Environmental Impact Assessment Report (EIAR)

Proposed Ballydermot Wind Farm, Co. Offaly & Co. Kildare

Chapter 6 - Biodiversity

Table of Contents

6. BIODIVERSITY 6-1
6.1 Introduction 6-1
6.1.1 Project Referencing 6-1
6.1.2 Study Area 6-2
6.1.3 Requirements for Ecological Impact Assessment 6-4
6.1.4 Review of Relevant Guidance and Sources of Consultation 6-6
6.1.5 Statement of Authority 6-8
6.2 Methodology 6-9
6.2.1 Desk Study 6-9
6.2.2 Scoping and Consultation 6-11
6.2.2.1 Pre-Planning Meetings 6-30
6.2.3 Field Surveys 6-38
6.2.3.1 Multi-disciplinary Ecological Walkover Surveys 6-40
6.2.3.2 Dedicated Habitat and Vegetation Composition Surveys 6-42
6.2.3.3 Dedicated Round-Leaved Wintergreen Survey 6-45
6.2.3.4 Terrestrial Fauna Surveys 6-45
6.2.3.5 Aquatic Surveys 6-51
6.2.4 Methodology for Assessment of Impacts and Effects 6-58
6.2.4.1 Identification of Target Receptors and Key Ecological Receptors 6-58
6.2.4.2 Determining Importance of Ecological Receptors 6-58
6.2.4.3 Characterisation of Impacts and Effects 6-59
6.2.4.4 Determining the Significance of Effects 6-59
6.2.4.5 Incorporation of Mitigation 6-61
6.2.5 Limitations 6-61
6.3 Establishing the Ecological Baseline 6-62
6.3.1 Desk Study 6-62
6.3.1.1 Designated Sites 6-62
6.3.1.2 NPWS Article 17 Reporting 6-107
6.3.1.3 Vascular Plants 6-109
6.3.1.4 Bryophytes 6-110
6.3.1.5 National Biodiversity Data Centre Records 6-110
6.3.1.6 NPWS Protected Species Records 6-114
6.3.1.7 Inland Fisheries Ireland 6-116
6.3.1.8 Freshwater Pearl Mussel (*Margaritifera margaritifera*) 6-118
6.3.1.9 Map of Irish Wetlands 6-120
6.3.1.10 Baseline Hydrology and Hydrogeology 6-128
6.3.1.11 Existing Baseline Habitat Mapping 6-140
6.3.1.12 Conclusions of the Desktop Study 6-143
6.3.2 Baseline Ecological Survey Results 6-143
6.3.2.1 Description of Habitats and Flora within the Project Site 6-143
6.3.2.2 Protected, Rare and Threatened Flora 6-221
6.3.2.3 Invasive Flora 6-224
6.3.3 Fauna in the Existing Environment 6-227
6.3.3.1 Non-Volant Mammals 6-227
6.3.3.2 Bats 6-243
6.3.3.3 Marsh Fritillary 6-249
6.3.3.4 Pollinators 6-251
6.3.3.5 Reptiles and Amphibians 6-252
6.3.3.6 Fisheries and Aquatic Fauna 6-253
6.3.4 Likely Future Receiving Environment 6-255
6.3.4.1 Future Environmental Trends 6-257
6.3.5 Identification of Key Ecological Receptors 6-259
6.4 Ecological Impact Assessment 6-270
6.4.1 Do-Nothing Scenario 6-270
6.4.2 Likely Significant Impacts During Construction Phase 6-271
6.4.2.1 Effects on Habitats During Construction 6-271
6.4.2.2 Effects on Rare and Threatened Flora During Construction 6-286
6.4.2.3 Effects on Fauna During Construction 6-288
6.4.3 Likely Significant Effects During Operational Phase 6-305
6.4.3.1 Effects on Habitats during Operation 6-305
6.4.3.2 Effects on Protected Fauna During Operation 6-307
6.4.4 Likely Significant Effects During Decommissioning Phase 6-310
6.4.5 Effects on Designated Sites 6-312

6.4.5.1 European Designated Sites 6-312
6.4.5.2 Nationally Designated Sites 6-313
6.5 Cumulative Impacts 6-314
6.5.1 Assessment of Projects 6-314
6.5.1.1 Other Wind Farm Projects 6-316
6.5.1.2 Other EIA or Large-scale Projects 6-323
6.5.1.3 EPA Licenced Activities 6-325
6.5.1.4 Peatland Climate Action Scheme 6-326
6.5.1.5 Arterial Drainage Schemes 6-327
6.5.1.6 Forestry Operations 6-327
6.5.1.7 Land-uses 6-329
6.5.2 Assessment of Plans 6-331
6.5.3 Conclusion of Assessment of Cumulative Effects 6-354
6.6 Summary 6-355

TABLE OF FIGURES

Figure 6-1 Biodiversity Study Area 6-3
Figure 6-2 Pollinator Survey Locations 6-49
Figure 6-3 European Designated Sites with Hydrological Catchments 6-64
Figure 6-4 European Designated Sites with Groundwater Catchments 6-66
Figure 6-4b European Designated Sites with Hydrological Catchments 6-67
Figure 6-5 Nationally Designated Sites with Hydrological Catchments 6-68
Figure 6-5b Nationally Designated Sites with Hydrological Catchments 6-69
Figure 6-6 Nationally Designated Sites with Groundwater Catchments 6-70
Figure 6-6b Nationally Designated Sites with Hydrological Catchments 6-71
Figure 6-7 Locations of the 14 no. bogs within the Proposed Wind Farm site 6-145
Figure 6-8 Watercourses within the Project Site 6-181
Figure 6-9 Habitat Maps 6-208
Figure 6-9b Habitat Maps 6-209
Figure 6-9c Habitat Maps 6-210
Figure 6-9d Habitat Maps 6-211
Figure 6-9e Habitat Maps 6-212
Figure 6-9f Habitat Maps 6-213
Figure 6-10 Habitat Maps with Proposed Project Infrastructure Footprint Overlain 6-214
Figure 6-10a Habitat Maps with Proposed Project Infrastructure Footprint Overlain 6-215
Figure 6-10b Habitat Maps with Proposed Project Infrastructure Footprint Overlain 6-216
Figure 6-10c Habitat Maps with Proposed Project Infrastructure Footprint Overlain 6-217
Figure 6-10d Habitat Maps with Proposed Project Infrastructure Footprint Overlain 6-218
Figure 6-10e Habitat Maps with Proposed Project Infrastructure Footprint Overlain 6-219
Figure 6-10f Habitat Maps with Proposed Project Infrastructure Footprint Overlain 6-220
Figure 6-11 Red-Listed Flora within the Project Site 6-223
Figure 6-12 Japanese knotweed locations 6-226
Figure 6-13 Badger Signs 6-236
Figure 6-14 Otter Signs 6-237
Figure 6-15 Pine Marten Signs 6-238
Figure 6-16 Irish Stoat Signs 6-239

Figure 6-17 Irish Hare Signs 6-240
Figure 6-18 Red Squirrel Signs 6-241
Figure 6-19 Other Mammal Signs 6-242

TABLE OF TABLES

Table 6-1 Organisations consulted with regard to biodiversity 6-11
Table 6-2 Ecology surveys informing the EIAR 6-38
Table 6-3 Categorising types of plots using clustering analysis (after Wiser & de Cáceres, 2013). 6-43
Table 6-4 Locations of n=42 aquatic survey sites in the vicinity of the Proposed Project 6-55
Table 6-5 Identification of European Sites within the Likely Zone of Influence 6-72
Table 6-6 Identification of Nationally Designated Sites within the Likely Zone of Influence 6-89
Table 6-7 Species listed under Annex II of the Habitats Directive, the Flora Protection Order (2022) or the Irish Red List of Vascular Plants within hectads N42, N52, N62, N63, N72 or N82 – Pre 1970 up to 1999 6-109
Table 6-8 NBDC records for protected species and species of conservation interest (excluding birds and pollinators) in hectads N42, N52, N62, N63, N72 and N82 6-111
Table 6-9 NBDC records for rare and protected pollinator species in hectad N63 and tetrads N72B, N72C and N72H 6-112
Table 6-10 NBDC records for invasive species (hectads N42, N52, N62, N63, N72 and N82) 6-114
Table 6-11 NPWS records for rare and protected species 6-114
Table 6-12 Inland Fisheries Ireland data on Fish Ecological Status 6-116
Table 6-13 Wetland sites within and in the vicinity of the Project Site 6-120
Table 6-14 WFD Catchments, sub-catchments and river-basins and Proposed Project infrastructure 6-131
Table 6-15 Watercourses on site with relevant water quality statuses 6-134
Table 6-16 Water quality monitoring stations and associated Q values 6-135
Table 6-17 WFD groundwater bodies and Proposed Project infrastructure 6-138
Table 6-18 WFD groundwater body status 6-138
Table 6-19 Ballydermot Site List as identified within the National Peatlands Park – Ballydermot Boglands Area brochure 6-140
Table 6-20 Watercourse Crossings within the Proposed Wind Farm 6-172
Table 6-21 Watercourse crossings along the Proposed Grid Connection Underground Electrical Cabling Route 6-195
Table 6-22 Identification of Key Ecological Receptors within the ZoI of the Proposed Project 6-259
Table 6-23 Habitats occurring within the construction footprint of the Proposed Project 6-272
Table 6-24 Assessment of potential for effects on Raised bog (PB1) during construction 6-273
Table 6-25 Assessment of potential for effects on Cutover bog and associated secondary habitats during construction 6-276
Table 6-26 Assessment of potential for effects on Bog woodland (WN7) and Scrub (WS1) during construction 6-278
Table 6-27 Assessment of potential for effects on Treelines (WL2) during construction 6-280
Table 6-28 Assessment of potential for effects on aquatic habitats and associated aquatic species during construction 6-281
Table 6-29 Assessment of potential for effects on rare and threatened flora during construction 6-286
Table 6-30 Assessment of potential for effects on badger during construction 6-288

Table 6-31 Assessment of potential for effects on otter during construction 6-291
Table 6-32 Assessment of potential for effects on other non-volant mammals during construction 6-294
Table 6-33 Assessment of potential for effects on bats during construction 6-296
Table 6-34 Assessment of potential for effects on marsh fritillary during construction 6-300
Table 6-35 Assessment of potential for effects on other pollinators during construction 6-303
Table 6-36 Assessment of potential effects on aquatic habitats and associated aquatic species during operation 6-306
Table 6-37 Assessment of potential for effects on bats during operation 6-309
Table 6-38 Cumulative Study Areas in relation to ecological receptors (birds are assessed separately within Chapter 7 of this EIAR) 6-315
Table 6-39 Wind farm projects within 15km of the Proposed Turbines 6-316
Table 6-40 Assessment of Plans 6-331

TABLE OF PLATES

Plate 6-1 A high vertical facebank and drainage ditch at the margins of the remnant Raised bog (PB1) in the north of Blackriver Bog 6-148
Plate 6-2 The area of Raised bog (PB1) in the north of Glashabaun South Bog, which is dry and degraded in nature 6-148
Plate 6-3 Cutover bog (PB4) dominated by bare peat at the location of Proposed Turbine 18 6-150
Plate 6-4 Freshly cut peat bricks left out for drying in Blackriver Bog, showing ongoing local turbary activities 6-151
Plate 6-5 Cutover bog dominated by bare peat, in the early stages of recolonisation by ling heather (Calluna vulgaris) secondary Calluna-dominated community in Ballydermot South Bog. 6-151
Plate 6-6 Ling heather (Calluna vulgaris) dominated secondary community at the location of the Proposed Met Mast no. 2 in the west of the Proposed Wind Farm site. 6-153
Plate 6-7 Secondary Calluna-dominated community with encroaching downy birch (Betula pubescens) scrub (WS1) 6-153
Plate 6-8 Secondary Calluna-dominated community with higher abundance of white-beak sedge (Rhynchospora alba) and Sphagnum bog mosses 6-154
Plate 6-9 Area of pioneer Poor fen (PB4/PF2) dominated by common cottongrass (Eriophorum angustifolium) in Lodge Bog, in a mosaic with areas of bare peat. 6-155
Plate 6-10 Area of more developed Poor fen (PB4/PF2) with standing water at the location of the Proposed Turbine 11 hardstand. 6-156
Plate 6-11 Area of Reed and large sedge swamp (PB4/FS1) at the location of the Proposed Turbine 23. 6-157
Plate 6-12 Area of downy birch (Betula pubescens)-dominated Scrub (PB4/WS1) to the south of Proposed Turbine 27. 6-158
Plate 6-13 Area of Dry meadows and grassy verges (PB4/GS2) and Dense bracken (PB4/HD1) separating two blocks of Bog woodland (WN7) in Barnaran Bog. 6-159
Plate 6-14 Linear areas of Bog woodland (WN7) located in Ballydermot South Bog. 6-160
Plate 6-15 Downy birch (Betula pubescens) dominated Bog woodland (WN7) at the location of Proposed Turbine 34. 6-160
Plate 6-16 Area of Oak-ash-hazel woodland (WN2) present along the Crabtree River 6-161
Plate 6-17 Mixed broadleaved woodland (WD1) located to the west of Proposed Turbine 36 6-162
Plate 6-18 Conifer plantation (WD4) within Killina Bog, at the location of the Proposed Enhancement Area. 6-163
Plate 6-19 Dense bracken (HD1) present within a ride between areas of Bog woodland (WN7) to the north of Turbine 16. 6-164

Plate 6-20 Area of Dry calcareous and neutral grassland (PB4/GS1) growing along a former railway line in Glashabaun North Bog. 6-165

Plate 6-21 Area of developed Dry calcareous and neutral grassland (PB4/GS1) in Ballydermot North Bog. 6-166

Plate 6-22 Grassy verges (PB4/GS2) present at the edges of existing machine tracks at the location of Proposed Turbine 25. 6-167

Plate 6-23 Dry meadows and grassy verges (PB4/GS2) growing in association with Dense bracken (PB4/HD1) near the margins of Codd 2 Bog. 6-167

Plate 6-24 Area of purple moor grass (Molinia caerulea) dominated Wet grassland (PB4/GS4) that has recolonised cutover bog in Blackriver Bog. 6-168

Plate 6-25 Existing gravel road located to the west of Proposed Turbine 2, classified as Buildings and artificial surfaces (BL3). 6-169

Plate 6-26 The existing access road to Cushaling Wind Farm, classified as Buildings and artificial surfaces (BL3), overlaps with the Proposed Wind Farm access track for a distance of approximately 850m in the west of the Project Site. 6-170

Plate 6-27 Area of Recolonising bare ground (ED3) along the Proposed Wind Farm access road in the west of the Project Site. 6-171

Plate 6-28 The proposed temporary construction compound located to the east of Proposed Turbine 14 is located in an area of Recolonising bare ground (ED3). 6-171

Plate 6-29 Tributary of the Figile River, a Lowland depositing river (FW2), located in Blackriver Bog. 6-180

Plate 6-30 Narrow, vertical-sided Drainage ditch (FW4) on bare peat at the location of proposed Turbine 10. 6-182

Plate 6-31 Wet, vegetated Drainage ditch (FW4) with eroded banks in Ballydermot South Bog. 6-183

Plate 6-32 Pumping station and silt pond located in Ballydermot South Bog 6-184

Plate 6-33 Areas of open water associated with pioneer Poor fen (PB4/PF2) communities in Derrybrennan Bog. ... 6-185

Plate 6-34 Area of open water where deep excavations have resulted in permanent pools of water in Glashabaun South bog. 6-185

Plate 6-35 Area of open water at the location of Proposed Turbine 6 in Ballydermot North Bog, with little revegetation. 6-186

Plate 6-36 Cutover bog (PB4) at the location of the Proposed Onsite Substation, dominated by bare peat with some early colonisation. 6-187

Plate 6-37 A mosaic of pioneer Poor fen (PB4/PF2) and Scrub (PB4/WS1) on cutover bog at the location of the Proposed Onsite Substation. 6-188

Plate 6-38 Area of Recolonising bare ground (ED3) on cutover bog at the location of the Proposed Onsite Substation 6-188

Plate 6-39 The facebank of high field at the location of the Proposed Onsite Substation, classified as cutover bog with secondary Calluna-dominated communities. 6-189

Plate 6-40 Secondary Calluna-dominated community within the high field at the location of the Proposed Onsite Substation 6-189

Plate 6-41 The Proposed Offsite Substation is partially located within an Improved agricultural grassland (GA1) field. 6-192

Plate 6-42 The eastern portion of the Proposed Offsite Substation is classified as Dry meadows and grassy verges (GS2). 6-192

Plate 6-43 Much of the Proposed Offsite Substation is located a field of rush-dominated Wet grassland (GS4) 6-193

Plate 6-44 The Proposed Temporary Construction Compound 10 for the Proposed Offsite Substation is located within a field of Wet grassland/Scrub (GS4/WS1). 6-193

Plate 6-45 The eastern field boundary is delineated by a mature ash (Fraxinus excelsior) and beech (Fagus sylvatica) treeline. 6-194

Plate 6-46 Proposed Turbine Delivery Route accommodation area 1 comprises a large area of Recolonising bare ground (ED3) at the junction of the R402 and R420 Regional Roads 6-202

Plate 6-47 Treeline (WL2) present at the location of Proposed Turbine Delivery Route accommodation area 1 6-203

Plate 6-48 Proposed Turbine Delivery Route accommodation area 2 comprises an Amenity grassland (GA2) in the west of Ballinagar village. 6-204

Plate 6-49 Short section of mixed Treeline (WL2) located at Proposed Turbine Delivery Route accommodation area 2. 6-204

Plate 6-50 Proposed Turbine Delivery Route accommodation area 3 enters the existing Cloncreen Wind Farm from the west, through an entrance currently blocked with a peat Earth bank (BL2) 6-205

Plate 6-51 Scrub (WS1) present at Proposed Turbine Delivery Route accommodation area 3 in the west of the existing Cloncreen Wind Farm 6-206

Plate 6-52 Existing gravel road through Cloncreen Wind Farm at the Proposed Turbine Delivery Route accommodation area 4 6-207

Plate 6-53 Existing gravel road through Cloncreen Wind Farm at the Proposed Turbine Delivery Route accommodation area 5 6-207

Plate 6-54 Round-leaved wintergreen (Pyrola rotundifolia subsp. rotundifolia) growing in pioneer fen habitat in Killina Bog 6-222

Plate 6-55 Basil thyme (Clinopodium acinos) growing along a former railway track between Glashabaun North and Glashabaun South Bogs 6-222

Plate 6-56 Japanese knotweed (Reynoutria japonica) identified growing in the south of Ticknevin Bog 6-225

Plate 6-57 Japanese knotweed (Reynoutria japonica) located along an access track to the west of the Project Site. . 6-225

Plate 6-58 Badger sett entrance in Glashabaun North Bog 6-229

Plate 6-59 Badger sett entrance with spoil heap evident, present in Blackriver Bog 6-230

Plate 6-60 Two pine marten observed on a trail camera in August 2026 6-233

Plate 6-61 Marsh fritillary larval web identified adjacent to the Proposed Onsite Substation internal access road 6-250

Plate 6-62 Adult marsh fritillary butterfly recorded in Lullybeg Butterfly Reserve within the Project Site, May 2026 6-251

GLOSSARY OF TERMS

Terms	Definition
Qualifying Interests	The specific habitats or species for which Special Areas of Conservation are designated under the EU Habitats Directive
Special Conservation Interests	Specific species or habitats for which a site is designated as a Special Protection Area, primarily focusing on rare, vulnerable, or migratory birds, as well as wetlands
Special Areas of Conservation	Designated for habitats (e.g., active raised bogs, reefs) and non-bird species listed under the EU Habitats Directive 92/43/EEC.
Special Protection Areas	Designated specifically for the protection of wild birds and their habitats under the EU Birds Directive 2009/147/EC.

GLOSSARY OF ACRONYMS

Acronyms	Definition
AA	Appropriate Assessment
AASR	Appropriate Assessment Screening Report
ACP	An Coimisiún Pleanála
ARB	Annex I Active raised bog [7110]
BCI	Bat Conservation Ireland
BIWQ	Biotic Index of Water Quality
BMP	Biodiversity Management Plan
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
DAU	Development Applications Unit
DCEE	Department of Climate Energy and the Environment
DRB	Annex I Degraded raised bog still capable of natural regeneration [7120]
DTM	Digital Terrain Model
EcIA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
eDNA	Environmental DNA
EEC	European Economic Community
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERICA	Engine for Relevés to Irish Communities Assignment
FPO	Flora Protection Order
GIS	Geographic Information System
GSI	Geological Survey Ireland
GWB	Groundwater Body
HD	Habitats Directive
HDD	Horizontal Directional Drilling
IAQM	Institute of Air Quality Management

Acronyms	Definition
IAS	Invasive Alien Species
IFI	Inland Fisheries Ireland
IPC	Integrated Pollution Control
IPCC	Irish Peatland Conservation Council
ITM	Irish Transverse Mercator
IUCN	International Union for Conservation of Nature
IVC	Irish Vegetation Classification
KCDP	Kildare County Development Plan
KER	Key Ecological Receptor
LFL	Limited Felling Licence
LVIA	Landscape and Visual Impact Assessment
NBAP	National Biodiversity Action Plan
NBDC	National Biodiversity Data Centre
NHA	Natural Heritage Area
NIEA	Northern Ireland Environment Agency
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
NT	Near Threatened
NVD	National Vegetation Database
OCDP	Offaly County Development Plan
OPW	Office of Public Works
OSI	Ordnance Survey Ireland
PCAS	Peatlands Climate Action Scheme
pNHA	Proposed Natural Heritage Area
PRF	Potential Roost Features
QI	Qualifying Interest
RPO	Regional Policy Objectives
SEA	Strategic Environmental Assessment

Acronyms	Definition
SID	Strategic Infrastructure Development
S.I.	Statutory Instrument
SAC	Special Area of Conservation
SCI	Special Conservation Interests
SNH	Scottish Natural Heritage
SPA	Special Protection Area
TAO	Transmission Asset Owner
TII	Transport Infrastructure Ireland
VP	Vantage Point
WA	Wildlife Act
WFD	Water Framework Directive
ZoI	Zone of Influence

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 (with the exception of avian receptors, which are specifically dealt with in Chapter 7 of this EIAR), and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified. Mitigation by design has been applied in the iterative constraints-led design processes of Proposed Project 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 Acts 1976 (as amended) and the EU Habitats Directive 92/43/EEC. 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, Flora and Fauna.
- 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 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, Flora and Fauna.

6.1.1 Project Referencing

As detailed in Section 1.1.1 of Chapter 1 Introduction, for the purposes of this EIAR, the various project components are described and assessed using the following references: the '**Proposed Project**' which encompasses the entirety of the project ('**Proposed Wind Farm**' and '**Proposed Grid Connection**'), the '**Proposed Turbines**', '**Proposed Onsite Substation**', '**Proposed Offsite Substation**', '**Proposed Enhancement Areas**', '**Proposed Construction Haul Routes**' and '**Proposed Turbine Delivery Route**'.

Where the '**Project Site**' is referred to, this relates to the Planning Application Boundary, as delineated in red as shown on Figure 1-1 of the EIAR and encompasses an area of approximately 5,157 hectares.

Where the '**Proposed Wind Farm site**' is referred to, this represents the area encompassing the Proposed Wind Farm, the Proposed Onsite Substation, 0.5km of the Proposed Grid Connection underground electrical cabling route, and the Proposed Enhancement Areas; this area spans a large suite of bogs, comprising of a total of 14 no, individual bog basins, which form part of the Allen Bog Group.

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 Study Area

The study area for this Biodiversity Chapter is the area from which it was considered necessary to collect ecological information (i.e. through the desktop study and ecological surveys) to inform the assessment of potential impacts on ecological receptors. The '**Biodiversity Study Area**' has been defined with the consideration of the likely ZoI as outlined in Section 6.1.1 above, through reviewing the project details and the types of impacts and effects that could arise as a result of the Proposed Project.

The primary study area for the purposes of this Biodiversity Chapter is the Project Site. The Project Site is the area within which the majority of ecological surveys were undertaken (i.e. multidisciplinary walkover, habitat and botanical, terrestrial mammal, bat, pollinator, and marsh fritillary surveys) and which is assessed for potential effects on most terrestrial habitats and species. The Project Site (as defined in Section 1.1.1 of this EIAR) includes the Proposed Turbine Delivery Route accommodation areas, and therefore these areas form part of the Study Area. The remaining elements of the Proposed Project (i.e. the lengths of the Proposed Turbine Delivery Route with the exception of the accommodation areas, and Proposed Construction Haul Routes) are not included in the area for ecological surveys as there are no works proposed within these areas. However these elements and their potential impacts are fully assessed with regard to their potential impacts on biodiversity, flora and fauna.

For some receptors (i.e. otter, aquatic receptors) the Biodiversity Study Area extended beyond the Project Site. For aquatic receptors, including otter, fish and aquatic and riparian habitats, all freshwater watercourses which could be affected directly or indirectly by the Proposed Project given their location and downstream distance from the Project Site are considered as part of the Biodiversity Study Area. This includes sites within, in the vicinity of, as well as downstream of the Proposed Wind Farm and watercourses crossed by the Proposed Grid Connection underground electrical cabling route, including 150m up and downstream of the crossing points. Dedicated surveys were undertaken at these locations to collect data on the potential presence of aquatic habitats and species.

The desk study undertaken considers desktop records from the wider environment in which the Project Site is located, including all the hectads within which the Project Site is located (i.e., hectads N42, N52, N62, N63, N72 and N82), to provide context for the assessment and to inform an understanding of the wider environment. This Biodiversity Chapter has also been prepared with due consideration to the identified study areas for Water as defined in Section 9.2.1 of Chapter 9 of this EIAR, in the context of the potential impacts on biodiversity, flora and fauna. The identified study area for Ornithology has also been considered as part of the desk study, where relevant for the assessment of likely significant effects on European and Nationally Designated Sites. All other ornithological considerations are addressed in Chapter 7 of this EIAR and are not repeated in this Biodiversity Chapter.

The Biodiversity Study Area is shown in Figure 6-1 below.

645000 650000 655000 660000 665000 670000 675000 680000 685000

740000 735000 730000 725000 720000 715000 710000

N

N63

N42 N52 N62 N72 N82

5157ha

0 5 10 km

Map Legend

- Project Site
- WFD Watercourses
- National Grids (10km)

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



SITE LOCATION - NOT TO SCALE

Drawing Title
Biodiversity Study Area

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-1	1:130,000
Drawn By	Checked By	Date
JG	CF	22/10/2026

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

6.1.3 Requirements for Ecological Impact Assessment

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 sites[1]) 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 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 (SACs). 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 Ornithology 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[2],, SPAs or cSPAs) has been carried out in the Appropriate Assessment Screening Report (AASR) and Natura Impact Statement (NIS), which is also submitted with the planning application for the Proposed Project. A separate assessment has not been

[1] 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.
[2] Candidate SACs (cSACs) are afforded the same protection as SACs. The process of making cSACs into SACs by means of Statutory Instrument has begun and while the process is ongoing. The term SAC will be used to conform with nomenclature used in the National Parks and Wildlife Services (NPWS) database. The same applies to candidate SPAs.

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).

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 designation[3]. 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

Irelands 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.

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:

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

- **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 farms[4]. 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 Project Site and the ecological assessment process. Pollinator friendly measures have been incorporated into the design of the Proposed Project and these are detailed within the Biodiversity Management Plan (BMP) (see Appendix 6-5).

6.1.4 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:

[4] *All-Ireland Pollinator Plan: Pollinator-friendly management of wind farms [online]. Available at: https://pollinators.ie/wp-content/uploads/2022/12/Wind-Farm-Pollinator-Guidelines-2022-WEB.pdf [Accessed 04/06/2026].*

- 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. In line with the approach set out in Section 1.8.3 of Chapter 1 of the EIAR, this assessment has had regard to the EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

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

- Ireland's 4th National Biodiversity Action Plan 2023-2030
- Regional Spatial and Economic Strategy, Eastern and Midlands Regional Assembly 2019-2031
- Kildare County Development Plan 2023-2029
- Offaly County Development Plan 2021-2027
- Kildare County Council Biodiversity Action Plan 2026-2031
- Offaly Biodiversity Action Plan 2025-2030
- Allenwood Biodiversity Action Plan 2021-2025
- Bord na Móna Biodiversity Action Plan 2016-2021
- National Planning Framework Ireland 2040
- National Development Plan 2021-2030.
- All-Ireland Pollinator Plan 2026-2030

In addition, the guidelines listed below were consulted in the preparation of this document to provide the scope, structure, and content of the assessment. Further to these, species- and receptor-specific guidance followed are outlined in the relevant sections below:

- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2022).
- Advice Notes on current practice in the preparation of Environmental Impact Statements (EPA, 2003)
- 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);
- Technical Guidance Series – Competencies for Species Survey: Badger (CIEEM, 2013)
- Technical Guidance Series – Competencies for Species Survey: Otter (CIEEM, 2013)
- Competencies for Species Survey: Badger. Chartered Institute of Ecology and Environmental Management, Winchester. (CIEEM, 2013)

6.1.5 Statement of Authority

This EIAR chapter has been prepared by Katy Beckett (B.A., M.Sc., MCIEEM) and Chandra Walters (B.Sc.), and reviewed by Sarah Mullen (B.Sc., M.Sc., Ph.D., ACIEEM) and Pat Roberts (B.Sc., MCIEEM).

Katy is a Project Ecologist with MKO with over 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.

Chandra is an Ecologist with MKO with over five year's consultancy experience. She is skilled in botanical and habitat surveys as well as specialised faunal surveys such as mammal, marsh fritillary and pollinator surveys. Chandra has authored numerous reports to inform Appropriate Assessment (Stage 1 and Stage 2), as well as EcIAs for a variety of projects including renewable energy developments.

Sarah is a Project Director for Ecology with MKO and has over ten years' experience in ecological consultancy. She is a skilled ecologist having authored and/or 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.

Pat is Principal Ecologist with MKO with over 21 years post graduate experience of providing ecological services in relation to a wide range of developments at the planning, construction and monitoring stages. He is highly experienced in the completion of ecological baseline surveys, impact assessments and Appropriate Assessment reporting.

The baseline terrestrial ecological surveys were conducted by MKO ecologists Amy McDermott (B.Sc.), Amy Moriarty (B.Sc.), Bea Jackson (B.A., M.Sc.), Brídín Foster (B.Sc.), Caití Farren (B.A.), Caoimhe Myles (B.Sc., M.Sc.), Chandra Walter, Ciara Lynn Sheehan (B.Sc.), Clare Mifsud (Ph.D.), Cuan Feely (B.Sc.), Deepali Mooloo (B.Sc., M.Sc.), Diarmuid O'Leary (B.Sc.), Inga Reich (M.Sc., Ph.D.), Jo Ruane (B.Sc., M.Sc.), Julie O'Sullivan (B.Sc., M.Sc.), Kate Johnson (B.Sc.), Kate Leahy (B.Sc.), Kate O'Donnell (B.Sc., ACIEEM), Katy Beckett, Kevin McElduff (B.Sc.), Lucy Jenkins (B.A., M.Sc.), Mairead Kavanagh (B.Sc.), Matthew Kieran (B.Sc.), Neil Campell (B.Sc., M.Sc.), Niamh Leahy (B.Sc.), Ellen Tuck (B.Sc.), Padraig Desmond (B.Sc.), Rachel Walsh (B.Sc., MCIEEM), Rudraksh Gupta (B.Sc., M.Sc., ACIEEM) and Sarah Mullen. All surveyors have relevant academic qualifications and are competent in undertaking habitat and ecological assessments. A statement of authority for all surveyors is found in Appendix 6-7.

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 Ryan Connors (B.Sc., M.Sc.), Fred Mosley (B.A., M.Sc.), Kate Greaney (BSc., MSc.), Charlie Meehan (B.A., MSc.), Laura McEntegart (B.Sc.), Tim Murphy (B.Sc.), Alice Twiss (B.Sc.),

Sophie Moore (B.A.) and Saoirse Fitzsimons (B.A., M.Sc.). The Bat Report (included as Appendix 6-2) was prepared by Fred Mosley, Ryan Connors, Tim Murphy and Molly O'Hare (B.Sc., M.Sc.) 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.

Please see Section 1.8 of Chapter 1 of this EIAR and Appendix 6-7 for further details on the project team qualifications.

6.2 Methodology

The following sections describe the methodologies followed to establish the baseline ecological condition of the Project 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 existing information at the Proposed Wind Farm site provided by BnM personnel, in particular ecological data including habitat mapping and bird survey data provided by the BnM Ecology Team;
- Review of Draft Cutaway Bog Decommissioning and Rehabilitation Plans for the 14 no. Bogs forming part of the Allen Bog Group which form part the Proposed Wind Farm site;
- Available info from IPC licence P0503-01[5];
- Review of National Parks and Wildlife Service (NPWS) Article 17 reporting and mapping 2025, 2019, 2013 and 2007;
- NPWS Site Synopses for European and Nationally Designated Sites within the Likely ZoI;
- Review of the Irish Ramsar Wetlands Committee[6] web-mapper of Ramsar Sites;
- Review of online web-mappers: Environmental Protection Agency (EPA)[7] online web mapper;
- Review of Inland Fisheries Ireland (IFI)[8] Open Data Portal and IFI Reports, where available;
- Data on potential occurrence of rare plant and bryophytes – as per NPWS online map viewers; Flora (Protection) Order Map Viewer – Bryophytes[9] and Flora Protection Order 2022 Map Viewer[10];
- Review of relevant Plans, including the NBAP and the All-Ireland Pollinator Plan 2026-2030;

[5] *EPA [online] Available at: https://leap.epa.ie/licence-profile/P0503/versions/22c7e87d-7c61-e211-9eb5-0050568a69e2 [Accessed 18/08/2026]*
[6] *Irish Ramsar Wetlands Committee [online]. Available at: https://www.irishwetlands.ie/irish-sites/ [Accessed 05/06/2026]*
[7] *EPA Maps [online] Available at: https://gis.epa.ie/EPAMaps/ [Accessed 05/06/2026]*
[8] *IFI Open Data Portal [online] Available at: https://opendata-ifigeo.hub.arcgis.com/ [Accessed 05/06/2026]*
[9] *NPWS FPO Bryophytes [online] Available at: http://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e [Accessed 05/06/2026]*
[10] *NPWS Flora (Protection) Order 2022 Map Viewer [online] Available at: https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e [Accessed 05/06/2026]*

- Records from the NPWS web-mapper and review of specially requested records from the NPWS Rare and Protected Species Database for the hectads in which the Proposed Project is located;
- Review of the NPWS habitat datasets: 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[11];
- Review of NPWS *Margaritifera* Sensitive Area Map (Version 10,2020)[11];
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper[12];
- Data obtained from MothsIreland relating to the Suspected moth (*Parastichtis suspecta*) through direct liaison;
- Review of Wetland Surveys Ireland[13] and Kildare Wetland Survey 2012[14] online mappers;
- Review of the National Peatlands Park – Ballydermot Boglands Area brochure[15] prepared by the National Peatlands Park Group;
- Details on the baseline hydrology of the Project Site have been obtained from the desk study undertaken to inform Chapter 9 Water of this EIAR, and the references therein.

Details on the desktop studies in relation to bats and birds are detailed in the Bat Report, Appendix 6-2 and Chapter 7 Ornithology of this EIAR, respectively. Additional desk study information relating to aquatic habitats and species is also presented in the Aquatic Baseline Report, Appendix 6-3.

Potential for in-combination effects have been considered in Section 2.10 of Chapter 2 of this EIAR and Section 6.5 of this Chapter. This was informed by a review of the planning files prepared for other plans and projects occurring in the wider area as detailed in Section 2.10 of Chapter 2.

[11] *NPWS Maps and Data [online] Available at: https://www.npws.ie/maps-and-data [Accessed 05/06/2026]*
[12] *NBDC Biodiversity Maps [online] Available at: https://maps.biodiversityireland.ie/Map [Accessed 05/06/2026]*
[13] *Map of Irish Wetlands [online]. Available at: https://wetland.maps.arcgis.com/apps/instant/sidebar/index.html?appid=0b602456f4e54b2b808b9cf8d6472cad [Accessed 17/07/2026]*
[14] *Heritage Council Maps: Kildare Wetland Survey 2012 [online] Available at: https://www.heritagemaps.ie/datasets/heritagecouncil::kildare-wetland-survey-2012-polygon [Accessed 28/07/2026]*
[15] *National Peatlands Park – Ballydermot Boglands Area brochure [online] Available at: https://consult.kildarecoco.ie/ga/system/files/materials/4060/4845/National%20Peatlands%20Park%20Brochure.pdf [Accessed 14/10/2026]*

6.2.2 Scoping and Consultation

MKO undertook a scoping exercise in 2021 and 2025 during preparation of this EIAR, as described in Section 2.8 of Chapter 2 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 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 relation to both the Scoping Round 1 – 2021 and Scoping Round 2 – 2025 are included, with additional responses from Scoping Round 1 – 2021 included where no response was received in Scoping Round 2 – 2025.

Table 6-1 Organisations consulted with regard to biodiversity

Consultee	Date Received	Response	Addressed
An Taisce	5th of May 2021	A response was received acknowledging receipt of the scoping request. No further response was received from An Taisce in relation to Scoping Round 1 - 2021.	N/A
	14th of April 2026	An automatic response was received acknowledging receipt of the scoping request, stating that An Taisce are unable to respond to every query due to limited resources. No further response has been received from An Taisce in relation to Scoping Round 2 - 2025 at the time of writing.	
Bat Conservation Ireland	2nd of February 2021	A response was received stating that Bat Conservation Ireland does not have the administrative capacity to comment on individual planning proposals. However, they emphasised the following: › All bat surveys should adhere to best practice guidelines for surveying, mitigation, and monitoring. › Bat Conservation Ireland data can be queried for bat records through the National Biodiversity Data Centre which holds bat records and the Bat Landscape Favourability map. Alternatively, bat records can be queried for a fee directly from Bat Conservation Ireland.	All bat surveys have been undertaken in line with best practice guidelines, as described fully within the Bat Report, which is included as Appendix 6-2 to this Biodiversity Chapter and in Section 6.2.3.4.5 below. Bat records were also obtained from the Bat Conservation Ireland database, as outlined in Section 3.2.3 of the Bat Report.

Consultee	Date Received	Response	Addressed
	N/A	No response has been received from Bat Conservation Ireland in relation to the Scoping Round 2 - 2025 at the time of writing.	N/A
Butterfly Conservation Ireland	N/A	No response was received from Butterfly Conservation Ireland in relation to Scoping Round 1 - 2021.	N/A
	18th of December 2025	Butterfly Conservation Ireland highlighted that their surveys indicate that the region holds extensive biodiversity. › At least 13 species listed under Annex II and seven habitats listed under Annex I of the EU Habitats Directive, quoting the 'Bad' and 'Inadequate' conditions of these habitats per the latest Article 17 reports. › The Lullymore/Lullybeg area ranks as one of Ireland's three important butterfly areas[16]. › The region supports hundreds of moth species, including some rare and threatened macro-moths. The rare moth Suspected *Parastichtis suspecta*, declared Regionally Extinct (in Ireland) in 2016 was rediscovered in the region. › The region contains 26 of Ireland's 35 butterfly species, including four species ranked with a threat category under the IUCN criteria. Lullybeg is one of only five locations in the Republic of Ireland where 100 plus Marsh Fritillary adult butterflies have been recorded in one 10km square. The region holds a number of colonies, operating within the landscape as a functioning metapopulation. The provisions of the EIA Directive and the Wildlife Act (as amended) in relation to biodiversity were iterated: › Article 3 of the EIA Directive: an EIAR must "describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: [...] (b) biodiversity, with	A comprehensive suite of ecological surveys were undertaken to inform this Biodiversity Chapter, including dedicated moth trapping surveys, pollinator survey and marsh fritillary surveys. The findings of these surveys are outlined in Section 6.3.3.4 below. A BMP has been prepared for the Proposed Project and is included as Appendix 6-5 of this EIAR. This BMP includes measures for the creation of pollinator corridors through the Proposed Wind Farm, as well as management and enhancement of existing suitable habitat for marsh fritillary, peatland enhancement measures and woodland and scrub planting. Potential effects on habitats, including habitat loss, fragmentation and degradation, on all spatial scales, are addressed in Section 6.4 below, and mitigations to protect habitats and species are prescribed where necessary. All provisions of EIA Directive and Wildlife Act (as amended) have been considered

[16] *Van Swaay, C.A.M., Warren, M. (2006). Prime Butterfly Areas of Europe: an initial selection of priority sites for conservation. Journal of Insect Conservation (2006) 10: 5–11 _ Springer 2006 DOI 10.1007/s10841-005-7548-1*

Consultee	Date Received	Response	Addressed
		particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC" › Annex IV, point 4 of the EIA Directive: a "description of the factors specified in Article 3(1) likely to be significantly affected by the project: [...] biodiversity (for example fauna and flora)" is required. › The Wildlife (Amendment) Act 2000 Section 9 (a) and (b) inserted an extra function on the Minister *"to promote the conservation of biological diversity"* and it defined 'biological diversity' *"as meaning the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part and 'diversity' includes diversity within species, between species and of ecosystems".* Other points raised include: › Concerns in relation to how the proposed road network, turbines and drainage will alter the condition and connectedness of the habitats, and the potential impacts that may arise in the immediate, medium and longer-term timescales. › How peatland rehabilitation efforts will be implemented within the extensive, widely dispersed layout of the Proposed Wind Farm. › An alternative site development location was suggested, in an area of highly degraded peatland west of the Rathangan/Edenderry Road. › The national importance of Lullybeg Nature Reserve – Ballydermot (Lullymore), operated by Butterfly Conservation Ireland, was highlighted. › It was suggested that a comprehensive examination of the Kildare County Development Plan 2023-2029 be undertaken to review the current proposal.	within this EIAR and Biodiversity Chapter. A cumulative assessment has also been undertaken and is fully described in Section 6.5 of this Chapter.
Coillte	N/A	Coillte were not included in the Scoping Round 1 - 2021.	N/A
	14th of April 2026	An automatic response was received acknowledging receipt of the scoping request. No further response has been received at the time of writing.	
Department of Agriculture, Food and the Marine	8th of March 2021	In accordance with the requirements of Article 5 (2) of Directive 2011/92/EU as amended by Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment (EIA Directive), during Scoping Round 1 -	As outlined in Chapter 4 Description of this EIAR, the approximately 60.7ha of commercial forestry felling required as part

Consultee	Date Received	Response	Addressed
		2021, the Environmental Protection Agency (EPA, see below in this table) consulted with the Department of Agriculture, Food and the Marine as part of their scoping response. A copy of the response received from the department was attached, the contents of which are outlined in below. No other response was received directly from the Department of Agriculture, Food and the Marine in relation to Scoping Round 1 - 2021. › 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 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.	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 on 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 offset 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 6.4 of this Biodiversity Chapter.

Consultee	Date Received	Response	Addressed
	19th of January 2026	The same response was provided during the Scoping Round 2 (2025) in relation to proposed felling of commercial forestry, and as such no additional issues were raised in relation to biodiversity, flora or fauna.	
Department of Climate, Energy and the Environment	N/A	No response was received from the Department of Climate, Energy and the Environment (DCEE) in relation to the Scoping Round 1 – 2021. The response received from Geological Survey Ireland, the national earth science agency which is part of the DCEE, is outlined in the section below.	N/A
	N/A	No response has been received from the DCEE in relation to Scoping Round 2 – 2025 at the time of writing. The response received from Geological Survey Ireland, the national earth science agency which is part of the DCEE, is outlined in the section below.	
Department of Housing, Local Government and Heritage (includes the National Parks and Wildlife Service)	4th of August 2021	The following comments were received in relation to Nature Conservation: › During the desk study include a search of records from the NBDC, for both common and rare species which occur in the area. › Include a month-long, static bat detector deployment during the month of August, following the findings of Scottish Power research into bat usage on their windfarms. › Have a detailed look at invasive species and the means which will be taken to control them. › Detail any restoration conditions attached to IPC licences for these sites and how they will be fulfilled during this development. › Add a section on how this site can be enhanced for the provision of ecosystem services (climate change mitigation, provision of clean water, nature-based amenity etc.) during the operational phase of the development. › Examine amenity use versus conservation interests e.g. ground-nesting birds. › Include survey for marsh fritillary in any suitable habitat	A comprehensive desk study has been undertaken as part of this Biodiversity Chapter, including a search of records from the NBDC, as outlined in Section 6.3.1 of this EIAR. Detailed baseline ecological surveys were undertaken as part of the preparation of this Biodiversity Chapter, including surveys for invasive species, marsh fritillary and bats as outlined within this scoping response. All surveys have been undertaken in line with best practice guidelines, as described in Section 6.2.3 below. All potential effects arising from the construction and operation phases of the

Consultee	Date Received	Response	Addressed
		› Examine the effects of any necessary lighting on wildlife during construction as well as operation phases and include mitigation to reduce or eliminate it.	Proposed Project have been considered in Section 6.4 of this Biodiversity Chapter, encompassing all aspects of the Proposed Project. Additionally, opportunities for biodiversity enhancement have been incorporated and are fully described within the Biodiversity Management and Enhancement Plan, included as Appendix 6-5 of this EIAR. The interaction of the Proposed Project with IPC Licence (P0503-01) is outlined in detail in Chapters 1 Introduction, 2 Background and 4 Description of this EIAR.
	21st of January 2026 Meeting held on 26th of May 2026, see Section 6.2.2.1.1 below for further details	In addition to a number of comments relating to birds, which are addressed in Chapter 7 Ornithology of this EIAR, the potential for biodiversity enhancement measures within the Project Site was highlighted: › The Department notes that the Long Derries, Edenderry SAC is located within the application and predominantly owned by both the Applicant, BnM, and Coillte. Consequently, there may be an opportunity to consider appropriate conservation measures at this site to help deliver the conservation objectives within the context of any biodiversity enhancement measures being proposed for the current application (should there be no such measures currently in place). › The qualifying interest of the Long Derries, Edenderry SAC, the Annex I habitat [6210] Orchid-rich Calcareous Grassland*, was considered by the National Parks and Wildlife Service of this Department to be under threat from scrub encroachment and under-grazing. Consequently, there may be some potential for appropriate scrub management and/or the establishment of an appropriate grazing regime, should these measures not already occur at the site.	While The Long Derries, Edenderry SAC was located partially within the Project Site at the time of consultation (December 2025), this European Site no longer comprises part of the Project Site as design was refined to avoid this SAC. The potential conservation management of this SAC was discussed during the meeting with DAU/NPWS on 26th of May 2026. Separate to this application, the Applicant have been consulting with the NPWS about management of the part of The Long Derries, Edenderry SAC within their ownership. This consultation is ongoing and has been decoupled from this planning application and therefore does not form part of the Proposed Project.
	15th of March 2021	In accordance with the requirements of Article 5 (2) of Directive 2011/92/EU as amended by Directive 2014/52/EU on the assessment of the effects of certain public	As outlined in Section 6.1.3 of this Biodiversity Chapter, this ecological impact

Consultee	Date Received	Response	Addressed
Environmental Protection Agency (EPA)		and private projects on the environment (EIA Directive), the EPA consulted with the Planning Authorities Offaly County Council and Kildare County Council and relevant prescribed bodies. A copy of the response received from the Department of Agriculture, Food and the Marine was attached, the contents of which are outlined in this table above, in relation to the Department of Agriculture, Food and the Marine. The EPA received no other responses within the timeframe set out. Having regard to the specific characteristics of the project, including location and technical capacity, and likely impact on the environment, the EPA is of the opinion that the scope and level of detail to be included in the environmental impact assessment report should as a minimum: (i) identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of a project on each of the factors listed in Article 3 of the EIA Directive; (ii) address the matters raised in the responses received from the bodies detailed above; (iii) have regard to the rehabilitation plan(s) required under Condition 10 of Licence Reg No. P0503 for any bog areas relevant to the Proposed Project; (iv) have regard to the requirements of the *Guidelines on the information to be contained in Environmental Impact Assessment Reports*, as appropriate; (v) have regard to the relevant topics contained in the EPA's Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) September 2003. (vi) satisfy the requirements of the EIA Directive.	assessment has been undertaken with regards to EPA (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports* as appropriate and EPA (2003) *Advice Notes on current practice in the preparation of Environmental Impact Statements*. This EIAR and Biodiversity Chapter have been prepared in compliance with all aspects of the EIA Directive. This is described further within Section 1.2.1 of Chapter 1 Introduction of this EIAR. The interaction of the Proposed Project with IPC Licence (P0503-01) is outlined in detail in Chapters 1 Introduction, 2 Background and 4 Description of this EIAR.
	14th of April 2026	An automatic response was received acknowledging receipt of the scoping request. No further response has been received from the Environmental Protection Agency to Scoping Round 2 - 2025 at the time of writing.	N/A
Fáilte Ireland	16th of February 2021	Fáilte Ireland's '*Guidelines for the Treatment of Tourism in an EIA'* was shared, which notes the following in relation to Biodiversity:	The potential for the Proposed Project to result in significant effects on all aspects of

Consultee	Date Received	Response	Addressed
		› 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: '*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.*'	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 6.5.2 below.
	23rd of December 2025	Fáilte Ireland's '*Guidelines for the Treatment of Tourism in an EIA*' was shared again in 2025, and as such no additional issues were raised in relation to biodiversity, flora or fauna.	
Geological Survey of Ireland	10th of February 2021	Geological Survey of Ireland (GSI) provided a number of comments in relation to the Proposed Project, of which the following are relevant to biodiversity, flora and fauna: <u>Geoheritage</u> Geological Survey Ireland is in partnership with the National Parks and Wildlife Service to identify and select important geological and geomorphological sites throughout the country for designation as geological NHAs. County Geological Sites (CGS), as adopted under the National Heritage Plan, include additional sites that may also be of national importance, but which were not selected as the very best examples for NHA designation. GSI records show that there are no CGSs in the vicinity of the Proposed Wind Farm. <u>Groundwater</u>	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 this EIAR. These data have been used to inform the ecological impact assessment within this Biodiversity Chapter, where appropriate. The potential for groundwater deterioration arising from the Proposed Project has been fully described and mitigation has been prescribed where necessary within Chapter 9

Consultee	Date Received	Response	Addressed
		Groundwater is important as a source of drinking water, and it supports river flows, lake levels and ecosystems. It contains natural substances dissolved from the soils and rocks that it flows through and can also be contaminated by human actions on the land surface. As a clean, but vulnerable, resource, groundwater needs to be understood, managed and protected. <u>Geological Mapping</u> GSI maintains online datasets of bedrock and subsoils geological mapping that is reliable, accessible and meets the requirements of all users including depth to bedrock and physiographic maps. These datasets include depth to bedrock data and subsoil classifications. It was encouraged to utilise these datasets.	Water of this EIAR. Where groundwater deterioration has the potential to result in impacts on Key Ecological Receptors, this has been fully considered and addressed within Section 6.4 of this Biodiversity Chapter.
	16th of December 2025	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.	
Inland Fisheries Ireland (IFI)	10th of March 2021	The site of the Proposed Project is located primarily within the upper reaches of the Figile River system with smaller sections located within the Slate catchment. The IFI provided the following information in relation to these watercourses: › The Figile and Slate Rivers are two of the four Barrow tributaries, draining large peatland areas in the Bog of Allen which combined are known as the Black River system. The Black River, which joins the Barrow immediately upstream of Monasterevin, is by far the largest tributary of the Barrow system draining, 622km^2 and represents 21% of the entire Barrow catchment.	A comprehensive suite of ecological surveys were undertaken to inform this Biodiversity Chapter, including dedicated aquatic surveys in watercourses within and downstream of the Project Site. All aquatic receptors have been fully considered and assessed in this EIAR, an impact assessment is included in Section 6.5 below, and mitigation measures have been prescribed to block/ameliorate any predicted effects. An AASR and NIS has also been prepared for

Consultee	Date Received	Response	Addressed
		› Salmon spawning/recruitment within the Black River is currently limited to small sections of the four tributaries referred to above, relatively recently reducing from a far wider range throughout the tributaries. › Adult salmon spawn in shallow waters during the winter months and the adult salmon that spawn in systems such as the Figile and Slate will have resided in deeper sections of the Barrow main channel prior to entering the Black River system to spawn. Conversely the progeny of the salmon that spawn in the Figile and Slate system as they grow older and larger will travel downstream to the deeper waters of the Barrow main channel, before smoltifying and migrating to sea. IFI would like to stress that the populations of salmon (and other Habitats Directive species) in these rivers/streams are an important/integral component of the salmon populations of the River Barrow and River Nore SAC even though those waters are not SAC designated. IFI's main concerns relating to the Proposed Project relate to: <u>The potential that the Proposed Project may consolidate the water quality and habitat/hydro-morphological issues that persist throughout the Figile and Slate River system linked to peat extraction operations by Bord na Móna:</u> › The WFD Ecological Status/Potential for numerous waters draining Bord na Móna peatland areas throughout the Black River system is "Poor", while for many the WFD Risk calculation is that they are "At Risk". › The WFD Characterisation Reports for numerous waters throughout the Black River system draining peatland areas identifies peat extraction as a significant pressure, with organic pollution the main impact associated with peat extraction. › To facilitate peat harvesting deep drainage channels were constructed throughout peatland sites. Deepening of fisheries watercourses adjacent to and downstream of peatlands was also undertaken to facilitate this peat harvesting. These significant alterations lowered the water table within surrounding peat deposits and result in the associated peat being exposed to air, facilitating the rapid breakdown of this organic matter, releasing nutrients, principally ammonia to waters.	the Proposed Project, which assesses all likely significant effects on aquatic receptors associated with European Site, including potential effects on *ex-situ* Qualifying Interest (QI) species. All potential effects on water quality and hydrological conditions as a result of the Proposed Project are fully discussed in Chapter 9 Water of this EIAR, and where these effects may also impact biodiversity, this is discussed in Section 6.4 below.

Consultee	Date Received	Response	Addressed
		› The drying out of the peats exacerbates the washout of peat solids to surface waters. The potential for peat particles to become windblown is exacerbated by drying out also. › A number of comments were relayed in relation to the silt settlement ponds within the Project Site and their efficacy in relation to retention of suspended solids and dissolved nutrients › The potential for direct run-off from haul roads and stockpiles of peat, wind-blown peat and the potential for suspended solids generation from excavations in subsoils below peat deposits should also be considered. › IFI also provided comments in relation to the potential for drainage waters to be significantly elevated in temperature at certain times of year when compared to typical groundwater recharge and/or the surface waters to which it is being discharged. Given the important link between water temperature and biological/biochemical reactions, the temperature of drainage waters being discharged to fisheries streams/rivers is critical in that some key constituents of water, either change their form (ionization of ammonia) or alter their concentration, as with dissolved oxygen. › An examination of OSI 6 & 25 inch sheets highlight significant modifications to watercourses flowing through, adjacent to and downstream of the peatland sites in the Black River catchment. The modifications noted (through both desktop checks and on-site visits) included realignment/straightening, deepening, widening, culverting/piping of waters, construction of on-line silt ponds to facilitate commercial peat extraction and differences in height where waters are lifted to facilitate drainage. The effects of these hydromorphological changes on fisheries habitats was outlined, concluding that significant human intervention is likely to be necessary to facilitate recovery of the fisheries habitat on long stretches of watercourses draining peatland areas in the Black River catchment. <u>Direct impacts upon water quality/quantity related to the construction/operation phase:</u> › The Proposed Project is likely to include the clearance of large areas of peatland habitat/peat. The clearance of this material will act to increase the rate at which	

Consultee	Date Received	Response	Addressed
		water is drawn toward these excavations and will also further dry out surrounding peat-lands thereby increasing ammonia run-off. › A number of pollution control and mitigation measures were recommended in relation to ammonia, cementitious materials, silt/suspended solids, hydrocarbons and any other deleterious materials during the construction phase. › No in-stream works shall be carried out without the written approval of Inland Fisheries Ireland. IFI believe that the restoration of salmon spawning recruitment throughout the Black River is integral to improving salmon stocks in the River Barrow and River Nore SAC however significant human intervention is likely to be necessary to facilitate recovery of the fisheries habitat on long stretches of these watercourses. IFI is keen to build on recent water quality improvements in the Black River, which drains 21% of the Barrow River catchment and to restore and increase populations of salmon and other native fish species over large sections of this system. Existing populations within the Black River are an integral component of the Barrow River SAC populations of these species and as these populations expand in numbers and range their importance will increase significantly. IFI believe that the implementation of restoration plan/plans, throughout the Figile/Black River catchment to address the water quality & hydro-morphological issues referred to above, is integral to the restoration of populations of salmon & other species for which the Barrow River was SAC designated.	
	9th of December 2025 Meeting held on 5th October 2026, see Section 6.2.2.1.1 below for further details	During the second round of scoping, IFI reiterated several of the points outlined above in relation to salmonids, in addition to the following comments: › Regarding Atlantic Salmon, a Qualifying Interest of the River Barrow and River Nore SAC, the Barrow consistently fails to reach its Salmon Conservation Limit (CL). › The reason that the Barrow CL numbers are so low relates mainly to extensive hydro-morphological damage to the upper/mid catchment of the Barrow where significant loss and degradation of habitat occurred due to extensive widening	As outlined above in relation to the 2021 scoping response from IFI, a comprehensive suite of ecological surveys were undertaken to inform this Biodiversity Chapter, including dedicated aquatic surveys in watercourses within and downstream of the Proposed Project. All aquatic receptors have been fully considered and assessed in this EIAR, and an impact assessment is included

Consultee	Date Received	Response	Addressed
		and deepening of watercourses by the Barrow Drainage Board/Bord na Móna. Because of this damage most of the system now produces little or no salmon and other important native fish species. › IFI believe that the restoration of salmon spawning recruitment throughout the Black River is integral to improving salmon stocks in the SAC. › IFI have recorded salmon spawning at several locations along the Cushaling River within the Project Site. Turbine development is proposed near sections of channel that represent excellent salmonid spawning/nursery habitat. IFI then highlighted a number of opportunities for river restoration within the Project Site: › Checks throughout the Crabapple River system have highlighted excellent salmonid habitat on sections of channel, specifically the Lugherra tributary where habitat restoration has occurred naturally. Inspections of the Lugherra highlight that it was previously subject to very significant deepening and widening but unlike most other channels here, maintenance dredging/cleaning ceased decades ago. As a result significant terrestrial woodland on the lands bordering the River has developed and the river here has recruited gravels from the bank/subsoils back to this river. IFI believe the Lugherra River highlights the potential for river/riparian habitat restoration throughout the entire study area. › Checks by IFI have highlighted significant loss of fisheries habitat linked to the previous land use, where long sections were subject to hydro-morphological damage because of over-deepening and over-widening. IFI have noted multiple on-line silt traps on watercourses flowing throughout the study area, the purpose of which was to settle out the very fine peat solids associated with commercial peat harvesting. The scale of deepening and widening on these on-line silt ponds is such that there is no realistic potential for natural habitat restoration and for this to happen human intervention will be necessary. › IFI inspections have noted significant fisheries habitat loss within the study area on the Crabapple River system where all flows from the upper reaches of the Crabapple River were diverted across Lullybeg bog to the lower reaches of the Lugherra river. The net result of this is a significant loss of fisheries habitat wetted area and deterioration of the habitat of most of the Crabapple River, with no	in Section 6.4.2.1.5 below, and mitigation measures have been prescribed to block/ameliorate any predicted effects. An AASR and NIS have also been prepared for the Proposed Project, which assesses all likely significant effects on aquatic receptors associated with European Site, including potential effects on *ex-situ* QI species. All potential effects on water quality and hydrological conditions as a result of the Proposed Project are fully discussed in Chapter 9 Water of this EIAR. The Proposed Project has been designed in order to maintain potential to restore the watercourses within the Proposed Wind Farm site. The following measures have been embedded as part of the Proposed Project: › Crossings of the river corridor minimised where possible; › Size and position of crossings will have consideration for likely future restored channel, rather than solely the existing modified drain/channel; › Clear-span structures preferred. Depending on the detailed design at the construction phase, pipe or box culverts may be installed at 6 no. watercourse crossings within the Proposed Wind Farm site (see Section 4.9.1.7, Chapter 4), these will be

Consultee	Date Received	Response	Addressed
		potential for this habitat to restore naturally. IFI believe that in addition to habitat restoration of the Crabapple River, restoring these waters to their original channel could provide significant flood storage. › Inspections have also highlighted habitat loss relating to the culverting of watercourses. In many cases, the extent of habitat loss linked to culverting is relatively short, linked to culverts which facilitate wide access roads and light industrial rail. › IFI checks of the Glashabaun River (Cushaling tributary) highlighted that almost all this tributary had been lost through culverting through the cut-over peatland, with only a few short openings along the entire channel of this watercourse. A long section of the Duke's River (Crabapple tributary) was also noted to have been piped. Given the scale of this project there is a unique opportunity to showcase multiple river and terrestrial habitat restoration techniques focusing upon the watercourses within the study area and to make this restoration a central pillar of the project. The expansion of spawning Atlantic Salmon within the study area is critical to Ireland achieving its requirements under the European Habitats Directive and the Water Framework Directive.	suitable oversized and embedded with the base of the culvert below the invert of the channel in order to maintain bed continuity and avoid barriers to fish passage. › The road/culvert levels will be set to avoid fixing an artificial longitudinal profile or preventing future channel adjustment. The Proposed Project drainage will not rely on the river (existing or restored) as an online treatment feature.
Irish Peatland Conservation Council (IPCC)	18th of January 2021	IPCC highlighted the latest Article 17 reports (NPWS, 2019, at the time of scoping), which assigned Active Raised Bog and Degraded Raised Bog overall statuses of "Bad" and "Deteriorating" with "Unfavourable" prospects in Ireland. They highlighted the importance of restoring the raised bog within the Lullymore Bog Complex, with special attention given to help the return of species which may have been displaced or lost during peat extraction. <u>Local Biodiversity Hotspots:</u> IPCC's chief concern lies with the protection of the numerous raised bog remnants and local biodiversity hotspots of the greater Lullymore Bog and surrounding area.	A comprehensive desk study was undertaken to inform this Biodiversity Chapter, as outlined in Section 6.2.1 above, and the results provided in Section 6.3.1 below. The Wetland Surveys Ireland database was included as part of this desk study. An extensive suite of ecological surveys were also undertaken to inform this Biodiversity Chapter, as outlined in Section 6.2.3 below.

Consultee	Date Received	Response	Addressed
		A number of local biodiversity hotspots of the greater Lullymore Bog and surrounding area were then highlighted, including Lodge Bog Nature Reserve, Lullymore West Nature Reserve, Lullybeg Nature Reserve, Lodge Bog Wetlands, Lullymore Wetlands, Ballysooghan North, Aghameelick, The Long Derries, Edenderry SAC [000925], Mouds Bog SAC [002331] and Pollardstown Fen SAC [000396]. The importance of each area was detailed, including the presence of intact raised bog, fens, calcareous grasslands, Annex II marsh fritillary butterflies and other Red-Listed species such as the large heath butterfly. <u>Wetland Surveys Ireland:</u> It was also stated that Wetland Surveys Ireland, on behalf of Offaly and Kildare County Councils, have earmarked a number of wetland sites for an ecological survey. The data recorded needs to be included within the respective County Wetland Survey, therefore ecological importance of these areas has not yet been described. A number of areas which have been surveys have been described as having moderate/high local conservation value or are nationally important. These sites need adequate setback distances so as not to disturb the ecological integrity of the habitats present.	The Proposed Project has been designed, through an iterative design process and detailed constraints studies, to avoid the most ecologically valuable and sensitive areas of the Project Site. This includes uncut raised bog, wetlands and known biodiversity hotspots, with set back distances applied where relevant. A detailed assessment of the potential impacts on Key Ecological Receptors (KERs), including remnant raised bog, are included in Section 6.4 of this Chapter.
	26th of January 2026	Many of the comments outlined within the IPCC response to the first round of scoping were repeated in relation to the second round of scoping. The key points are outlined as follows: IPCC highlighted the latest Article 17 reports (NPWS, 2025), which gave Raised Bog (active) and Degraded Raised Bog, overall status of "Bad" in Ireland with their "Range" also "Bad" and unchanged since 2019. They highlighted the importance of restoring the raised bog within the Lullymore Bog Complex, with special attention given to help the return of species which may have been displaced or lost during peat extraction. <u>Local Biodiversity Hotspots:</u>	As outlined above in relation to the 2021 scoping response, a comprehensive desk study and suite of ecological surveys were undertaken to inform this Biodiversity Chapter, as outlined in Sections 6.2.1 above and Section 6.2.3 below. The Proposed Project has been designed, through an iterative design process and detailed constraints studies, to avoid the most ecologically valuable and sensitive areas of the Project Site. This includes uncut raised bog, wetlands and known biodiversity

Consultee	Date Received	Response	Addressed
		A number of local biodiversity hotspots of the greater Lullymore Bog and surrounding area were described, including all of those outlined in relation to the first round of scoping in 2021, and the importance of each was described. Additionally, Umeras Peatland Park and other areas listed within Bord na Móna's Biodiversity Action Plan which have already received restoration or rehabilitation works were included. IPCC also see that much of the Ballydermot/Lullymore Complex has not been under production for a long time, before the cessation of peat extraction by Bord na Móna and have naturally regenerated. IPCC consider embryonic fen, wet and dry grasslands, raised bog and wet and dry heath habitats as having long term biodiversity value and that these habitats should be protected from any proposed development. <u>Wetland Surveys Ireland:</u> The same comments were outlined regarding the Wetland Surveys Ireland sites, as described in relation to the first round of scoping in 2021. <u>County Kildare Development Plan:</u> A number of policies and actions within the County Kildare Development Plan 2023-2029 were brought to attention, including Action B1 A31 relating to biodiversity and green infrastructure in which the County Council support the delineation of an *"interconnected Bog of Allen Nature Reserve, Special Amenity Area or National Peatlands Park".* <u>Drainage</u> The potential effects of the Proposed Project in terms of the loss of restoration potential of the area was described, calling for consideration of the potential carbon offsets resulting from its operational lifespan.	hotspots, with setback distances applied where relevant. A detailed assessment of all potential impacts on Key Ecological Receptors (KERs), including remnant raised bog and cutover bog, which includes the PCAS areas within the Project Site, are included in Section 6.5 of this Chapter. In relation to the restoration potential of the Project Site, a BMP has been prepared for the Proposed Project and is included as Appendix 6-5 of this EIAR, which includes the enhancement of approximately 263.8ha of cutover peatlands within the Project Site. Additionally, the infrastructure footprint of the Proposed Project is small relative to the overall area of the Project Site (i.e., covers less than 3% of the total Project Site), and will not affect the restoration potential of the cutover peatland within the Proposed Wind Farm site. The measures outlined within the Draft Cutaway Bog Decommissioning and Rehabilitation Plans (hereafter the Draft Rehabilitation Plans) prepared by BnM for each of the 14 no. bogs forming the Proposed Wind Farm site which form part of the Project Site will occur irrespective of the Proposed Project and have been proven to successfully co-exist on other BnM wind farms (i.e., Cloncreen Wind Farm and Mountlucas Wind Farm). A cumulative assessment, including a comprehensive review of the Kildare and

Consultee	Date Received	Response	Addressed
		Peat Depth All deep peats including raised bog remnants should be protected from drainage and infrastructure. These are the areas where there will be a repository of the original flora, seed bank and micro-biome which may be necessary for successful natural and native recolonisation. A map of the peat depth needs to be provided. Peatlands and Climate Action Scheme The IPCC are very supportive of PCAS as it utilises advanced restoration techniques to go beyond the basic legal requirements to stabilise emissions to air and water as per Bord na Móna's integrated pollution and prevention licence issued by the Environmental Protection Agency. The impacts of installing large renewable energy developments in close proximity to PCAS areas was highlighted as a concern. Fragmentation The potential fragmentation effects due to the construction of new roads, hardstands and infrastructure was considered as potentially accumulating to degrade the potential for meaningful biodiversity recovery and long term carbon sequestration. The potential edge effects being increased was also noted as a potential conflict with habitat management and restoration.	Offaly County Development and Biodiversity Action Plans, is included in Section 6.5 of this Biodiversity Chapter.
Irish Wildlife Trust	N/A	No response was received from the Irish Wildlife Trust in relation to Scoping Round 1 – 2021.	N/A
	N/A	No response has been received from the Irish Wildlife Trust in relation to Scoping Round 2 – 2025 at the time of writing.	
	N/A	The Kildare County Council Environment Department were not included in Scoping Round 1 - 2021.	N/A

Consultee	Date Received	Response	Addressed
Kildare County Council Environment Department	N/A	No response has been received from the Kildare County Council Environment Department in relation to Scoping Round 2 - 2025 at the time of writing.	
Offaly County Council Environment Department	N/A	The Offaly County Council Environment Department were not included in Scoping Round 1 - 2021.	N/A
	N/A	No response has been received from the Offaly County Council Environment Department in relation to Scoping Round 2 - 2025 at the time of writing.	
Office of Public Works (OPW)	N/A	No response was received from the Office of Public Works in relation to Scoping Round 1 - 2021.	N/A
	23rd of March 2026	No issues raised in relation to biodiversity, flora or fauna.	
The Heritage Council	N/A	No response was received from The Heritage Council in relation to Scoping Round 1 - 2021.	N/A
	N/A	No response has been received from The Heritage Council in relation to Scoping Round 2 - 2025 at the time of writing.	
Uisce Éireann	N/A	No response was received from Uisce Éireann in relation to the Scoping Round 1 - 2021.	N/A
	21st of April 2026	No issues raised in relation to biodiversity, flora or fauna.	
Waterways Ireland	12th of February 2021	Waterways Ireland responded to Scoping Round 1 - 2021 saying they had no comments or suggestions on the Proposed Project.	N/A

Consultee	Date Received	Response	Addressed
	4th of December 2025	An automatic response was received acknowledging receipt of the scoping request. No further response has been received from Waterways Ireland in relation to Scoping Round 2 - 2025 at the time of writing.	

6.2.2.1 Pre-Planning Meetings

6.2.2.1.1 *National Parks and Wildlife Service (NPWS)*

Members of the Proposed Project Team and the Applicant met with a representative from the NPWS to provide an overview of the Proposed Project and to discuss aspects relevant to biodiversity. The meeting was held via Microsoft (MS) Teams on the 26th of May 2026. A summary relevant to biodiversity (excluding birds, which are addressed separately in Chapter 7 of this EIAR) is included here. Those in attendance were:

On behalf of the NPWS:

- Eoin Connolly (Ecologist Grade II)

On behalf of Agent and Applicant:

- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Sarah Mullen (MKO Ecology)
- Kate O'Donnell (MKO Ecology)
- Katy Beckett (MKO Ecology)
- Padraig Cregg (MKO Ornithology)
- Patrick Manley (MKO Ornithology)
- Aoife Joyce (MKO Ecology Bats)
- Molly O'Hare (MKO Ecology Bats)
- Julie Larkin (BnM)
- Ellen Hilliard (BnM)
- Muriel Ennis (BnM)
- Chris Cullen (BnM)

The Proposed Project team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- Overview of the Proposed Project layout
- An overview of ecological surveys undertaken to date and the baseline data established for the Project Site
- Identification of key ecological receptors and a summary of the potential impacts arising from the Proposed Project
- Proposed ecological enhancement and mitigation measures to be implemented as part of the design and operation of the Proposed Project.

Following this presentation, there was further discussion held between the Proposed Project team and the NPWS representative. Matters raised in relation to ecology included:

- Classification of peatland habitats for cutover areas, using the NPWS Wildlife Manuals system (Smith, G.F. & Crowley, W. (2020) *The habitats of cutover raised bog*, Irish Wildlife Manuals No. 128) – identifying low- to high-*Sphagnum* cutover areas in order to establish presence of the Annex I habitat Active raised bog on areas of cutover.
- Discussion of the levels of bat activity on site and the mitigation measures proposed, including blade feathering, lighting and noise restrictions.
- Future trends and habitat succession as a key long-term assessment of the Project Site, including suitability of the Proposed Enhancement Areas for marsh fritillary over time, incorporation of Draft Rehabilitation Plans into the assessment of future trends, and the design of enhancement areas with future site plans in mind.

- Differentiation of the Do-Nothing Scenario baseline (IPC rehabilitation proposals) from the works proposed for the wind farm, including clear separation of enhancement measures from baseline IPC obligations.
- Practical deliverability and long-term enforceability of scrub management proposals, including cost and realistic intervention approaches, as a risk to be addressed in the assessment.
- The acceptability of a residual effect conclusion where appropriately contextualised temporally and shown to become non-significant based on future trends.
- A preference for simplicity in monitoring design, backed by robust survey data, given a general lack of systems-level feedback from such measures in Ireland.
- A preference for simple, frequent indicators over convoluted ones, to inform intervention as required.
- The need for proposed measures to be backed by literature where possible, and transparency in the EIA on feasibility where literature is unavailable.
- The status of part of the Long Derries, Edenderry SAC within the Applicant's ownership boundary, separate from this application, and related discussions with NPWS about enhancement (including an on-site meeting in May).

Further discussions were held with the NPWS between Ellen Costello (MKO Environmental) and Eoin Connolly (NPWS Ecologist Grade II) via phone call on the 15th of July 2026.

In summary:

- MKO Environmental provided a refresher on the Proposed Project and clarified the multifactorial approach to reducing the significance of collision risk on golden plover.
- Application of the mitigation hierarchy was discussed
- A number of ornithological matters were discussed, which are considered fully in Chapter 7 Ornithology of this EIAR
- NPWS stressed the importance of being clear on the mitigation and offsetting approach of the Proposed Project, and where each layer sits within the mitigation hierarchy. This aligns with requests previously outlined by An Coimisiún Pleanála (ACP).

6.2.2.1.2 *Inland Fisheries Ireland*

Members of the Project Team, including Environmental Scientists, Ecologists and Aquatic Ecologists, met with Inland Fisheries Ireland (IFI) on 5th of October 2026 to discuss the Proposed Project.

Those in attendance were:

On behalf of IFI:

- Donnachadh Byrne (Environmental Officer for the area)
- Lonan O'Farrell (Development Inspector for the Southeast)

On behalf of Agent and Applicant:

- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Ciarán Fitzgerald (MKO Environmental)
- Kate O'Donnell (MKO Ecology)
- Katy Beckett (MKO Ecology)
- Bill Brazier (Triturus Environmental Ltd)
- Ross Macklin (Triturus Environmental Ltd.)
- Julie Larkin (BnM)

- Ellen Hilliard (BnM)
- Anna Perdue (BnM)
- Muriel Ennis (BnM)
- Enda McDonagh (BnM)

The project team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- An overview of the Proposed Project.
- Ecological and aquatic surveys undertaken to date and their findings.
- The existing condition of watercourses within the Project Site.
- Proposed measures to avoid and mitigate potential impacts on watercourses and aquatic ecology.
- Opportunities for future watercourse and riparian habitat restoration.

Following this presentation, a discussion was held between the project team and IFI representatives. Matters relevant to Appropriate Assessment that were raised included:

- IFI highlighted the existing degraded condition of watercourses within the Project Site, associated with historical peat extraction, low gradients and underlying geology, and the potential requirement for active riparian restoration to improve aquatic habitat and water quality.
- IFI suggested that opportunities for riparian restoration should be considered as part of the Proposed Project, including targeted measures in the vicinity of proposed watercourse crossings.
- IFI emphasised the importance of ensuring that the Proposed Project does not exacerbate existing environmental pressures on watercourses or constrain opportunities for future river restoration.
- The project team outlined the measures incorporated into the Proposed Project design to avoid and minimise impacts on watercourses, including setbacks from water features, appropriate water quality mitigation measures and the use of clear-span crossings where feasible and oversized embedded culverts to maintain fish passage and facilitate potential future restoration works.
- BnM outlined that separate engagement with IFI is ongoing regarding potential river restoration initiatives under a Memorandum of Understanding. BnM are happy to continue engagement with IFI.
- The project team clarified that the mitigation and enhancement measures incorporated into the Proposed Project have been developed to address potential effects arising from the development itself, while wider river restoration opportunities are being considered separately.

The matters raised during the consultation have been considered and addressed, where relevant, within this report.

6.2.2.1.3 *An Coimisiún Pleanála*

A number of pre-application meetings were held with ACP. Members of the MKO Ecology Team attended the Second and Third pre-application meetings. Further information on these meetings are outlined in Section 2.9.3 of this EIAR and information relevant to this Biodiversity Chapter are outlined in the subsections below.

Section 37B Consultation

The Applicant engaged with ACP, under the provisions of Section 37B of the Planning Act, as to whether the Proposed Project would meet the thresholds of the Seventh Schedule of the Planning Act. The applicant opened consultations with ACP in September 2021 in relation to a Proposed Project of 50-55 no. wind turbines with a maximum height of 220 metres, a 220kV substation and underground cabling, with a total output of c. 240MW, with the potential for the wind farm to generate greater than 50 Megawatts (MW) of electricity to the National Grid.

A Strategic Infrastructure Development (SID) meeting under the provisions of Section 37B was held with ACP was held via MS Teams on the 7th of July 2021. Those in attendance were:

On behalf of ACP:

- Ciara Kellett (ACP - Assistant Director of Planning)
- Donal Donnelly (ACP - Senior Planning Inspector)
- Niamh Thornton (ACP - Executive Officer)

On behalf of Applicant and Agent:

- Caitríona Carter (BnM)
- Muriel Ennis (BnM)
- Sean Creedon (BnM)
- Jimmy Green (MKO)
- Karen Mulryan (MKO ENV)
- Paul Sweeney (MKO PLN)

The design team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- A high-level overview of the Proposed Project and the Project Site.
- Introduction to the Applicant.
- Overview of planning policy including compliance with local wind energy policy.
- Provided specific details of the scheme relating to LVIA, Ecology and Aviation.
- Set out the scope of the Environmental Impact Assessment Report to be undertaken.
- Discussed scoping & pre-application/public consultation undertaken to date.
- Set out the projected project timelines.
- Discussed the relevant SID criteria as set out in the 7th Schedule of the Planning Act.

Following this presentation, there was further discussion held between the project team and the representatives of ACP at this meeting. Matters discussed included:

- Noted that the turbine number and output mean the Proposed Project exceeds the 7th Schedule threshold.
- Focus on cumulative impacts and ecological surveys noting that interconnectivity between designated sites should be assessed
- Recommended recent windfarm cases brought for Judicial review be looked at.

Second Meeting

The Second pre-application meeting with An Coimisiún Pleanála was held via MS Teams on the 10th of March 2026. Those in attendance were:

On behalf of ACP:

- Lauren Murphy (ACP - Admin)
- Una Crosse (ACP - Assistant Director of Planning)
- Donal Donnelly (ACP – Senior Planning Inspector)
- Emmet Smyth (ACP - Senior Environmental Scientist)
- Paula Kearney (ACP – Senior Ecologist)
- Ian Boyle (ACP – Senior Planning Inspector)
- Adrian Ornsby (ACP - Planning Inspector)

On behalf of Applicant and Agent:

- Caitríona Carter (BnM)
- Anna Perdue (BnM)
- Ellen Hilliard (BnM)
- Muriel Ennis (BnM)
- Julie Larkin (BnM)
- Ronan Dunne (MKO Planning)
- Shikha Gajula (MKO Planning)
- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Ciaran Fitzgerald (MKO Environmental)
- Kate O'Donnell (MKO Ecology)
- Patrick Manley (MKO Ornithology)

The design team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- Introduction to the Applicant.
- A High-level overview of the Proposed Project and the Project Site.
- Updates on Constraint Assessment & Design Process
- Overview of the Proposed Project
- Set out the scope of the Environmental Impact Assessment Report to be undertaken.
- Overview of planning policy including compliance with local wind energy policy.
- Scoping & pre-application/public consultation undertaken to date.
- Discussed the relevant Strategic Infrastructure Development criteria as set out in the 7th Schedule of the Planning Act.
- Set out the projected project timelines.

Following this presentation, there was further discussion held between the project team and the representatives of ACP at this meeting. Matters discussed included:

- Evolution of the Proposed Project to be assessed along with the Proposed Turbine and substation locations and alternative considerations.
- EIA and AA to employ most up to date guidance for survey and assessment with clear and concise reporting.
- Lessons learnt from other wind farm developments to be included.
- Forward baseline assessment and future trends.
- Engagement with statutory bodies recommended.
- Ecological survey requirements discussed including receptor identification, buffer zones, vegetation management, baseline surveys, and ensuring IPC licence conditions align with biodiversity enhancement measures.
- Substitute consent application to be submitted.
- Water crossings to be agreed with IFI prior to submission of the planning application.
- Assessment of internal road network to be included.
- Recommended consultation with NPWS in relation to derogation licences, if required.

- Haul route and turbine delivery route to be assessed for vegetation removal.
- Importance of cumulative impact assessment emphasised.

Third Meeting

The Third pre-application meeting with ACP was held via MS Teams on the 12th of June 2026. Those in attendance were:

On behalf of ACP:

- Lauren Murphy (ACP - Admin)
- Una Crosse (ACP - Assistant Director of Planning)
- Donal Donnelly (Senior Planner Inspector)
- Emmet Smyth (ACP - Senior Environmental Scientist)
- Paula Kearney (Senior Ecologist)
- Maeve Maher-McWilliams (Ecologist)

On behalf of Applicant and Agent:

- Caitriona Carter (BnM)
- Anna Perdue (BnM)
- Julie Larkin (BnM)
- Chris Cullen (BnM)
- Ronan Dunne (MKO Planning)
- Shikha Gajula (MKO Planning)
- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Kate O'Donnell (MKO Ecology)
- Patrick Manley (MKO Ornithology)
- Aoife Joyce (MKO Bats)
- Molly O'Hare (MKO Bats)
- Michael Gill (HES)
- Conor McGettigan (HES)
- Ian Higgins (FTC)

The design team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- Update on the Proposed Project
- Update on the baseline environment
- Hydrology and Hydrogeology
- Land, soils and peat
- Biodiversity
- Ornithology
- Proposed Project timelines

Following this presentation, there was further discussion held between the project team and the representatives of ACP at this meeting. Matters discussed included:

- Forward baseline assessment and future trends.
- Confirmed that PCAS is substantially complete at Lodge Bog.
- Trim GWB and groundwater contribution of phosphorus to surface waters to be addressed as part of the WFD assessment in the EIAR.

- Clarification on the assessment of water resources, surface water bodies and groundwater conditions along the Proposed Grid Connection and within the Proposed Wind Farm site.
- Overall peat stability risk considered to be low to negligible.
- Approach to assessing biodiversity impacts over the project lifecycle.
- Potential presence of badger setts within the area of The Long Derries, Edenderry SAC, importance of outlining sett status for all identified badger setts and discussion on potential mitigation requirements.
- Consideration of future habitat condition and suitability following proposed enhancement measures.
- Prioritise retention of existing vegetation corridors, with trimming considered where possible instead of removal, and account for these impacts within the cumulative effects assessment and mitigation measures.
- Habitat loss calculations to be included within the Biodiversity Chapter of the EIAR, clearly explaining the approach taken, and identifying potential net biodiversity gain.
- The differentiation between mitigation, compensation/offsetting and enhancement measures within the EIAR.
- Calculations of habitat loss to be provided within the application along with calculations in relation to habitat loss from the deterrent measures with detail on how this is offset by the enhancement measures.
- Finalisation of habitat loss calculations and enhancement measures.
- Discussion on whooper swan and hen harrier and consultation with NPWS
- Consideration of Lodge Bog enhancement measures, including the expansion of breeding wader habitat, scrub management and use of protective measures such as predator-proof fencing.
- Golden plover mitigation, deterrent measures and enhancement proposals. Collision risk modelling, habitat loss calculations, deterrent habitat design, mitigation hierarchy and effectiveness of proposed measures.
- Consideration of cumulative impacts with Cloncreen Wind Farm and potential further design optimisation.
- Discussion on calculation methodologies, habitat size, vegetation growth and relevant guidance.

Fourth Meeting

The Fourth pre-application meeting with ACP was held via MS Teams on the 28th of August 2026. Those in attendance were:

On behalf of ACP:

- Lauren Murphy (ACP – Executive Officer)
- Una Crosse (ACP - Assistant Director of Planning)
- Donal Donnelly (ACP – Senior Planner Inspector)
- Emmet Smyth (ACP - Senior Environmental Scientist)
- Paula Kearney (Senior Ecologist)
- Maeve Maher McWilliams (Ecologist)

On behalf of Applicant and Agent:

- Caitríona Carter (BnM)
- Muriel Ennis (BnM)
- Julie Larkin (BnM)
- Chris Cullen (BnM)
- Ellen Hilliard (BnM)
- Anna Perdue (BnM)

- Ronan Dunne (MKO Planning)
- Shikha Gajula (MKO Planning)
- Ellen Costello (MKO Environmental)
- Ciaran Fitzgerald (MKO Environmental)
- Kate O'Donnell (MKO Ecology)
- Patrick Manley (MKO Ornithology)
- Padraig Cregg (MKO Ornithology)
- Kathryn Sheridan (MKO Ornithology)
- Jack Workman (MKO LVIA)
- Dija Mazonaite (MKO LVIA)
- Dermot Blunnie (AWN Consulting)
- Miguel Cartyuvels (AWN Consulting)
- Miriam Carroll (Tobar Archaeology)
- Alan Lipscombe (Alan Lipscombe Traffic and Transport Consultants)
- Peter Foulsham (Cyrrus)
- Kevin Hayes (AI Bridges)

The design team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- Overview of IPC licence and substitute consent application.
- Relevant Strategic Infrastructure Development criteria as set out in the 7th Schedule of the Planning Act.
- Overview of planning policy including national and regional planning context, the local policy context and local wind energy zoning.
- Clarifications from the third pre-application consultation relating to likely future receiving environment, timelines on baseline assessments, and other particular considerations including biodiversity, ornithology, geology, water and climate.
- Noise and vibration.
- Shadow flicker.
- Landscape and Visual Impact Assessment.
- Cultural heritage
- A high-level overview of traffic and transport including traffic counts, transport delivery route, proposed construction haul routes, junction design and capacity and site entrances.
- Other material assets including telecommunication and aviation assessment, telecom impacts and built services.
- Discussed consultation with statutory and public bodies undertaken.
- Set out the application contents including planning documents and planning drawing scales and the scope of the Environmental Impact Assessment Report.

Following this presentation, there was further discussion held between the Project Team and the representatives of ACP at this meeting. Matters discussed included:

- Transitional arrangements under the New Planning Act and RED III provisions to be incorporated via the New Regulations.
- Discussed the importance of distinguishing the current baseline from the likely future receiving environment, including natural revegetation and the cutaway bog rehabilitation measures. Recommended a clear comparison of the proposed measures and IPC measures.
- The use of 'offsetting' rather than 'compensation' in the EIAR terminology and keep mitigation, offsetting and enhancement clearly separated.
- The intact bog area excluded from deterrent planting to be clearly shown and verified against bird requirements.

- Searcher proficiency and scavenger-removal trials with respect to carcass searches to be included in the EIAR.
- Implications of the revised Nature Corridor designation as per the OCDP Variation No. 1 be considered.
- A standalone schedule of significant effects, similar to the mitigation schedule to be included.
- Brief credential, and relevant experience of surveyors be included.

6.2.3 Field Surveys

A comprehensive survey of the Biodiversity Study Area was undertaken on various dates between 2021 and 2026, as outlined in Table 6-2 below. The following sections fully describe the ecological surveys that have been undertaken and provide details of the methodologies and guidance followed. Surveys were carried out between September 2020 and September 2026 and are summarised in Table 6-2 below.

Table 6-2 Ecology surveys informing the EIAR

Survey Type	Dates	Survey Area	Guidance
Multi-disciplinary ecological walkover surveys *(including habitats, mammals, invasive species etc.)*	1st and 2nd of September 2026 6th of July 2026 13th, 14th, 19th, 20th, 26th and 27th of May 2026 11th and 18th of September 2025 17th of December 2025 13th of August 2024 16th, 18th, 23rd, 25th and 29th of July 2024 18th of April 2023 22nd and 23rd of March 2023 19th of July 2022 1st, 8th, 14th and 22nd of June 2022 5th, 6th and 26th of May 2022 11th and 12th of August 2021 16th of June 2021	Areas within the likely ZoI of the Proposed Project infrastructure footprint *(see Section 6.2.3.1 below for detail)*	Smith *et al.* (2011) TII (2008a) TII (2020)
Detailed Botanical Surveys – Irish Vegetation Classification (IVC)	6th of July 2026 13th, 14th, 19th, 20th, 26th and 27th of May 2026 13th of August 2024 16th, 18th, 23rd, 25th and 29th of July 2024	Targeted locations within the Proposed Project infrastructure footprint, and within habitats with the potential to conform to habitats listed under Annex I of the European Habitats Directive within the Project Site.	Fossitt (2000) Martin *et al.* (2018) Smith and Crowley (2020) Fernandez *et al.* (2014) Daly *et al.* (2023) NPWS (2025) EC (2013) Irish Vegetation Classification (IVC) and ERICA: Engine for Relevés to Irish Communities Assignment
Badger surveys	6th of July 2026	Suitable habitat for badger within 50m of	TII (2008a) TII (2006)

Survey Type	Dates	Survey Area	Guidance
	› 13th, 14th, 19th, 20th, 26th and 27th of May 2026 › 11th and 18th of September 2025 › 17th of December 2025 › 13th of August 2024 › 16th, 18th, 23rd, 25th and 29th of July 2024 › 18th of April 2023 › 22nd and 23rd of March 2023 › 19th of July 2022 › 1st, 8th, 14th and 22nd of June 2022 › 5th, 6th and 26th of May 2022 › 11th and 12th of August 2021 › 16th of June 2021	the Proposed Project infrastructure footprint	› CIEEM (2013)
Otter surveys	› 1st and 2nd of September 2026 › 6th of July 2026 › 13th, 14th, 19th, 20th, 26th and 27th of May 2026 › 11th and 18th of September 2025 › 17th of December 2025 › 13th of August 2024 › 16th, 18th, 23rd, 25th and 29th of July 2024 › 18th of April 2023 › 22nd and 23rd of March 2023 › 19th of July 2022 › 1st, 8th, 14th and 22nd of June 2022 › 5th, 6th and 26th of May 2022 › 11th and 12th of August 2021 › 16th of June 2021	150m upstream and downstream of all proposed watercourse crossings within the Proposed Wind Farm. Otter surveys were also undertaken 150m upstream and downstream of all aquatic survey sites by Triturus Environmental Ltd. during the baseline aquatic surveys, on the dates set out below.	› TII (2008a) › TII (2008b) › CIEEM (2013)
Camera trap surveys	› Trail cameras deployed between 18th of August and 2nd of September 2026 › Trail cameras deployed between 20th of June and 19th of July 2022	Areas identified as either potential badger setts or other active mammal burrows within the Project Site	› TII (2006) › TII (2008a)
Bat surveys	› 16th and 22nd of September 2026 › 5th, 13th, 18th and 31st of August 2026 › 6th and 20th of July 2026 › 16th of June 2026 › 7th of May 2026 › 22nd of April 2026 › 12th and 23rd of September 2024 › 7th of August 2024 › 15th and 16th of July 2024 › 18th of June 2024 › 1st of May 2024 › 16th of April 2024	The Project Site	› NatureScot (2021) › NIEA (2021; amended 2024) › Collins (2023)
Aquatic surveys *(including otter)*	› 25th – 30th August 2026 › 1st, 2nd and 3rd of August 2024 › 31st of July 2024 › 1st, 2nd and 3rd of July 2021	Freshwater watercourses which could be affected directly or indirectly by the Proposed Project. This included aquatic sites within and in downstream of the	› CEN (2003) › CFB (2008) › EA (2003) › Toner *et al.* (2005) › TII (2008a)

Survey Type	Dates	Survey Area	Guidance
		Proposed Wind Farm and watercourses crossed by the Proposed Grid Connection (see Appendix 6-3 Aquatic Baseline Report for full details).	› Reynolds *et al.* (2010) › Gammell *et al.* (2021) › IFI (2010)
Marsh fritillary survey	› 4th, 8th, 11th and 18th of September 2025 › 4th of September 2024 › 21st of August 2024	Areas identified as potential suitable habitat for marsh fritillary within the Project Site	› TII (2008a) › NBDC 'Habitat Condition Assessment For Marsh Fritillary' (online)
Nocturnal moth trapping	› 25th of August 2026 › 7th, 8th and 31st of July 2026 › 25th of June 2026	Representative range of habitats within the Project Site	› NBDC Farmer Moth Monitoring Project (online) › Butterfly Conservation *Recording and monitoring* (online) › Sterling and Parsons (2023) › Jonason *et al.* (2014) › Fry and Waring (2020)
Daytime pollinator transects	› 24th of August 2026 › 7th, 8th, 30th and 31st of July 2026	Representative range of habitats within the Project Site	› NBDC Irish Butterfly Monitoring Scheme (online) › NBDC Bumblebee Monitoring Scheme (online)
Round-leaved wintergreen survey	› 30th of July 2025	Areas of suitable habitat in the vicinity of where round-leaved wintergreen was recorded during the desk study and during walkover surveys.	› TII (2008a)

6.2.3.1 Multi-disciplinary Ecological Walkover Surveys

The habitats within the Proposed Wind Farm site were the subject of detailed surveys and assessments by BnM between 2009 and 2016 and a detailed habitat map was produced of the Proposed Wind Farm site, which comprises 14 no. bogs of the Allen Bog Group in Counties Kildare and Offaly – Ballydermot North, Ballydermot South, Barnaran, Blackriver, Codd 1, Codd 2, Derrybrennan, Glashabaun North, Glashabaun South, Killina, Lodge, Lullybeg, Lullymore and Ticknevin Bogs. This habitat mapping and assessment was undertaken following the BnM habitat classification scheme (see

Appendix II of the Bord na Móna Biodiversity Action Plan 2016-2021[17]) and was cross referenced with '*A Guide to Habitats in Ireland*' (Fossitt, 2000).

Between 2021 and 2026, MKO ecologists visited the Project Site to ground-truth the results of the BnM habitat surveys and mapping and to evaluate the updated baseline habitat conditions within the Project Site, given the time that has elapsed since the surveys were undertaken by BnM. Detailed surveys were also undertaken of the Proposed Grid Connection and the Proposed Turbine Delivery Route accommodation areas. Multi-disciplinary ecological walkover surveys were undertaken within the Project 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)[18].

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 Project Site and described within this Biodiversity 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 Project 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 (*Lutra lutra*), badger (*Meles meles*), pine marten (*Martes martes*), Irish stoat (*Mustela erminea* ssp. *hibernica*), Irish hare (*Lepus timidus* ssp. *hibernicus*), red squirrel (*Sciurus vulgaris*), pygmy shrew (*Sorex minutus*), and hedgehog (*Erinaceus europaeus*). In addition, a search was conducted for signs of or areas of suitable habitat for amphibians, reptiles and lepidoptera within the Project Site. These surveys comprehensively covered all habitat areas within the likely ZoI of the Proposed Project. As outlined in Section 6.1.1 above, the extent of the likely ZoI can vary depending on the ecological feature in question, its sensitivity to environmental change and the nature of the proposed works or development. As such, the extent of the survey area correspondingly varied in accordance with the habitats within the vicinity of the Proposed Project infrastructure footprint. For example, all areas of remnant raised bog within 150m of the Proposed Project infrastructure were surveyed in detail to allow a robust assessment of potential hydrological impacts, while less sensitive habitats such as those dominated by bare peat were surveyed to a 50m buffer, allowing for a search for mammal signs and invasive species without the requirement for detailed habitat assessments.

During the multi-disciplinary ecological walkover surveys, a search for non-native invasive species was also undertaken. The survey focused on the identification of 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).

A search was also undertaken for rare and threatened plant species for which records were identified during the desk study. This included a search for the species basil thyme (*Clinopodium acinos*) and round-leaved wintergreen (*Pyrola rotundifolia* ssp. *rotundifolia*) which are listed as Near Threatened (NT) on the Ireland Red List No. 10 – Vascular Plant (Wyse Jackson et al. 2016). Where additional

[17] *BnM (2016) Bord na Móna Biodiversity Action Plan 2016-2021. Available at: https://www.bnm.ie/wp-content/uploads/2021/03/Biodiversity-Action-Plan-2016-2021-1.pdf [Accessed 13/10/2026]*
[18] *TII (2008a). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority.*

surveys were required for any plant species during the optimal flowering period, these are described in the sections below.

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. The results of the desk study and scoping replies were also used to inform the scope of targeted ecological surveys required. Additionally, incidental records of fauna observed during the extensive ornithological surveys and other dedicated species/habitat specific surveys carried out within the Project Site were also recorded.

6.2.3.2 Dedicated Habitat and Vegetation Composition Surveys

Detailed botanical surveys were undertaken at a number of targeted locations within the Project 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 met masts, Proposed Onsite Substation and Proposed Offsite Substation. In addition, detailed botanical surveys were also undertaken across the Project Site in habitats identified as having potential to conform to habitats listed under Annex I of the EU Habitats Directive. A total of 93 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 6-1-1 of Appendix 6-1. The size of all relevés was 2m x 2m with the exception of relevés within remnant raised bog which were 4m x 4m in extent (Fernandez *et al.* (2014) *Raised Bog Monitoring and Assessment Survey 2013*) and relevés within bog woodland which were 20m x 20m in extent (in accordance with Daly *et al.* (2023) *The monitoring and assessment of four EU Habitats Directive Annex I woodland habitats*).

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 Habitats 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)[19] 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 Project 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).

[19] *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 03/06/2026]*

Table 6-3 Categorising types of plots using clustering analysis (after Wiser & 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 aid in the determination of whether any of the habitats surveyed within the Project Site had any affinity to Annex I habitats and whether further assessment was required. For those relevés undertaken within the Proposed Project infrastructure 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 within the footprint of the Proposed Project, or habitats within the likely ZoI for indirect effects (e.g. hydrological impacts, dust deposition), 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)[20] and the latest NPWS Article 17 Habitats Assessments (NPWS, 2025)[21]. These included areas of uncut raised bog with the potential to conform to Annex I Active raised bog [7110] or Degraded raised bogs still capable of natural regeneration [7120]. In addition, detailed habitat assessments were undertaken in line with the guidance documents outlined in the following subsections.

No other habitats, including fens, heaths, woodlands or other habitats on cutover bog, were identified as having the potential to conform to any habitats protected under Annex I of the EU Habitats Directive, further to those outlined below. All areas of cutover bog were considered for potential to conform to Annex I Active raised bog as per Smith and Crowley (2020) *The Habitats of Cutover Raised Bog*, however no areas of cutover bog were identified as having the required threshold of 40% cover of *Sphagnum*, therefore detailed assessment in line with Smith and Crowley (2020) were not required in any locations. Detailed descriptions of all habitats are included in Section 6.3.2 below.

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

Vegetation-based Assessments

Where areas of remnant, uncut raised bog were identified within the likely ZoI of the Proposed Project, 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)[22] 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] (ARB) and Degraded raised bogs still capable of natural regeneration [7120] (DRB).

[20] *European Commission (2013) Interpretation manual of European Union habitats. EUR 28. European Commission DG Environment.*
[21] *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.*
[22] *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.*

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 whether any areas of raised bog within the likely ZoI of the Proposed Project conformed to the Annex I habitats Active raised bog or Degraded raised bogs still capable of natural regeneration.

Eco-Hydrological Modelling

As per the latest Article 17 habitats reporting (2025),

> *"DRB is now defined by an ecohydrological model that was developed based on LiDAR (Light Detection and Ranging) data. The model predicts where there is potential to restore active conditions on the high bog (NPWS, 2017). As a result, only those areas with the right combination of physical conditions (including surface shape, slope and drainage patterns) ultimately capable of supporting Active Raised Bog (ARB) are now considered as DRB. These are the areas of raised bogs whose hydrology has been disturbed so that their surfaces have dried out and suffered some species change or loss. Bog species of drier conditions now dominate, and peat formation has ceased. The water level is generally 10 cm or more below the surface and drops to 30+ cm below during dry summer weather. To qualify as DRB, these areas must still be capable of natural regeneration to active bog within 30 years if their hydrology is repaired (usually after restoration works, particularly blocking of drains). The remainder of the high bog that is neither ARB nor DRB is now referred to as 'Supporting Raised bog habitat'."*

Therefore, in order to supplement the vegetation data and analysis outlined in the preceding section, eco-hydrological modelling was carried out to identify those areas considered to have significant potential to rewet with limited interventions (e.g. though blocking of main outlets and drain-blocking).

The approach utilised was adapted from the protocol outlined within Appendix 2 of the *National Raised Bog Special Areas of Conservation Management Plan 2017–2022* (NPWS, 2017), for modelling of restoration potential on raised bog. The 1m resolution Digital Terrain Model (DTM) acquired in 2020 was generalised by resampling the DTM to a resolution of 5m to 'smooth' the confounding effects of micro-topography and the depression evaluation tool (ArcHydro) used to identify areas of enclosed depressions (>0.5 ha). This model was developed to predict areas of greatest restoration potential or re-wetting potential on raised bog using measures such as drain blocking.

6.2.3.3 Dedicated Round-Leaved Wintergreen Survey

During the multi-disciplinary ecological walkover surveys of the Proposed Wind Farm site, the plant species round-leaved wintergreen (*Pyrola rotundifolia* ssp. *rotundifolia*) was recorded at a number of locations, including within the construction footprint of the Proposed Project. This species is listed as Near Threatened (NT) on the Ireland Red List No. 10 - Vascular Plants (Wyse Jackson *et al.* 2016). Therefore, targeted surveys for this species were undertaken on the 30th of July 2025 (during the flowering period for this species). Locations targeted for dedicated surveys included areas of suitable habitat for the species within and in a 50m buffer of the Proposed Project infrastructure. Surveys were undertaken in line with TII (2008a).

6.2.3.4 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 badger, otter, bats, marsh fritillary and other pollinator species including moths were undertaken on the dates set out in Table 6-2 above with the methodologies followed also provided below.

Additionally, incidental observations of fauna during the extensive ornithological surveys carried out within the Project Site to inform the ornithological impact assessment undertaken in Chapter 7 of this EIAR were also recorded.

6.2.3.4.1 *Badger Surveys*

Areas identified as providing potential habitat for badger were subject to specialist targeted survey on the dates set out in Table 6-2 above. The badger surveys were undertaken in line with TII (2006) '*Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes*'[23]. The badger surveys were conducted adhering to best practice guidance (TII, 2006, 2008a) and CIEEM best practice competencies for species surveys (CIEEM, 2013[24]).

The badger surveys were not constrained by vegetation given the nature of the habitats within the Project Site and the timing of the surveys (TII, 2006).

The badger surveys were conducted in order to determine the presence or absence of badger in close proximity to the Proposed Project infrastructure. This involved a search for all potential badger signs as per TII (2008a) (latrines, badger paths, setts, snuffle holes/feeding signs). If encountered, setts were classified as per the convention set out in TII (2008a) and Smal (1995)[25], which categorises setts by their status (i.e. main, annexe, subsidiary, outlier) and level of usage (disused, partially used, well-used).

Camera Trap Surveys

In 2022, camera traps were also deployed under licence at the location of a badger sett identified within the Project Site during dedicated badger surveys. The camera traps were deployed between the 20th of June and 19th of July 2022.

[23] *TII (2006). Guidelines for the Treatment of Badger Prior to the Construction of National Roads Schemes. Dublin: National Roads Authority.*
[24] *CIEEM (2013) Technical Guidance Series – Competencies for Species Survey, Online, Available at: https://cieem.net/resource/competencies-for-species-survey-css/ [Accessed: 04/06/2026]*
[25] *Smal, C. (1995) The Badger and Habitat Survey of Ireland. Unpublished Report to the Department of Agriculture and the National Parks & Wildlife Service.*

In 2026, camera traps were deployed at three potential badger setts within the Project Site as part of the dedicated badger surveys. The camera traps were deployed between the 18th of August and 2nd of September 2026.

An additional camera was also set up at a small mammal burrow in Glashabaun North Bog between these dates. This burrow was determined to be too small to belong to badger, however due to its proximity to the Proposed Project infrastructure (approximately 25m from a proposed amenity track), a trail camera was deployed in order to determine its usage status by other species.

6.2.3.4.2 Otter Surveys

On a precautionary basis, all EPA mapped watercourses within the Proposed Wind Farm site were identified as providing potential habitat for otter. Specialist targeted surveys for the species were carried out by MKO ecologists at the location of each proposed watercourse crossing within the infrastructure footprint of the Proposed Wind Farm.

Otter surveys were conducted as per TII (2008a) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*). This involved a search for all otter signs (e.g. spraints, scat, prints, slides, trails, couches and holts) within 150m of each survey site. In addition to the width of the rivers/watercourses, a 10m riparian buffer was considered to comprise part of the otter habitat (NPWS, 2009). Where otter signs were observed these were mapped. The dedicated otter survey also followed the guidance as set out in TII (2008b) *'Guidelines for the Treatment of Otters Prior to the Construction of National Roads Schemes'*[26] and CIEEM best practice competencies for species surveys (CIEEM, 2013)[24].

Additional otter surveys were conducted by Triturus Environmental Ltd. on the dates set out in Table 6-2 above as part of aquatic baseline surveys undertaken, recording all otter signs within 150m radius of each survey site. The survey locations are shown in Figure 2.1 in Appendix 6-3 Aquatic Baseline Report and outlined in Table 6-4 below. In addition to surveying watercourses within/in proximity to and downstream of the Proposed Wind Farm, these surveys also included a survey of all watercourse crossings associated with the Proposed Grid Connection Route. 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.).

6.2.3.4.3 Marsh Fritillary Surveys

The desk study undertaken identified records of marsh fritillary in hectads N42, N52, N62, N63, N72 and N82 within which the Proposed Project is located. In addition, during the multi-disciplinary ecological walkover surveys, areas of suitable marsh fritillary habitat (i.e. abundance of devil's-bit scabious) within the Project Site were mapped as part of the survey effort and were used to inform the layout of the Proposed Project.

Given the presence of suitable habitat, targeted larval web surveys for the species were undertaken in areas of suitable habitat within or in close proximity to the Proposed Project infrastructure footprint. The surveys were undertaken within the optimal period i.e. August – September, on the dates outlined in Table 6-2 above, on dry days, with no rain and no to little wind. The survey methodology followed best practice TII (2008a) guidelines.

The NBDC methodology entitled '*Habitat Condition Assessment For Marsh Fritillary'*[27] was also followed in order to assess the condition of each habitat parcel surveyed, classifying the habitats as

[26] *TII (2008b). Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. Dublin: National Roads Authority.*
[27] *National Biodiversity Data Centre [online]. Available at: https://biodiversityireland.ie/app/uploads/2021/11/Marsh-Fritillary-Habitat-Condition-Form.pdf [Accessed 04/062026]*

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.

6.2.3.4.4 Pollinator and Moth Surveys

Surveys comprised daytime pollinator transects and nocturnal moth trapping on the dates set out in Table 6-2. The programme was designed to sample representative habitats across the Project Site and to provide coverage at different times during the summer. Survey locations included areas associated with Proposed Project infrastructure and Proposed Enhancement Areas.

The surveys followed the principles of the NBDC Irish Butterfly Monitoring Scheme and All-Ireland Bumblebee Monitoring Scheme, adapted to record a wider range of visible pollinating insects, together with established moth survey techniques described by the NBDC Farmer Moth Monitoring Project, Fry and Waring (2020) and MothsIreland.

The daytime pollinator transect routes and moth-trap locations are shown in Figure 6-2 below.

Daytime Pollinator Transects

A total of 15 no. daytime pollinator transects were completed along 15 no. separately mapped routes (D1–D15) between 7th July and 24th August 2026. Three were surveyed in early July, six in late July and six in late August. The route was changed for each survey to cover additional parts of the Project Site and different habitats. Some routes passed through the same general areas, but no precise route was repeated.

Routes were approximately 1 km long and followed safe, walkable lines through representative pollinator habitat, including grassland, heath, scrub and woodland margins. The daytime method followed the principles of the Irish Butterfly Monitoring Scheme[28] and All-Ireland Bumblebee Monitoring Scheme[29], adapted to record butterflies, bumblebees, solitary bees, hoverflies, day-flying moths and other visible pollinating insects.

Transects were walked at a slow, steady pace, with insects recorded within the standard 5 m recording box. Flowering plants visited by insects were recorded where practicable. Surveys were undertaken in suitable dry weather with low wind speeds, and conditions were recorded for each survey.

Nocturnal Moth Trapping

Moth trapping was undertaken under licence no. C139/2002, issued under Sections 23 and 34 of the Wildlife Act (as amended). A desk study of historical moth records was undertaken before the field surveys to identify notable species potentially occurring in the area, including species of Red List conservation concern. This information was used to inform survey effort and the identification of priority records. The desk study results are presented in Section 6.3.1.5.2.

A total of 18 no. overnight moth-trap deployments were completed at 18 no. separately mapped positions (M1–M18) between 25th June and 25th August 2026. Two deployments were completed in late June, four in early July, six in late July and six in late August. Trap positions changed between rounds to sample additional areas and different microhabitats. The surveys therefore provide spatial and seasonal coverage rather than repeated measurements at fixed trap locations.

[28] *NBDC [online] Irish Butterfly Monitoring Scheme. Available at: https://biodiversityireland.ie/surveys/butterfly-monitoring-scheme/ [Accessed 15/07/2026]*
[29] *NBDC [online] Bumblebee Monitoring Scheme. Available at: https://biodiversityireland.ie/surveys/bumblebee-monitoring-scheme/ [Accessed 15/07/2026]*

Locations were selected to reduce potential overlap in catches, provide broad coverage and sample representative moth habitat across the Proposed Wind Farm site. Traps were positioned on stable, sheltered ground adjacent to suitable habitat features, including woodland and treeline edges, scrub, hedgerows, wetland edges and flower-rich margins. Placement provided a clear line of sight for the light source while limiting exposure to wind.

Survey nights were selected to coincide with conditions favourable for moth activity, including relatively warm, still, humid and overcast conditions (Jonason *et al.*, 2014). Non-lethal light traps were deployed before dusk and processed the following morning. Professional Skinner traps and LED Skinner-style traps were used; the equipment used at each location is identified in Appendix 6-4. The trap surroundings and exterior were checked before processing. Moths were photographed and identified where possible, with handling kept to a minimum, before being released into suitable cover. Records arising from licensed trapping were submitted to the NBDC and/or MothsIreland for verification in accordance with licence requirements.

665000

670000

730000

725000

N

D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15

M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15 M16 M17 M18

0 1 2 km

Map Legend

- Project Site
- Moth Trap Locations
- Pollinator Transect Routes

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

SITE LOCATION - NOT TO SCALE

Drawing Title

Pollinator Survey Locations

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-2	1:40,000
Drawn By: JG	Checked By: CF	Date: 22/10/2026

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

6.2.3.4.5 Bat Surveys

Dedicated bat surveys of the Project Site were undertaken throughout 2024 and the results of these surveys form the core dataset used to inform this EIAR chapter. Additional Bat Habitat Appraisals, Vantage Point Surveys, Manual Transects/Night-time Bat Walkover Surveys and Ground-level Static Surveys within the Lodge Bog Enhancement and Killina Bog Offsetting Areas were undertaken in 2026 and are also included in this assessment. Detailed descriptions of the survey methodologies undertaken at the Project Site 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 Proposed Turbine Delivery Route accommodation areas was also undertaken. The 2024 data were also supplemented by data from previous baseline bat surveys undertaken within the Project Site in 2022. The 2022 data is presented in Appendix 4 of the Bat Report.

Survey design and effort was created in accordance with best practice guidelines, including Bat Conservation Trust's '*Bat Surveys: Good Practice Guidelines'* (Collins, 2023)[30] and NatureScot (2021) '*Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation'*[31]. 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)[32]. This is in line with standard best practice industry guidelines. A more recent Ireland-specific guidance document, '*Bat Survey, Assessment and Mitigation Guidelines for Onshore Wind Turbines in Ireland'* (Bat Conservation Ireland, 2026)[33], was published during the preparation of this EIAR and the Bat Report, included in Appendix 6-2, following completion of the baseline bat surveys for the Proposed Project. This document provides a consolidated, Ireland-specific framework for bat survey, assessment and mitigation, building upon the aforementioned established guidance.

The survey programme included bat habitat suitability walkover surveys to assess the suitability of habitats within the Project 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 Project Site to assess the suitability of habitats to support roosting, foraging and commuting bats. A precautionary 200m survey buffer, in consideration of Bat Conservation Ireland (BCI, 2026) was applied around all the Proposed Turbines and associated hardstands, internal site access roads, substation infrastructure and sections of the Proposed Turbine Delivery Route, wherever land access was available. 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. 85m) 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. A walkover survey was carried out, and structures were assessed for their potential to support roosting bats. Any potential tree roosts within the 285m search radius of the Proposed Turbine locations were examined for the presence of rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other potential roost features (i.e. PRFs). Watercourse, drain and culvert

[30] *Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London.*
[31] *NatureScot (2021). Bats and onshore wind turbines: survey, assessment and mitigation. Version: August 2021 (updated with minor revisions).*
[32] *NIEA, Natural Environment Division (2021). Guidance on Bat Surveys, Assessment & Mitigation for Onshore Wind Turbine Developments.*
[33] *Bat Conservation Ireland (2026) Bat Survey, Assessment and Mitigation Guidelines for Onshore Wind Farms in Ireland. Bat Conservation Ireland, Ireland.*

crossing infrastructure along the Proposed Grid Connection underground electrical cabling route were also assessed for any suitability to host roosting bats, comprising a detailed inspection of existing infrastructure to look for evidence of bat use. No other areas were identified during the Bat Habitat Appraisal as requiring detailed roost surveys.

- **Manual Transects / Night-time Bat Walkovers:** Manual activity surveys comprised walked transects after dusk (night-time bat walkover). A series of representative transect routes were selected throughout the Proposed Wind Farm site. The aim of these surveys was to identify bat species using the Proposed Wind Farm site and gather any information on bat behaviour and important features used by bats. Transects were completed for up to 3 hours after sunset, using full spectrum bat detectors (Batlogger M). All bat activity was recorded for subsequent analysis to confirm species identifications.
- **Vantage Point Surveys:** Stationary vantage point surveys (VPs) were carried out in the summer and autumn seasons of 2026. These surveys were carried out specifically to observe the high-altitude flight behaviour of Leisler's bat.
- **Ground-level Static Surveys:** Full-spectrum static detectors (Song Meter SM4BAT) were deployed at 22 locations for at least 10 nights in spring, 20 nights in summer, and 10 nights in autumn 2024 (Figure 3-4 in Appendix 6-2). Detector placement was based on the Proposed Turbine locations. A further 4 detectors were deployed within the Proposed Enhancement Areas at Lodge Bog and Killina Bog in spring, summer and autumn 2026 (Figure 3-5, Appendix 6-2). 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).

6.2.3.5 Aquatic Surveys

Dedicated aquatic baseline surveys of the watercourses draining the Project Site were undertaken by Triturus Environmental Ltd. in 2026, on the dates outlined in Table 6-2 above. Previous aquatic baseline surveys were also undertaken by Triturus in relation to the Project Site in July 2021 and July-August 2024, and the results of these surveys are used to supplement the findings of the 2026 surveys, where relevant.

All freshwater watercourses which could be affected directly or indirectly by the Proposed Project were considered as part of this assessment. This included sites within and downstream of the Proposed Wind Farm and watercourses crossed by the Proposed Grid Connection underground electrical cabling route. Thus, a total of n=42 sites (41 no. riverine sites and 1 no. canal site) were selected for detailed aquatic assessment. All aquatic survey site locations (labelled as sites A1-18, B1-2, C1-2, G1-11) are shown in Figure 2.1 of the Aquatic Baseline Report, which is included as Appendix 6-3 of this EIAR.

In relation to the Proposed Wind Farm, these survey sites (A1-18, B1-2, C1-2) were located on the Codd River (EPA code: 14C44) and two of its unnamed tributaries, the Cloncant Stream (14C41), Abbeylough Stream (14A01), Figile River (14F01), Lullybeg Stream (14L13), Lullymore East River (14L11) and an unnamed tributary (14C32), Clonbrown River (14C32), Ballykilleen Stream (14B25), Clonbullogue River (14C53), Ballygarrett River (14B30), Clonkeen Stream (07C36), River Boyne (07B04), Drumsru Stream (14D19) and the Slate River (14S01). In relation to the Proposed Grid Connection, these survey sites (G1-11) were located on the Slate River (14S01) and unnamed tributaries of the Slate River, the Killinagh Upper Stream (14K17), Upper Ballynakill River (14U01), Brockagh River (14B73), the Blackwood Feeder line and main line of the Grand Canal. These survey locations are detailed in Table 6-4 below and shown in Figure 2.1 of the Aquatic Baseline Report, which is included as Appendix 6-3 of this EIAR.

Survey effort focused on both in-stream 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 netting. As outlined in Section 6.2.3.4.2 above, otter surveys were also undertaken.

To further validate site surveys and to detect potentially cryptically low populations of high conservation value aquatic species, protected and/or rare aquatic species within the Biodiversity Study Area, composite water samples were collected from the Figile River (sites A15a & A18), River Boyne (B2) and Slate River (C2) and analysed for freshwater pearl mussel (*Margaritifera margaritifera*), Atlantic salmon (*Salmo salar*), white-clawed crayfish (*Austropotamobius pallipes*) and lamprey (*Lampetra* spp.) environmental DNA (eDNA). Crayfish plague (*Aphanomyces astaci*) eDNA was also tested for during the 2024 surveys at survey sites A18, B2, C2, and at a survey site approximately 0.8km downstream of the 2026 survey site A15a.

Dedicated white-clawed crayfish surveys were also undertaken at all aquatic survey sites in August 2026.

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.

Table 6-4 Locations of n=42 aquatic survey sites in the vicinity of the Proposed Project

Site no.	Watercourse	EPA code	Townland	X (ITM)	Y (ITM)	Distance Downstream of the Project Site
A1	Unnamed stream	n/a	Derries	665752	729939	0km – within the Proposed Wind Farm site
A2	Unnamed stream	n/a	Derries	666710	729706	0km – within the Proposed Wind Farm site
A3	Codd River	14C44	Derries	666119	729187	0km – within the Proposed Wind Farm site
A4	Codd River	14C44	Codd	664647	728006	0.1km
A5	Cloncant Stream	14C41	Derries	666402	729057	0km – within the Proposed Wind Farm site
A6	Cloncant Stream	14C41	Cushaling	663787	727511	0km – within the Proposed Wind Farm site
A7	Abbeylough Stream	14A01	Ballybrack	670827	728735	0km – within the Proposed Wind Farm site
A8	Figile River	14F01	Ticknevin	666719	727796	0km – Proposed Wind Farm watercourse crossing (WC-WF-07)
A9	Unnamed stream	n/a	Lullybeg	667604	725885	0km – within the Proposed Wind Farm site
A10a	Lullybeg Stream	14L13	Lullybeg	668325	724418	0km – Proposed Wind Farm watercourse crossing (WC-WF-13)
A10b	Lullymore East River	14L11	Lullybeg	667752	724098	0km – Proposed Wind Farm watercourse crossing (WC-WF-12)
A10c	Lullybeg Stream	14L13	Lullybeg	667103	725094	0km – Proposed Wind Farm watercourse crossing (WC-WF-11)
A11a	Lullymore East River	14L11	Lullybeg	667683	725577	0km – Proposed Wind Farm watercourse crossing (WC-WF-10)
A11b	Lullymore East River	14L11	Lullybeg	666815	725833	0km – Proposed Wind Farm watercourse crossing (WC-WF-08)
A12a	Lullybeg Stream	14L33	Cushaling	666165	724787	0km – Proposed Wind Farm watercourse crossing (WC-WF-15)
A12b	Clonbrown River	14L33	Cushaling	666087	724946	0km – Proposed Wind Farm watercourse crossing (WC-WF-14)

Site no.	Watercourse	EPA code	Townland	X (ITM)	Y (ITM)	Distance Downstream of the Project Site
A13a	Clonbrown River	14C32	Killinthomas	665802	723269	0km – Proposed Wind Farm watercourse crossing (WC-WF-01)
A13b	Clonbrown River	14C32	Killinthomas	665761	723345	0km – Proposed Wind Farm watercourse crossing (WC-WF-02)
A13c	Clonbrown River	14C32	Killinthomas	665583	723926	0km – Proposed Wind Farm watercourse crossing (WC-WF-03)
A13d	Clonbrown River	14C32	Cushaling	665055	725590	0km – within the Proposed Wind Farm site
A14a	Figile River	14F01	Cushaling	665011	725882	0km – within the Proposed Wind Farm site
A14b	Figile River	14F01	Cloncant	663529	726766	0km – Proposed Wind Farm watercourse crossing (WC-WF-04)
A15a	Figile River	14F01	Shean	661438	727522	0km – Proposed Wind Farm watercourse crossing (WC-WF-06)
A15b	Ballykilleen Stream	14B25	Shean	661272	727619	0km – Proposed Wind Farm watercourse crossing (WC-WF-05)
A16	Clonbullogue River	14C53	Clonbullogue	661405	723666	1.6km
A17	Ballygarrett River	14B30	Clonbrown	662374	723087	1.0km
A18	Figile River	14F01	Nahana	659896	719047	4.9km
B1	Clonkeen Stream	07C36	Cloncanon	665410	731179	0.2km
B2	River Boyne	07B04	Kishawanny Upper	664528	733464	2.6km
C1	Drumsru Stream	14D19	Barnaran	670840	724189	0.2km
C2	Slate River	14S01	Cloncurry	670272	721700	1.2km

Site no.	Watercourse	EPA code	Townland	X (ITM)	Y (ITM)	Distance Downstream of the Project Site
G1	Killinagh Upper Stream	14K17	Allenwood South	673402	726368	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-01)
G2	Grand Canal	n/a	Allenwood South	674633	726464	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-02)
G3	Upper Ballynakill River	14U01	Derrymullen	676233	726584	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-03)
G4	Unmapped Channel	n/a	Derrymullen	676949	726639	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-04)
G5	Slate River	14S01	Graigues	678787	726784	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-05)
G6	Slate River	14S01	Blackwood	679415	726846	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-06)
G7	Blackwood Feeder (Grand Canal)	n/a	Blackwood	679499	726854	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-07)
G8	Slate River	14S01	Blackwood	679608	726864	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-08)
G9	Brockagh River	14B73	Coolree	680021	726896	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-09)
G10	Unmapped Channel	n/a	Downings North	680640	726952	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-11)
G11	Unnamed stream	n/a	Downings North	682652	727121	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-10)

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 are 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.

Invasive alien species listed under the following regulations were also considered:

- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended)
- European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024)

6.2.4.2 Determining Importance of Ecological Receptors

The importance of the ecological features identified was determined with reference to a defined geographical context. This was undertaken following a methodology that is set out in Chapter 3 of the '*Guidelines for Assessment of Ecological Impacts of National Roads Schemes'* (TII, 2009)[34] (hereafter referred to as TII (2009) Guidelines). The TII (2009) 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. The TII (2009) 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 TII (2009) 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 European Sites (SACs or SPAs) 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 (2009) 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 TII (2009) Guidelines are considered to be

[34] *TII (2009). Guidelines for Assessment of Ecological Impacts of National Roads Schemes. Dublin: National Roads Authority.*

Key Ecological Receptors (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. 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 Proposed Project will result in a number of impacts. The ecological effects of these impacts are characterised as per the CIEEM '*Guidelines for Ecological Impact Assessment in the UK and Ireland*' (2018)[35] (hereafter referred to as the CIEEM 2018 Guidelines). The CIEEM 2018 Guidelines are the industry standard for the completion of Ecological Impact Assessment in the UK and Ireland. This chapter has also been prepared in accordance with the corresponding EPA guidance (EPA, 2022). 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** 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 Ecological Impact Assessment (EcIA), a '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:

[35] *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.*

- Any processes or key characteristics of key ecological receptors 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.

The EPA '*Guidelines on information to be included in Environmental Impact Assessment Reports*' (2022) and the TII (2009) Guidelines were also considered when determining significance and the assessment is in accordance with the above listed guidelines.

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 the ecological resources for which it has been valued (TII (2009) Guidelines). 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 definitions 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 CIEEM 2018 methodology, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted, 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

Constraint studies, as described in Section 3.2.5.3.1 of Chapter 3 of this EIAR, have been carried out to ensure that the Proposed Turbines and all ancillary infrastructure are located in the most appropriate areas of the Project Site. Detailed ecological constraints studies were also undertaken during the design phase of the Proposed Project based on ecological desk study data as well as early survey data, in order to further inform the layout of the Proposed Project. Section 6.4 of this Biodiversity Chapter assesses the potential effects of the Proposed Project to ensure that all effects on sensitive ecological receptors are adequately addressed. Where significant effects on sensitive ecological receptors are predicted, mitigation is incorporated into the project design or layout to address such effects. The implemented mitigation measures avoid, reduce or offset potential significant residual effects, post mitigation.

6.2.5 Limitations

The information provided in this assessment accurately and comprehensively describes the baseline ecological environment following surveys on numerous dates during all seasons and over six years (2020 to 2026); provides an accurate prediction of the likely ecological effects of the Proposed Project; prescribes best practice and mitigation as necessary; and describes the residual ecological impacts. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines as set out in the preceding sections. The habitats and species on the Project Site were readily identifiable, and comprehensive assessments were made during the field visits. No significant limitations in the scope, scale or context of the assessment have been identified.

6.3 Establishing the Ecological Baseline

6.3.1 Desk Study

The following sections describe the findings of the desk study. It provides a baseline of the ecology known to occur in the existing environment based on data sources reviewed to inform the ecological impact assessment as outlined in Section 6.2.1.

The Project Site is located within six 10km grid squares (hectads). The Proposed Wind Farm is located within hectads N62, N63 and N72, the Proposed Grid Connection extends from hectad N72 into N82 to the east, and the Proposed Turbine Delivery Route accommodation areas are also located within hectads N52 and N42 to the west. In addition to presenting desk study information on the ecological baseline of the Project Site, information on the ecology of the wider area (within hectads N42, N52, N62, N63, N72 and N82) is also included. This encompasses records of protected species (both historical and contemporary), information on Annex I habitats, and relevant water quality data. While historical information is presented where available, e.g. NPWS records, information on water quality, much of the information presented on the surrounding area relates to recent records obtained from the NBDC and other sources.

The results of desktop studies in relation to bats and birds are detailed in the Bat Report, Appendix 6-2 and Chapter 7 Ornithology of this EIAR, respectively. Additional desk study information relating to aquatic habitats and species is also presented in the Aquatic Baseline Report, Appendix 6-3.

6.3.1.1 Designated Sites

SACs and SPAs are designated under the EU Habitats Directive and EU Birds Directive, respectively, and are collectively known as 'European Sites'. The likely significant effects and/or adverse impacts on the integrity of European Sites is fully assessed in the AASR and NIS that accompanies the planning application for the Proposed Project. As per EPA Guidance 2022, *"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 6.4.5.1 of this EIAR provides a summary of the key assessment findings with regard to European Sites.

NHAs are designated under Section 18 of the Wildlife Act, 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. 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.

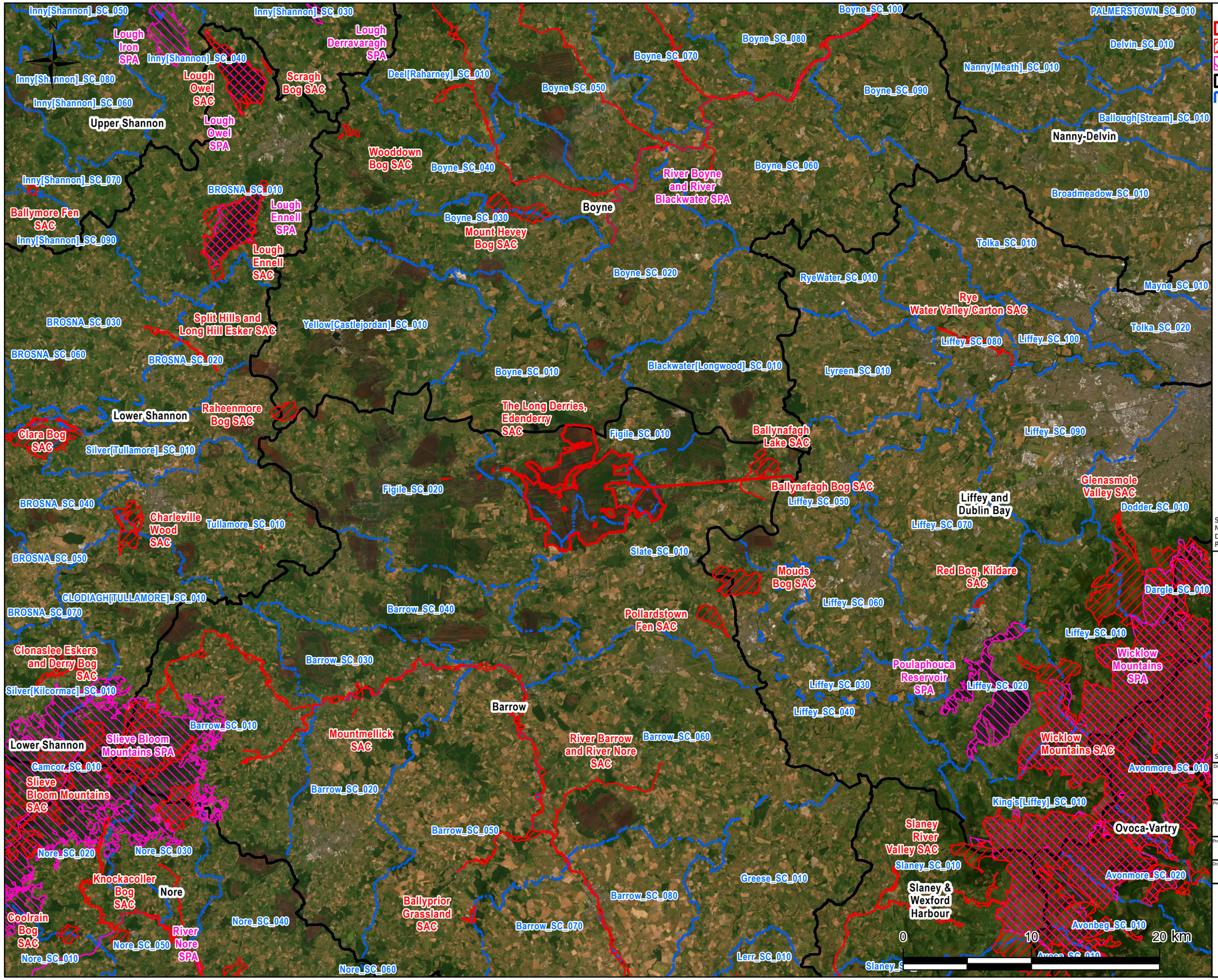
The following methodology was used to establish the designated sites that have the potential to be impacted by the peat extraction and ancillary activities:

- Initially the most up to date GIS spatial datasets for European and Nationally designated sites and water catchments were downloaded from the NPWS website

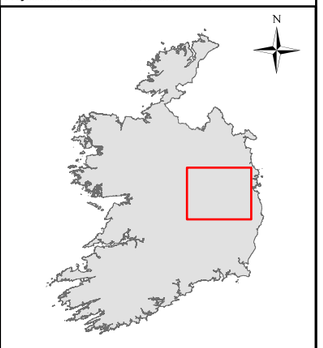
(www.npws.ie)[36] and the EPA website (www.epa.ie). The Irish Ramsar Wetlands Committee[37] web-mapper was also reviewed in relation to Ramsar Sites within the likely ZoI. The datasets were utilised to identify Designated Sites which could feasibly be affected by the Proposed Project.

- All Designated Sites that could potentially be affected were identified using a source-pathway-receptor model. To provide context for the assessment, European Designated Sites surrounding the Project Site are shown in Figures Figure 6-3 and Figure 6-4, and Nationally Designated Sites are shown in Figure 6-5 and Figure 6-6.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the Project 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 as identified in the preceding steps and assesses which are within the likely ZoI. All European Sites are fully described and assessed in the AASR and NIS submitted as part of this planning application. Ramsar Sites are also included in Table 6-5.
- Table 6-6 then provides details of all relevant Nationally Designated Sites as identified in the preceding steps and assesses which are within the likely ZoI.
- 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 likely significant effects were identified, further assessment is required.

[36] *The following SAC, SPA, NHA and pNHA GIS boundary datasets are the most recently available at the time of writing: SAC_ITM_2026_01, SPA_ITM_2026_02, NHA_ITM_2019_06, pNHA_ITM_2015_11.*
[37] *Irish Ramsar Wetlands Committee [online]. Available at: https://www.irishwetlands.ie/irish-sites/ [Accessed 05/06/2026]*



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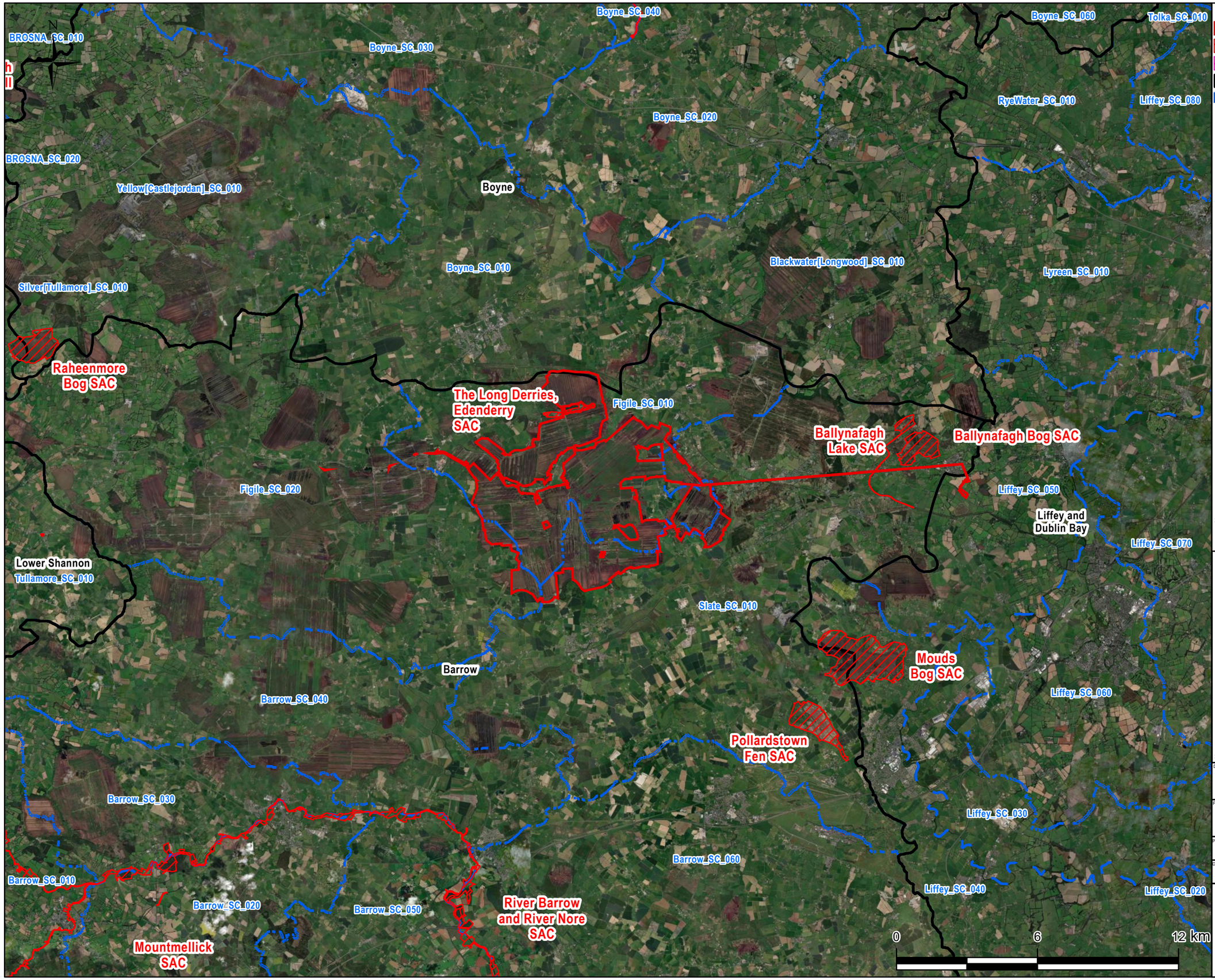
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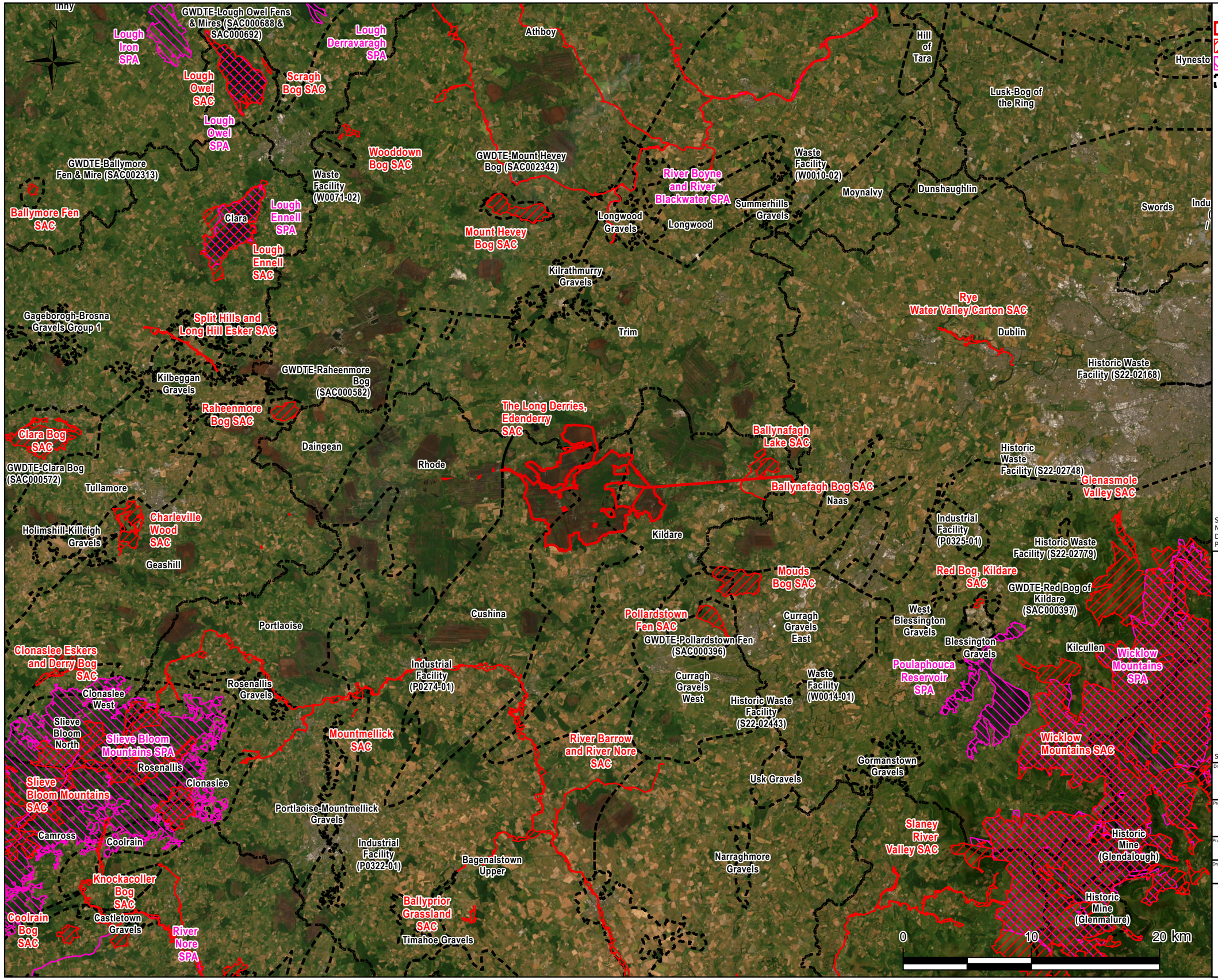
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European Site with Hydrological Catchments

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
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Drawn By	Checked By	Date
MNR	KB	27/10/2026

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

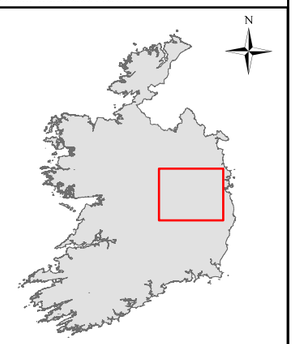

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Boyne
Boyne_SC_010
Blackwater[Longwood]_SC_010
Lyreen_SC_010
Silver[Tullamore]_SC_010
Raheenmore Bog SAC
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Liffey and Dublin Bay
Liffey_SC_070
Lower Shannon
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Slate_SC_010
Barrow
Mouds Bog SAC
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Barrow_SC_020
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Liffey_SC_020
Mountmellick SAC
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6
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Map Legend
Project Site
Special Area of Conservation (SAC)
Special Protection Areas (SPA)
WFD Hydrological Catchments
WFD Hydrological Subcatchments
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Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare
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Email: info@mkoireland.ie/ Website: www.mkoireland.ie



Map Legend

- Project Site
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)
- WFD Ground Waterbodies

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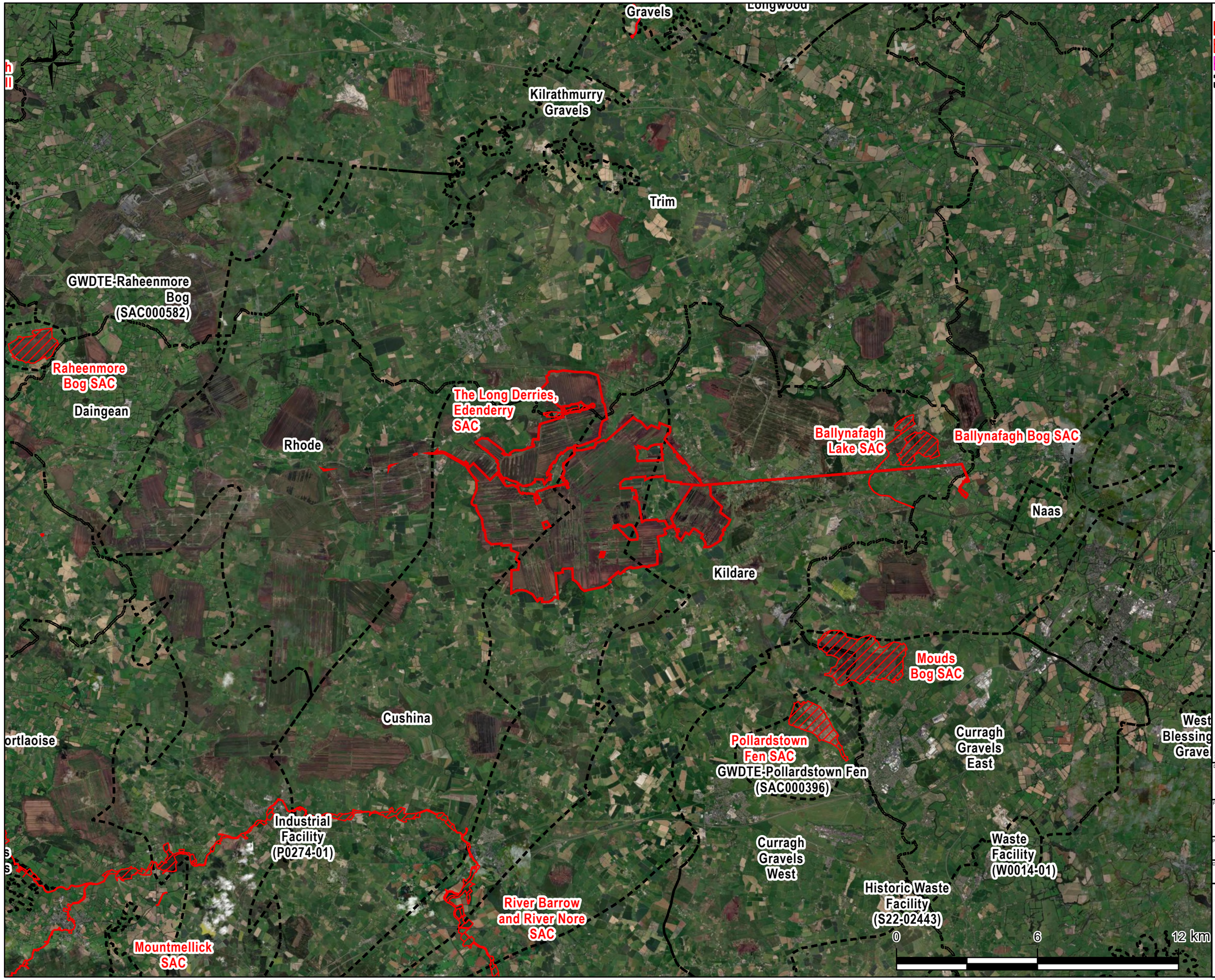
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Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

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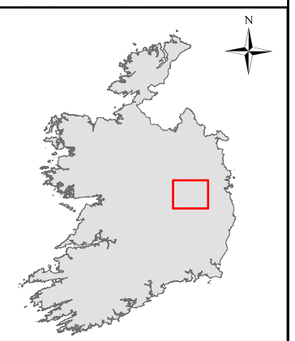
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Map Legend

- Project Site
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)
- WFD Ground Waterbodies

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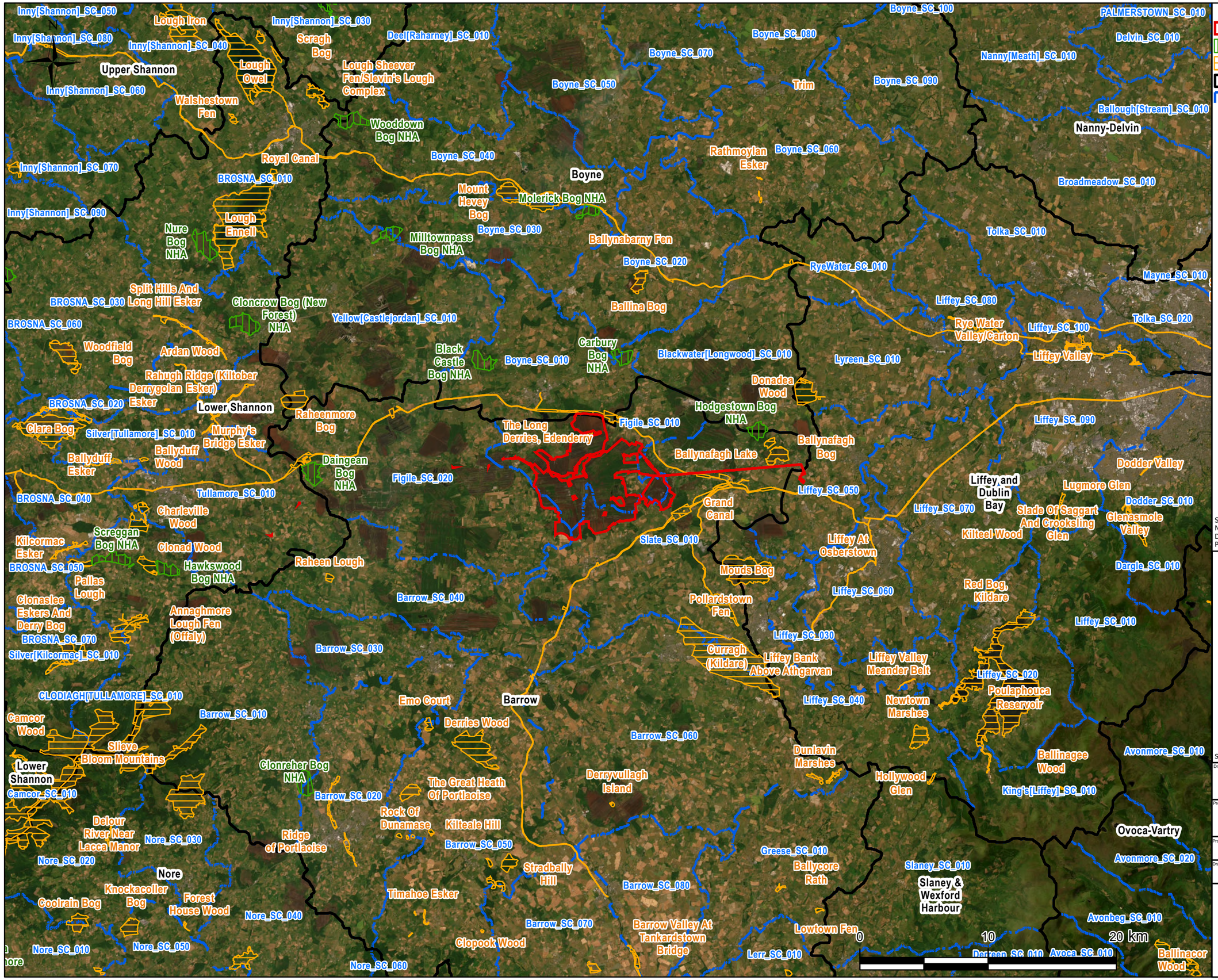
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Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

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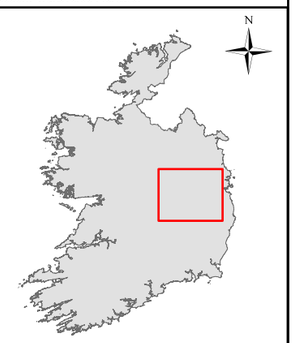
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Map Legend

- Project Site
- Natural Heritage Areas (NHA)
- Proposed Natural Heritage (pNHA)
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments

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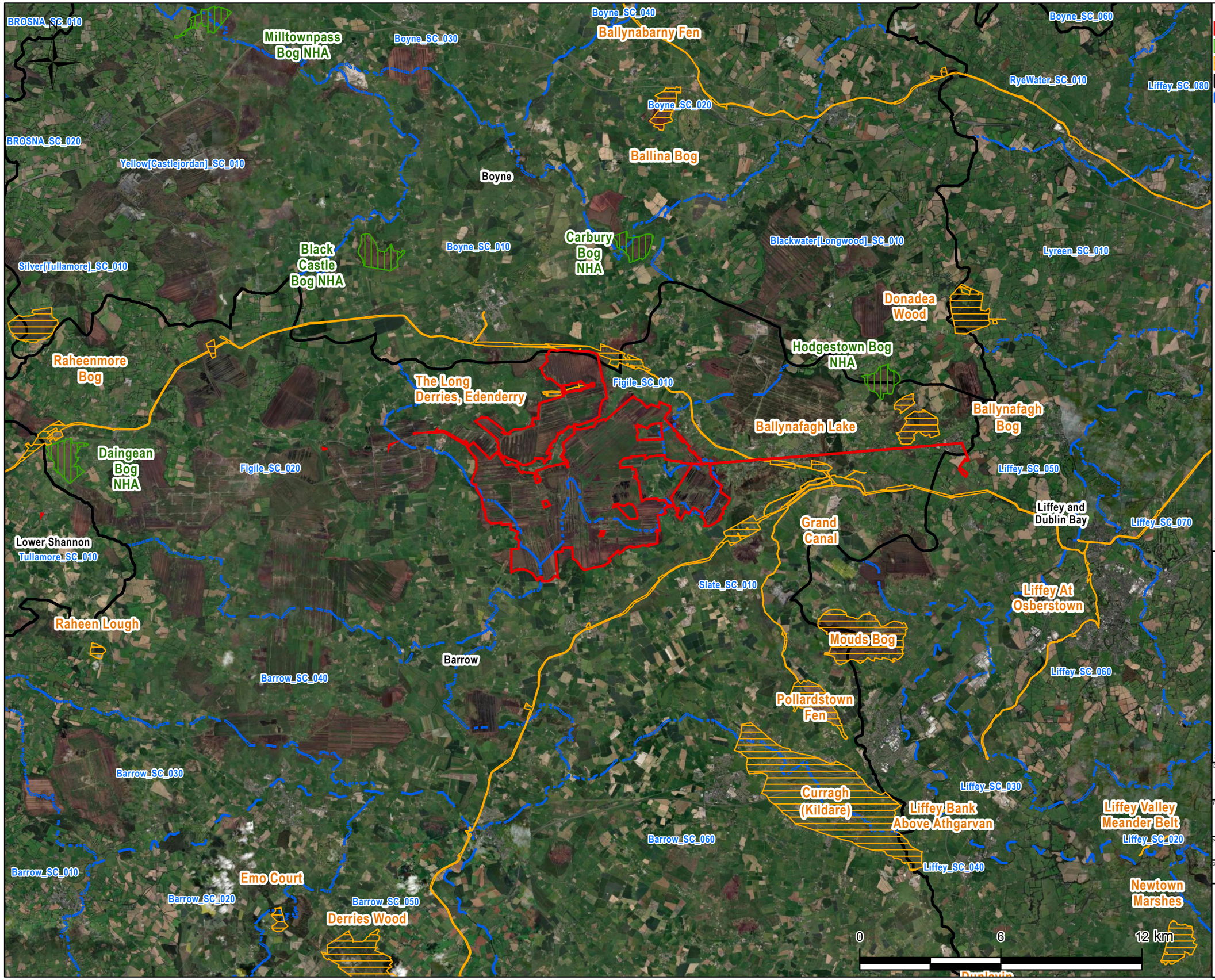
National Sites with Groundwater Catchments

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
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Drawn By	Checked By	Date
MNR	KB	28/10/2026

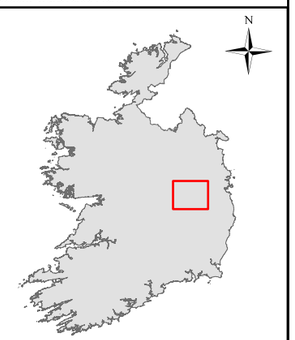
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Map Legend

- Project Site
- Natural Heritage Areas (NHA)
- Proposed Natural Heritage (pNHA)
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments

Spatial Reference
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Projection: Transverse Mercator



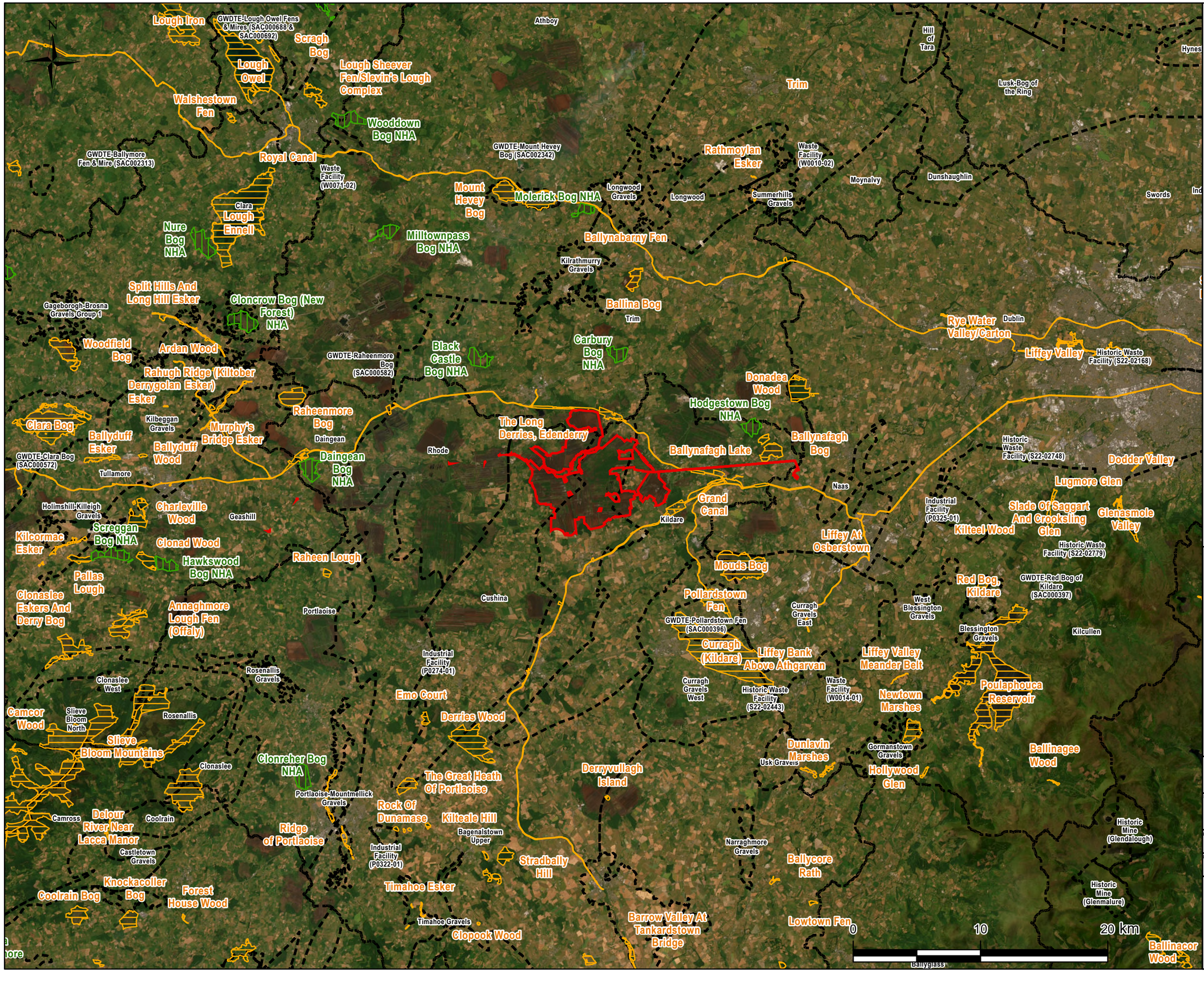
SITE LOCATION - NOT TO SCALE

Drawing Title
National Sites with Groundwater Catchments

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-5b	1:150,000
Drawn By	Checked By	Date
MNR	KB	28/10/2026

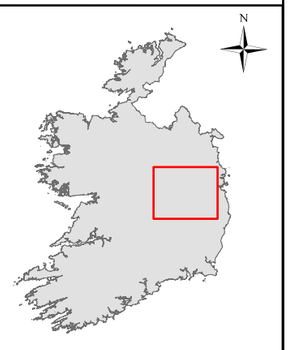
Email: info@mkoireland.ie/ Website: www.mkoireland.ie



Map Legend

- Project Site
- Natural Heritage Areas (NHA)
- Proposed Natural Heritage (pNHA)
- WFD Ground Waterbodies

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



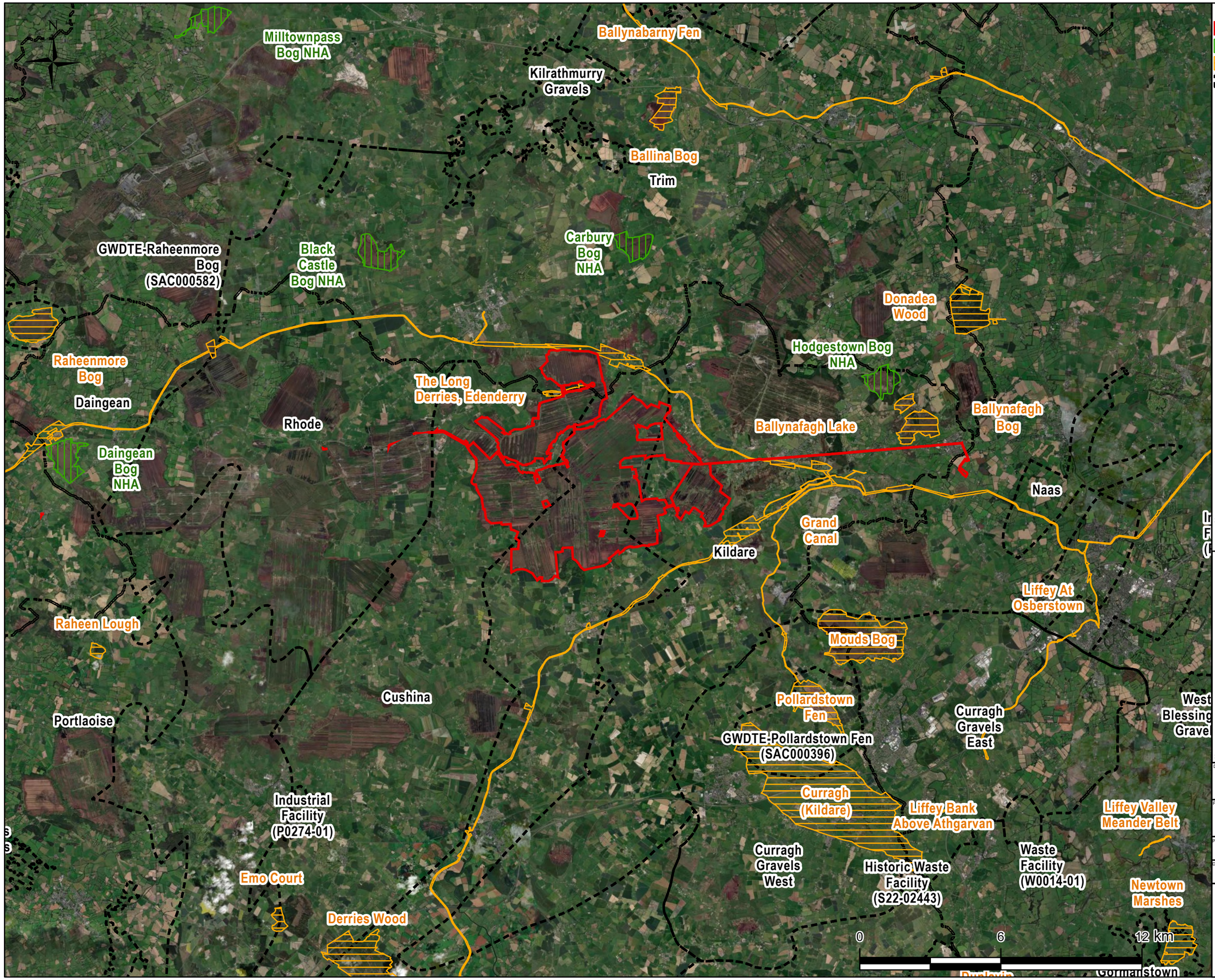
SITE LOCATION - NOT TO SCALE

Drawing Title
National Sites with Groundwater Catchments

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-6a	1:275,000
Drawn By	Checked By	Date
MNR	KB	28/10/2026

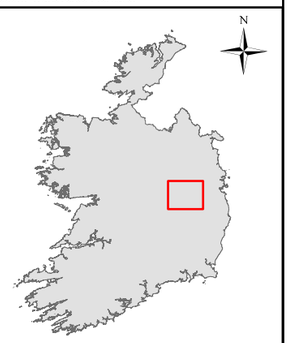
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Email: info@mkoireland.ie/ Website: www.mkoireland.ie



Map Legend

- Project Site
- Natural Heritage Areas (NHA)
- Proposed Natural Heritage (pNHA)
- WFD Ground Waterbodies

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



SITE LOCATION - NOT TO SCALE

Drawing Title
National Sites with Groundwater Catchments

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-6b	1:150,000
Drawn By	Checked By	Date
MNR	KB	28/10/2026

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

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Special Areas of Conservation (SACs)			
The Long Derries, Edenderry SAC [000925] **Distance to the Proposed Wind Farm:** The Proposed Wind Farm site is directly adjacent to this SAC. The nearest proposed infrastructure associated with the Proposed Wind Farm (i.e. electrical cabling) is located at a distance of approximately 230m away at its nearest point. **Distance to the Proposed Grid Connection:** 6.1km at its nearest point (i.e. the proposed underground electrical cabling route). **Distance to the Proposed Turbine Delivery Route accommodation areas:** 5.6km at its nearest point	› [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. The closest infrastructure associated with the Project Site, i.e. the internal 33kV electrical cabling, internal access roads and Proposed Turbine hardstands are located >230m away. Additionally, the proposed amenity track which follows the proposed new roads will not provide access to or encourage footfall to the SAC, being located over 250m from this European Site. As such there is no potential for likely significant effects on this SAC as a result of direct habitat loss or fragmentation of the QI grassland habitat during the construction, operation, or decommissioning phases of the Proposed Project. In terms of potential for indirect effects, the Long Derries, Edenderry SAC is hydrologically connected to the Project Site via the CODD River (IE_SE_14F010200) which flows in a general northeast to southwest direction within the Project Site, traversing part of the SAC, then flowing east to west along the SAC southern boundary. However, given the terrestrial nature of the QI habitat for which the SAC is designated there is no potential for likely significant effects on this European Site due to deterioration of water quality. The potential for indirect effects on the SAC arising from dust deposition has also been considered. During the construction phase of the Proposed Project, there is potential for temporary and localised dust generation associated with site preparation, excavation works and construction traffic. The closest infrastructure associated with the Proposed Project is located within 230 metres of the SAC at its closest point. Therefore, on a highly precautionary basis, there is potential for likely significant effects on the SAC and its QI habitat as a result of dust deposition and potential resulting degradation of the grassland habitat. While Japanese knotweed was recorded within the Project Site, it was recorded >350m from the nearest infrastructure associated with the Proposed Project and will not be disturbed by the works	**Yes**

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		associated with the Proposed Project. Therefore, there is no potential for likely significant effects on the SAC as a result of the spread of invasive species. **A complete source-pathway-receptor chain for likely significant effects on The Long Derries, Edenderry SAC has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site, in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.**	
Ballynafagh Lake SAC [001387] **Distance to the Proposed Wind Farm:** 6.1km at its nearest point **Distance to the Proposed Grid Connection:** The Proposed Grid Connection underground electrical cabling crosses the SAC at the Blackwater feeder canal. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 19.2km at its nearest point	› [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) › [1065] Marsh Fritillary (*Euphydryas aurinia*) › [7230] Alkaline fens	This SAC is located approximately 6.1km from the Proposed Wind Farm site. However, the Project Site overlaps with Ballynafagh Lake SAC where the Proposed Grid Connection underground electrical cabling route crosses the Blackwood feeder canal. The canal has been largely infilled, including at the location of the proposed crossing and was dry in nature at the time of survey and characterised by the presence of scrubby vegetation with no alkaline fen or suitable habitat for marsh fritillary or Desmoulin's whorl snail present. Furthermore, no in-channel works will be required to facilitate the crossing as the cables will be laid within the existing road (R403) bridge which crosses over the feeder canal using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods (refer to Section 4.9.2.7 of Chapter 4 for further detail). There is no potential for direct loss of any QI habitat or supporting habitat for QI species at this location. There is no surface water connectivity between the Proposed Wind Farm site and the SAC or between the Proposed Turbine Delivery Route accommodation areas and SAC. Therefore, no potential for likely significant effects on Ballynafagh Lake SAC via surface water pathways arising from works at these locations has been identified. However, in the absence of mitigation, there is potential for likely significant effects on the SAC due to deterioration of water quality during the crossing of the Blackwood feeder canal by the Proposed Grid Connection underground electrical cabling route. This could arise due to run-off of pollutants, including silts, rubble, hydrocarbons and cementitious material to the canal during the excavation of trenches and laying of the Proposed Grid Connection underground electrical cabling in the existing road bridge. The feeder canal has	**Yes**

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		been largely infilled and no flowing water was present at the location of the crossing or 150m up or downstream during the surveys undertaken. Nonetheless, there is potential for water to be present at different locations in the canal at different times of the year and for contaminated water to make its way to parts of the feeder canal where flowing water may be present and therefore the identification of this potential pathway is based on very precautionary approach. Deterioration of water quality has potential to result in degradation of the QI habitat alkaline fen and supporting habitat for the QI species Desmoulin's whorl snail where they occur downstream of the works. Both alkaline fen and Desmoulin's whorl snail are groundwater dependent QIs. The easternmost sections of the Proposed Wind Farm site and the Proposed Grid Connection underground electrical cabling route are underlain by the same GWB as Ballynafagh Lake SAC, the Kildare GWB. Therefore, in the absence of mitigation, there is potential for indirect effects on the SAC due to deterioration of groundwater quality arising from percolation of pollutants, including silts and hydrocarbons, to groundwater during construction, operation and decommissioning of the Proposed Project. In relation to potential changes in groundwater levels/flow, as outlined in Chapter 9 Water, while dewatering associated with works in the construction of the Proposed Wind Farm and Proposed Grid Connection may cause temporary local changes in groundwater flows and levels, these will be temporary and are unlikely to be significant beyond 50m from any excavation. The Proposed Grid Connection underground electrical cable trench will be shallow in nature and as outlined in Section 9.5.2.2 of Chapter 9 Water, will not interact with deep groundwater or cause any changes to groundwater flow or levels. Taking the above into account, no significant effects on the local groundwater table or flows which could affect the SAC will occur due to the construction of the Proposed Project. The potential for indirect effects arising from potential dust deposition during the transportation of construction materials along the Proposed Construction Haul Route to the Project Site was also considered. The Proposed Construction Haul Route which passes through this SAC will be used by	

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		HGVs to deliver stone and ready-mix concrete from to the location of the Proposed Offsite Substation within the Project Site. The Proposed Construction Haul Route along the existing R403 road, which is a tarmacadam surface, which will not generate significant dust according to Section 10.3.2.2 of Chapter 10 Air Quality. Therefore, there is no potential for significant effects on the SAC due to dust deposition during the transportation of construction materials to the Project Site. **A complete source-pathway-receptor chain for likely significant effects on Ballynafagh Lake SAC has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site, in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.**	
Ballynafagh Bog SAC [000391] **Distance to the Proposed Wind Farm:** 7.6km at its nearest point **Distance to the Proposed Grid Connection:** 146 m from the underground cabling route at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 20.4km at its nearest point **Distance via Surface Water:** approximately 740m downstream of the	› [7110] Active raised bogs* › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. There will be no works within or directly adjacent to the SAC and no direct loss of any QI habitats. There is no surface water connectivity between the Proposed Wind Farm site, and the SAC or between the Proposed Turbine Delivery Route accommodation works and the SAC and therefore no potential for likely significant effects on the SAC via surface water pathways arising from works at these locations. There is hydrological connectivity between the Proposed Grid Connection and Ballynafagh Bog SAC via the TEMP_14A46 watercourse (a 1st order stream), which is crossed by the Proposed Grid Connection underground electrical cabling route at Black Stick Crossroads in Prosperous, Co. Kildare using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods. The TEMP_14A46 flows into the Slate River (14S01) approximately 560m downstream of the crossing, which in turn flows along the southern boundary of the SAC at a hydrological distance of 740m from the crossing of the watercourse. In the absence of mitigation, there is potential for indirect effects on the SAC due to deterioration of water quality arising from run-off of pollutants, including silts, hydrocarbons and cementitious materials, to the TEMP_14A46	**Yes**

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Proposed Grid Connection at its nearest point.		watercourse during the construction works associated with the Proposed Grid Connection underground electrical cabling crossing of the TEMP_A14A46. **A complete source-pathway-receptor chain for likely significant effects on Ballynafagh Bog SAC has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site, in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.**	
Mouds Bog SAC [002331] **Distance to the Proposed Wind Farm:** 5.9km at its nearest point. **Distance to the Proposed Grid Connection:** 6.6km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 18.8km at its nearest point	› [7110] Active raised bogs* › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. No pathway for likely significant effects on the SAC as a result of surface water quality deterioration was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and this European Site. Furthermore, as the peatland habitats for which this SAC is designated are ombrotrophic, terrestrial in nature and located over 5km from the Project Site, there is no potential for likely significant effects on these habitats as a result of the Proposed Project. **No pathway for likely significant effects on Mouds Bog SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	No
River Barrow and River Nore SAC [002162] **Distance to the Proposed Wind Farm:** 9.8km at its nearest point.	› [1130] Estuaries › [1140] Mudflats and sandflats not covered by seawater at low tide › [1170] Reefs	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. The potential for the Proposed Project to result in significant indirect effects on the SAC has also been considered. There is surface water connectivity between the Project Site and this SAC (approximately 17km hydrological flowpath) via drainage ditches and watercourses within the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling	**Yes**

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Grid Connection: 17.9km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 7.3km at its nearest point. **Distance via Surface Water:** approximately 17km from the Proposed Wind Farm at its nearest point.	› [1310] *Salicornia* and other annuals colonising mud and sand › [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) › [1410] Mediterranean salt meadows (*Juncetalia maritimi*) › [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation › [4030] European dry heaths › [6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels › [7220*] Petrifying springs with tufa formation (*Cratoneurion*) › [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › [91E0*] Alluvial forests with *Alnus glutinosa* and	route. The majority of the Proposed Wind Farm lies within the Barrow (14) catchment, specifically the Figile sub-catchment. This area is drained by several streams including the Codd Stream, Clonbullogue Stream, Ballygarrett Stream, Cloncant Stream, Ballyhagan Stream and the Slate Stream all of which flow to the Figile River, which then flows into the Barrow River. Streams draining the southern part of the Proposed Wind Farm, as well as those along the Proposed Grid Connection underground electrical cabling route flow into the Slate River, which confluences with the Figile River approximately 6.6km southwest of the Proposed Wind Farm, which lies approximately 15.3km downstream of the Slate River. The Figile River then in turn converges with the River Barrow within the SAC approximately 6.4km downstream. In addition, areas of the Proposed Project are underlain by the same groundwater bodies (Cushina, Kildare and Bagenalstown) as the River Barrow and River Nore SAC and therefore there is also potential hydrological connectivity with the SAC via groundwater pathways. In the absence of mitigation, there is potential for indirect effects on the SAC due to deterioration of water quality arising from run-off of or percolation of pollutants (including silts, hydrocarbons and cementitious materials) to watercourses within and downstream of the Project Site which have connectivity downstream with the SAC, or to groundwater, during the construction, operation and decommissioning of the Proposed Project. Deterioration of water quality has potential to result in degradation of aquatic QI habitats and supporting habitat for the aquatic QI species associated with the SAC. As outlined in Chapter 9 Water, some dewatering may be required during the construction phase of the Proposed Project which may cause local changes in groundwater flows and levels. However, water level changes will be temporary and are unlikely to be significant beyond 50m from any excavation. Given the nature of the works and the intervening distance between the SAC and the Project Site and the likely ZoI for hydrogeological effects, in the absence of mitigation, there is no potential for the Proposed Project to have significant effects on the River Barrow and River Nore SAC as a result of impacts to groundwater levels or flows. While the SAC is located approximately 17km downstream of the Project Site at its nearest point, taking a precautionary approach a potential pathway for indirect effects on the SAC due to *ex-situ*	

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
	Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) › [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) › [1029] Freshwater Pearl Mussel *(Margaritifera margaritifera*) › [1092] White-clawed Crayfish (*Austropotamobius pallipes*) › [1095] Sea Lamprey (*Petromyzon marinus*) › [1096] Brook Lamprey (*Lampetra planeri*) › [1099] River Lamprey (*Lampetra fluviatilis*) › [1103] Twaite Shad (*Alosa fallax fallax*) › [1106] Salmon (*Salmo salar*) › [1355] Otter (*Lutra lutra*) › [6985] Killarney Fern (*Vandenboschia speciosa*)	disturbance or displacement of otter has been identified. Otters can utilise extensive territories, (approximately 7.5 ± 1.5km for females and 13.2 ± 5.3km for males (Ó'Neill, 2008) and therefore otter utilising watercourses within or downstream of the Proposed Project have potential to be associated with the SAC. A number of the larger watercourses within the Project Site, including the Figile River, were found to provide suitable habitat for a number of fisheries and aquatic species, including Atlantic salmon, white-clawed crayfish and some low suitability for lamprey species (see detail in Section 6.3.3.6 below and Aquatic Baseline Report, Appendix 6-3). Due to the downstream hydrological connectivity with this SAC, populations of aquatic QI species occurring within and downstream of the Project Site are considered to comprise part of the SAC populations. As outlined in Section 4.9.1.7 of Chapter 4 Description of the Proposed Project, in-stream works will be required at up to 8 no. locations to facilitate crossings of watercourses within the Proposed Wind Farm site. Due to the nature of these in-stream works and the fisheries suitability of these watercourses, in the absence of mitigation, there is potential for direct disturbance and mortality of sensitive aquatic QI species which may reside within these watercourses. **A complete source-pathway-receptor chain for likely significant effects on River Barrow and River Nore SAC has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site, in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.**	
Pollardstown Fen SAC [000396]	› [1013] Greyer's Whorl Snail (*Vertigo geyeri*)	There is no potential for direct effect as the Project Site is located entirely outside of this European Site.	No

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 7.5km at its nearest point. **Distance to the Proposed Grid Connection:** 9.5km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 19.2km at its nearest point.	› [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*) › [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) › [7210] Calcareous fens with *Cladium marisus* and species of the *Caricion davallianae** › [7220] Petrifying springs with tufa formation (*Cratoneurion*)* › [7230] Alkaline fens	No pathway for indirect effects on the SAC was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and this European Site and therefore no potential for likely significant effects due to deterioration of water quality via surface water pathways. Furthermore, while this SAC is designated for a number of groundwater-dependent QIs, no pathway for likely significant effects as a result of groundwater quality deterioration or altered groundwater levels or flows was identified as this SAC is underlain by a separate groundwater body, the Curragh aquifer catchments, to the Project Site. **No pathway for likely significant effects on Pollardstown Fen SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Charleville Wood SAC [000571] **Distance to the Proposed Wind Farm:** 28.1km at its nearest point. **Distance to the Proposed Grid Connection:** 39.9km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 9.4km at its nearest point. The SAC overlaps with the Proposed Construction Haul Route along the existing N52 road.	› [91E0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) › [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)	The Proposed Construction Haul Route between Kilsaran Concrete (Bunaterin, Tullamore) and the Project Site is located along the existing N52 road, which passes through this SAC. However, there will be no works required along the N52 to facilitate construction traffic, therefore no pathway for direct effects as a result of habitat loss or fragmentation was identified. There is no hydrological connectivity between the Project Site and this SAC via surface or ground water pathways. There is no hydrological connectivity between the watercourses which flow through the Project Site and this European Site, and this SAC is underlain by a separate GWB, the Geashill GWB, to the Proposed Project. Therefore, no pathway for likely significant effects on this SAC was identified as a result of ground or surface water quality deterioration. The potential for indirect effects arising from potential dust deposition during the transportation of construction materials along the Proposed Construction Haul Route to the Project Site was also considered. The Proposed Construction Haul Route which passes through this SAC will be used by	No

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		HGVs to deliver stone and ready-mix concrete from Kilsaran batching plant, Bunaterin, Co. Offaly to the Project Site. The Proposed Construction Haul Route along the existing N52 road, which is a tarmacadam surface, which will not generate significant dust according to Section 10.3.2.2 of Chapter 10 Air Quality. Therefore, there is no potential for significant effects on the SAC due to dust deposition during the transportation of construction materials to the Project Site. **No pathway for likely significant effects on Charleville Wood SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Raheenmore Bog SAC [000582] **Distance to the Proposed Wind Farm:** 16.4km at its nearest point. **Distance to the Proposed Grid Connection:** 28.4km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 7.3km at its nearest point.	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. No pathway for indirect effects on the SAC due to deterioration of surface water quality was identified as there is no hydrological connectivity between the Project Site and this European Site. Additionally, as the peatland habitats for which this SAC is designated are ombrotrophic, terrestrial in nature and located over 9km from the Project Site, there is no potential for likely significant effects on these habitats as a result of the Proposed Project. **No pathway for likely significant effects on Raheenmore Bog SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	No
River Boyne and River Blackwater SAC [002299] **Distance to the Proposed Wind Farm:** 14.3km at its nearest point.	› [7230] Alkaline fens › [91E0*] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)	There is no potential for direct effects as the Project Site is located entirely outside of this European Site. The potential for indirect effects on the SAC as a result of the Proposed Project has also been considered. The Clonkeen River flows in a westerly direction along the northern boundary of Ticknevin Bog in the north of the Project Site and discharges into the River Boyne and River	No

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Grid Connection: 19.3km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation works:** 19.9km at its nearest point. **Distance via Surface Water:** approximately 22km from the Proposed Wind Farm at its nearest point.	› [1099] River Lamprey (*Lampetra fluviatilis*) › [1106] Salmon (*Salmo salar*) › [1355] Otter (*Lutra lutra*)	Blackwater SAC approximately 22km downstream. According to Chapter 9 Water, there is no surface water outfall from the bog within this catchment. All water from Ticknevin Bog is directed to the south and discharges via several settlement ponds to the Codd Stream, a tributary of the Figile River. In addition, the nearest significant infrastructure associated with the Proposed Project, i.e. Proposed Turbine 32, is located over 700m from the Clonkeen River. While the proposed amenity track in Ticknevin Bog extends to the edge of the bog and is located approximately 70m from the Clonkeen River at the nearest point, the works associated with the construction of the amenity track are minor in nature and will not require significant excavations which could result in significant silt-laden runoff. Therefore, due to the nature of the existing drainage within the Proposed Wind Farm site and the layout of the proposed infrastructure associated with the Proposed Wind Farm (i.e. there is no significant infrastructure located within the same catchment), there is no potential for likely significant effects on River Boyne and River Blackwater SAC, in the absence of mitigation, due to surface water quality deterioration as a result of the Proposed Project. The northernmost part of the Proposed Wind Farm (Ticknevin bog) lies within the same groundwater body (Trim) as River Boyne and River Blackwater SAC. The SAC is designated for a number groundwater dependent QIs: Alkaline fens [7230] and Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]. Some dewatering may be required during the construction of the Proposed Project, which may cause temporary local changes in groundwater flows and levels. However, as outlined within Chapter 9 Water of the EIAR which is included here as Appendix 5, water level impacts will be temporary and are unlikely to be significant beyond 50m from any excavation. Therefore, due to the intervening distance between the SAC and the likely ZoI for hydrogeological effects, there is no potential for likely significant effects on the groundwater-dependent QIs as a result of impacts to groundwater levels or flows as a result of the construction of the Proposed Wind Farm. Given the hydrological distance between the Project Site and the SAC, i.e. 22km, there is no potential for likely significant effects on the SAC due to disturbance or displacement of otter populations associated with the SAC.	

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		No pathway for likely significant effects on River Boyne and River Blackwater SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.	
Special Protection Areas (SPAs)			
Slieve Bloom Mountains SPA [004160] **Distance to the Proposed Wind Farm:** 27.8km at its nearest point. **Distance to the Proposed Grid Connection:** 37.4km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 12.0km at its nearest point.	› [A082] Hen Harrier (*Circus cyaneus*)	There is no potential for direct effect as the Project Site is located entirely outside of this European Site, with the Proposed Wind Farm itself located 27.8km from the SPA at its nearest point. The potential for *ex-situ* effects on SCI species where they occur outside the SPA has also been considered. Hen harrier was recorded within the Core Ornithology Survey Area (i.e. the Proposed Wind Farm site, see Section 7.1 of Chapter 7 Ornithology) during bird surveys undertaken to inform this assessment. However, the SPA is located approximately 12km from the Project Site at its nearest point, i.e. the Proposed Turbine Delivery Route accommodation works, and approximately 27.8km from the Proposed Wind Farm. As such, the Proposed Project is located outside of the maximum foraging range for hen harrier (10km; SNH, 2016). Therefore, hen harrier recorded within the Core Ornithology Survey Area are not considered to be associated with the Slieve Bloom Mountains SPA population and as such, there is no potential for *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI population of the SPA. **No pathway for likely significant effects on Slieve Bloom Mountains SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	No
River Boyne and River Blackwater SPA [004232]	› [A229] Kingfisher (*Alcedo atthis*)	There is no potential for direct effect as the Project Site is located entirely outside of this European Site.	No

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 14.3km at its nearest point. **Distance to the Proposed Grid Connection:** 19.3km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 19.9km at its nearest point. **Distance via Surface Water:** approximately 22km from the Proposed Wind Farm at its nearest point.		The potential for indirect effects on the SPA due to deterioration of water quality, which could affect kingfisher forage resource availability, was also considered. The Clonkeen Riverflows in a westerly direction along the northern boundary of Ticknevin Bog in the north of the Proposed Wind Farm site and discharges into the River Boyne and River Blackwater SAC approximately 22km downstream. According to Chapter 9 Water, there is no surface water outfall from the bog within this catchment. All water from Ticknevin Bog is directed to the south and discharges via several settlement ponds to the Codd Stream, a tributary of the Figile River. In addition, the closest significant infrastructure associated with the Proposed Project, i.e. Proposed Turbine 32, is located over 700m from the Clonkeen River, while the proposed amenity track in Ticknevin Bog extends to the edge of the bog and is located approximately 70m from the Clonkeen River at the nearest point, the works associated with the construction of the amenity track are minor in nature and will not require significant excavations which could result in significant silt-laden runoff. Therefore, due to the existing drainage within the Project Site and the layout of the Proposed Project infrastructure footprint associated with the Proposed Wind Farm, (i.e. there is no significant infrastructure located within the same catchment), in the absence of mitigation there is no potential for likely significant effects on River Boyne and River Blackwater SPA due to surface water quality deterioration as a result of the Proposed Project. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. Kingfisher was recorded within the Core Ornithology Survey Area during bird surveys undertaken to inform this assessment. However, the SPA is located approximately 14.3km from the Project Site at its nearest point, i.e. the Proposed Wind Farm. Given the distance between the Project Site and the SPA, and the known of the home range for kingfisher (0.25km^2, Musseau *et al.,* 2023; NPWS, 2024) the kingfisher recorded within the Core Ornithology Survey Area are not considered to be associated with the SPA population. There is no potential for *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI population of the SPA.	

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		No pathway for likely significant effects on River Boyne and River Blackwater SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.	
Poulaphouca Reservoir SPA [004063] **Distance to the Proposed Wind Farm:** 26.2km at its nearest point. **Distance to the Proposed Grid Connection:** 18.5km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 39.5km at its nearest point.	› [A043] Greylag Goose (*Anser anser*) › [A183] Lesser Black-backed Gull (*Larus fuscus*)	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. There is no hydrological connectivity between the watercourses which flow through the Project Site and this SPA, and the SPA is underlain by a separate groundwater body, the Kilcullen GWB, to the Project Site. Therefore, there is no potential for indirect effects on the SPA due to deterioration of water quality. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. The SPA is located approximately 18.5km from the Project Site at its nearest point (the Proposed Offsite Substation) and approximately 26.2km from the Proposed Wind Farm. Greylag goose has a core foraging range of 15-20km from night roosts during the winter season (SNH, 2016). However, this species was not recorded within the Core Ornithology Survey Area during any of the extensive ornithological surveys undertaken between 2020 and 2026. Therefore, there is no potential for likely significant effects on the SCI population of this species due to *ex-situ* habitat loss, mortality or disturbance or displacement. Lesser black-backed gull were recorded on a number of occasions within the Core Ornithology Survey Area (see Chapter 7 Ornithology for full details and survey results). The majority of observations were of birds travelling or circling with several observations of birds foraging, roosting or loafing. There were no regular flight paths in any one direction to indicate that the birds observed onsite are commuting to/from Poulaphouca Reservoir SPA. However, lesser black-backed gull have a large foraging range, with an overall mean foraging distance of 30.8km recorded for terrestrial environments (Thaxter *et al.*, 2025). Therefore, given that the Project Site lies within the	**Yes**

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		foraging range of lesser black-backed gull from the Poulaphouca Reservoir SPA, it cannot be ruled out that the birds observed within the Core Ornithology Survey Area are associated with the SPA population. Taking a precautionary approach, the wintering lesser black-backed gull population within the Core Ornithology Survey Area is considered to have the potential to be associated with the SCI population of Poulaphouca Reservoir SPA. Therefore, there is potential for likely significant effects as a result of *ex situ* habitat loss, mortality or disturbance or displacement effects. **A complete source-pathway-receptor chain for likely significant effects on Poulaphouca Reservoir SPA has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site, in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.**	
Lough Ennell SPA [004044] **Distance to the Proposed Wind Farm:** 26.3km at its nearest point. **Distance to the Proposed Grid Connection:** 36.7km at its nearest point. **Distance to the Proposed Turbine accommodation areas:** 20.2km at its nearest point.	› [A059] Pochard (*Aythya ferina*) › [A061] Tufted Duck (*Aythya fuligula*) › [A125] Coot (*Fulica atra*) › [A999] Wetland and Waterbirds	There is no potential for direct effect as the Proposed Project is located entirely outside of this European Site. No pathway for likely significant effects on the SPA due to water quality deterioration was identified as there is no hydrological connectivity between the watercourses which flow through the Project Site and this SPA, and the SPA is underlain by a separate groundwater body, the Clara GWB, to the Project Site. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. The SPA is located approximately 22.0km from the Project Site at its nearest point (the Proposed Turbine Delivery Route accommodation areas) and approximately 26.5km from the Proposed Wind Farm. While pochard, tufted duck and coot are mobile species and may use habitats outside of the SPA, they have small core foraging ranges. Furthermore, none of the SCI species associated with Lough Ennell SPA were recorded within the Core Ornithology Survey Area during any of the	No

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		extensive ornithological surveys undertaken between 2020 and 2026. As such, there is no potential for *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI populations associated with the SPA. **No pathway for likely significant effects on Lough Ennell SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Wicklow Mountains SPA [004040] **Distance to the Proposed Wind Farm:** 32.4km at its nearest point. **Distance to the Proposed Grid Connection:** 24.5km at its nearest point. **Distance to the Proposed Turbine accommodation areas:** 51.4km at its nearest point.	› [A098] Merlin (*Falco columbarius*) › [A103] Peregrine (*Falco peregrinus*)	There is no potential for direct effect as the Proposed Project is located entirely outside of this European Site. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. The SPA is located approximately 24.5km from the Project Site at its nearest point (the Proposed Offsite Substation) and approximately 32.2km from the Proposed Wind Farm. As such, the Proposed Project is located outside of the maximum foraging ranges of merlin (5km; SNH, 2016) and peregrine (18km; SNH, 2016). Therefore, while merlin and peregrine were recorded within the Core Ornithology Survey Area, due to the intervening distance and the known foraging range for these species, these individuals are not associated with the Wicklow Mountains SPA populations. As such, there is no potential for *ex-situ* habitat loss, mortality or disturbance effects on the SCI populations of the SPA. **No pathway for likely significant effects on Wicklow Mountains SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	No
River Nore SPA [004233] **Distance to the Proposed Wind Farm:** 41.3km at its nearest point.	› [A229] Kingfisher (*Alcedo atthis*)	There is no potential for direct effect as the Proposed Project is located entirely outside of this European Site.	No

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Grid Connection: 50.1km at its nearest point. **Distance to the Proposed Turbine accommodation areas:** 29.9km at its nearest point.		The potential for indirect effects has also been considered. No pathway for likely significant effects as a result of water quality deterioration was identified as there is no downstream hydrological connectivity between the watercourses which flow through the Project Site and this SPA, and the SPA is underlain by separate groundwater bodies to the Project Site. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. Kingfisher was recorded within the Core Ornithology Survey Area during bird surveys undertaken to inform this assessment. However, the SPA is remote from the Project Site (approximately 30km from the Proposed Turbine Delivery Route accommodation areas and over 41km from the Proposed Wind Farm), therefore given the distance between the Proposed Project and this SPA, and what is known of the home range for kingfisher (0.25km^2; Musseau *et al.*, 2023; NPWS, 2024), the kingfisher recorded within the Core Ornithology Survey Area are not considered to be associated with the SPA population. As such, there is no potential for significant *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI population of the SPA. **No pathway for likely significant effects on River Nore SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Lough Owel SPA [004047] **Distance to the Proposed Wind Farm:** 34.1km at its nearest point. **Distance to the Proposed Grid Connection:** 42.8km at the nearest point.	› [A125] Coot (*Fulica atra*) › [A857] Shoveler (*Spatula clypeata*) › [A999] Wetland and Waterbirds	There is no potential for direct effect as the Proposed Project is located entirely outside of this European Site. The potential for likely significant indirect effects has also been considered. No pathway for likely significant effects as a result of water quality deterioration was identified as there is no downstream hydrological connectivity between the watercourses which flow through the Project Site and this SPA, and the SPA is underlain by a separate groundwater body, the GWDTE-Lough Owel Fens and Mires GWBs, to the Project Site.	No

European Sites and Distance from Project Site (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Turbine Accommodation Works: 31.3km at the nearest point.		The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. The SPA is located approximately 32.3km from the Project Site at its nearest point (the Proposed Turbine Delivery Route accommodation areas) and approximately 33.8km from the Proposed Wind Farm. While coot and shoveler are mobile species and may use habitats outside of the SPA, they have small core foraging ranges (e.g. 2-3km for shoveler; Johnson *et al.,* 2014). Furthermore, coot were not recorded within the Core Ornithology Survey Area during any of the extensive ornithological surveys undertaken between 2020 and 2026, and an individual shoveler was observed on only one occasion in November 2022. As such, there is no potential for *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI populations of the SPA. **No pathway for likely significant effects on Lough Owel SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Ramsar Sites			
Pollardstown Fen SAC [000396] and Raheenmore Bog SAC [000582] are also recognised as Ramsar Sites under the Ramsar Convention. These sites have been evaluated in detail in the table above in relation to their SAC designations. As such, in line with the above assessments, no pathway for likely significant effect on these Ramsar Sites was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. These Ramsar Sites are not within the Likely Zone of Influence of the Proposed Project. **Therefore, they are not considered further in this assessment.**			No

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

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Natural Heritage Areas (NHAs)			
Daingean Bog NHA [002033] **Distance to the Proposed Wind Farm:** 14.4km at its nearest point **Distance to the Proposed Grid Connection:** 26.5km at its nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 1.7km at its nearest point	› Peatlands [4]	There is no potential for direct effect on these NHAs as the Proposed Project is located entirely outside of these NHAs. There is no surface water or habitat connectivity between the Proposed Project and these NHAs and the peatland habitats for which these NHAs are designated terrestrial in nature. No pathway for likely significant effects on these NHAs due to deterioration of water quality or habitat loss/degradation as a result of the Proposed Project was identified. **No pathway for likely significant effect on Daingean Bog NHA, Hodgestown Bog NHA, Carbury Bog NHA, Black Castle Bog NHA or Hawkswood Bog NHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, these NHAs are not considered further in this assessment.**	No
Hodgestown Bog NHA [001393] **Distance to the Proposed Wind Farm:** 7.4km at its nearest point **Distance to the Proposed Grid Connection:** 2.1km at its nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 19km at the nearest point	› Peatlands [4]		No
Carbury Bog NHA [001388]	› Peatlands [4]		No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 4.1km at its nearest point **Distance to the Proposed Grid Connection:** 9.1km at its nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 11.6km at its nearest point			
Black Castle Bog NHA [000570] **Distance to the Proposed Wind Farm:** 7.0km at its nearest point **Distance to the Proposed Grid Connection:** 15.7km at its nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 7.0km at its nearest point	› Peatlands [4]		No
Hawkswood Bog NHA [002355] **Distance to the Proposed Wind Farm:** 38.5km at its nearest point **Distance to the Proposed Grid Connection:** 38.5km at its nearest point	› Peatlands [4]		No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Turbine Delivery Route accommodation areas: 7.6km at its nearest point			
Proposed Natural Heritage Areas (pNHAs)			
The Long Derries, Edenderry pNHA [000925] **Distance to the Proposed Wind Farm:** The Proposed Wind Farm is directly adjacent to this pNHA. The nearest proposed infrastructure associated with the Proposed Wind Farm (i.e. electrical cabling) is located at a distance of approximately 230m away at its nearest point. **Distance to the Proposed Grid Connection:** 6.1km at the nearest point (i.e. the proposed underground electrical cabling route). **Distance to the Proposed Turbine Delivery Route accommodation areas:** 5.6km at its nearest point. *This site is also an SAC (Table 6-5 above)*	› [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. The closest infrastructure associated with the Proposed Project, i.e. the internal 33kV electrical cabling, internal access roads and Proposed Turbine hardstands is located >230m away. Additionally, the proposed amenity track which follows the proposed new roads will not provide access to or encourage footfall to the pNHA, being located over 250m away. As such there is no potential for likely significant effects on this pNHA as a result of direct habitat loss or fragmentation of the grassland habitat during the construction, operation, or decommissioning phases of the Proposed Project. In terms of potential for indirect effects, The Long Derries, Edenderry pNHA is hydrologically connected to the Project Site via the CODD River (IE_SE_14F010200) which flows in a general northeast to southwest direction within the Project Site, traversing part of the pNHA, then flowing east to west along the pNHA southern boundary. However, given the terrestrial nature of the grassland habitat for which the pNHA is recognised there is no potential for likely significant effects on this pNHA due to deterioration of water quality. The potential for indirect effects on the pNHA arising from dust deposition has also been considered. During the construction phase of the Proposed Project, there is potential for temporary and localised dust generation associated with site preparation, excavation works and construction traffic. The closest infrastructure associated with the Proposed Project is located within 230 metres of the pNHA at its closest point. Therefore, on a highly precautionary basis, there is potential for likely significant effects on the pNHA and its grassland habitat as a result of dust deposition and potential resulting degradation of the habitat.	**Yes**

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		While Japanese knotweed was recorded within the Project Site (see Section 6.3.2.3 below), it was recorded >350m from the nearest infrastructure associated with the Proposed Project and will not be disturbed by the works associated with the Proposed Project. Therefore, there is no potential for likely significant effects on the pNHA as a result of the spread of invasive species. **A complete source pathway receptor chain for likely significant effects on The Long Derries, Edenderry pNHA in the absence of mitigation. Therefore, further assessment is required.**	
Grand Canal pNHA [002104] **Distance to the Proposed Wind Farm:** The Proposed Wind Farm is directly adjacent to this pNHA **Distance from the Proposed Grid Connection:** The Proposed Grid Connection underground electrical cabling crosses the pNHA to the west of Shee Bridge, Co. Kildare **Distance to the Proposed Turbine Delivery Route accommodation areas:** 2.3km at the nearest point	› Calcareous grassland › Woodland › Smooth Newt (*Lissotriton vulgaris*) › Opposite-leaved Pondweed (*Groenlandia densa*) › Otter (*Lutra lutra*)	This pNHA is located immediately adjacent to the northern boundary of the Proposed Wind Farm, to the north of Ticknevin Bog. However, there is no potential for direct effects in this location as the Proposed Wind Farm is located entirely outside of this pNHA. The closest infrastructure associated with the Proposed Wind Farm, i.e. the proposed amenity track in the northernmost section of the Project Site, is located approximately 150m away. Additionally, the nearest Proposed Turbine infrastructure, the Proposed Turbine 32 and associated hardstand and roads, are located over 730m away. As such there is no potential for likely significant effects on the pNHA in this location as a result of direct habitat loss or fragmentation. The Proposed Grid Connection underground electrical cabling route also crosses the Grand Canal pNHA approximately 0.2km to the west of Shee Bridge, Co. Kildare. The Proposed Grid Connection underground electrical cabling route will be installed in this location using Horizontal Directional Drilling (HDD) methodologies as outlined in Section 4.9.2.7.4 of this EIAR, therefore there will be no requirement for in-stream works, minimising interaction with the canal. Furthermore, the HDD launch and receptor pits will be located within artificial amenity grassland and roadways classified as buildings and artificial surfaces. No calcareous grassland, woodland or other terrestrial habitats associated with the Grand Canal pNHA are present at the locations of the HDD launch and receptor pits. Therefore, due to the nature of the works in this location, there is no potential for likely significant effects on this pNHA as a result of direct habitat loss. Additionally, due to the absence of suitable habitat for smooth newt at the locations of the HDD launch and receptor pits, there is no potential for disturbance or mortality of this species as a result of the construction of the Proposed Grid Connection underground electrical cabling route.	**Yes**

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		As outlined in Section 6.3.2.3 below, the invasive macrophyte New Zealand pigmyweed (*Crassula helmsii*) was recorded within the Grand Canal at the location of the Proposed Grid Connection underground electrical cabling route during the baseline aquatic surveys (see Aquatic Baseline Report, Appendix 6-3). However, due to the nature of the HDD works in this location, there will be no in-stream works and therefore no disturbance of this species within the canal. Therefore, there is no potential spread of this species as a result of the Proposed Project, and no potential for likely significant effects on the pNHA as a result of the spread of invasive species. However, due to the proximity of the HDD launch and receptor pits to the canal, surface water quality effects may occur during drilling and groundworks associated with HDD works at the proposed watercourse crossing under the Grand Canal. While the use of HDD will prevent direct effects on the watercourse, there is a risk of indirect effects on the pNHA as a result of sediment laden runoff during the launch pit and reception pit excavation works. There is also the unlikely risk of fracture blow out and contamination of the watercourse with drilling fluid. Therefore, in the absence of mitigation, there is potential for indirect effects on the pNHA due to deterioration of water quality arising from the construction of the Proposed Grid Connection underground electrical cabling route, which could potentially affect aquatic receptors such as otter, smooth newt and opposite-leaved pondweed. Additionally, otter spraint was recorded beneath Shee Bridge during the multi-disciplinary ecological walkover surveys, with feeding signs also recorded along the banks of the Grand Canal to the west. Otter are described as being associated with the Grand Canal pNHA within the site synopsis document[38], therefore, taking a precautionary approach, a potential pathway for indirect effects on this pNHA due to disturbance or displacement of otter has been identified. **A complete source pathway receptor chain for likely significant effects on The Grand Canal pNHA was identified in the absence of mitigation. Therefore, further assessment is required.**	

[38] *Obtained from NPWS [online] Available at: https://www.npws.ie/protected-sites/nha [Accessed 18/08/2026]*

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Ballynafagh Bog pNHA [000391] **Distance to the Proposed Wind Farm:** 7.6km at its nearest point **Distance to the Proposed Grid Connection:** 146 m from the underground electrical cabling route at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 20.4km at the nearest point **Distance via Surface Water:** approximately 740m downstream of the Proposed Grid Connection at the nearest point. *This site is also an SAC (Table 6-5 above)*	› [7110] Active raised bogs* › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. There will be no works within or directly adjacent to the pNHA and no direct loss of any associated habitats. There is no surface water connectivity between the Proposed Wind Farm site and the pNHA or between the Proposed Turbine Delivery Route accommodation areas and the pNHA and therefore no potential for likely significant effects on the pNHA via surface water pathways arising from works at these locations. There is hydrological connectivity between the Proposed Grid Connection and Ballynafagh Bog pNHA via the TEMP_14A46 watercourse (a 1st order stream), which is crossed by the Proposed Grid Connection underground electrical cabling route at Black Stick Crossroads in Prosperous Co. Kildare using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods. The TEMP_14A146 flows into the Slate River (14S01) approximately 560m downstream of the crossing, which in turn flows along the southern boundary of the pNHA at a hydrological distance of 740m from the crossing of the watercourse. In the absence of mitigation, there is potential for indirect effects on the pNHA due to deterioration of water quality arising from run-off of pollutants, including silts, hydrocarbons and cementitious materials, to the TEMP_14A46 watercourse during the construction works associated with the Proposed Grid Connection underground electrical cabling crossing of the TEMP_A14A46. **A complete source pathway receptor chain for likely significant effects on Ballynafagh Bog pNHA has been identified in the absence of mitigation. Therefore, further assessment is required.**	**Yes**
Ballynafagh Lake pNHA [001387] **Distance to the Proposed Wind Farm:** 7.6km at the nearest point **Distance to the Proposed Grid Connection:** 1.5km at the nearest point	› [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) › [1065] Marsh Fritillary (*Euphydryas aurinia*) › [7230] Alkaline fens	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. While this pNHA overlaps with the Ballynafagh Lake SAC, the Blackwood feeder canal is not included within the area of the pNHA. However, due to the connectivity between the Blackwood feeder canal and its inclusion as part of the SAC, is considered within this assessment to provide supporting habitat for the Ballynafagh Lake pNHA. However, the canal has been largely infilled, including at the location of the proposed crossing and was dry in nature at the time of survey and characterised by the presence of scrubby vegetation with no alkaline fen or suitable habitat for Desmoulin's whorl snail or marsh fritillary present. Furthermore, no in-channel works	**Yes**

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Turbine Delivery Route accommodation areas: 20.3km at the nearest point *This site is also an SAC (Table 6-5 above)*		will be required to facilitate the crossing as the cables will be laid within the existing road (R403) bridge which crosses over the feeder canal using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods. There is no potential for direct loss of any supporting habitats associated with the pNHA as a result of the Proposed Project. Additionally, there is no surface water connectivity between the Proposed Wind Farm site and the pNHA or between the Proposed Turbine Delivery Route accommodation areas and the pNHA and therefore no potential for likely significant effects on the pNHA via surface water pathways arising from works at these locations has been identified. However, in the absence of mitigation, there is potential for likely significant effects on the pNHA due to deterioration of water quality during the crossing of the Blackwood feeder canal by the Proposed Grid Connection underground electrical cabling route. This could arise due to run-off of pollutants, including silts, rubble, hydrocarbons and cementitious material to the canal during the excavation of trenches and laying of the Proposed Grid Connection underground electrical cabling in the existing road bridge. The feeder canal has been largely infilled and no flowing water was present at the location of the crossing or 150m up or downstream during the surveys undertaken. Nonetheless, there is potential for water to be present at different locations in the canal at different times of the year and for contaminated water to make its way to parts of the feeder canal where flowing water may be present and therefore the identification of this potential pathway is based on very precautionary approach. Deterioration of water quality has potential to result in degradation of alkaline fen and supporting habitat for Desmoulin's whorl snail where they occur downstream of the works, within supporting habitat for the pNHA. Both alkaline fen and Desmoulin's whorl snail are groundwater dependent receptors. The easternmost sections of the Proposed Wind Farm and the Proposed Grid Connection underground electrical cabling works are underlain by the same GWB as Ballynafagh Lake pNHA, the Kildare GWB. Therefore, in the absence of mitigation, there is potential for indirect effects on the pNHA due to deterioration of groundwater quality arising from percolation of pollutants, including silts and hydrocarbons, to groundwater during construction, operation and decommissioning of the Proposed Project.	

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		In relation to potential changes in groundwater levels/flow, as outlined in Chapter 9 Water of this EIAR, while dewatering associated with works in the Proposed Wind Farm may cause temporary local changes in groundwater flows and levels, these will be temporary and are unlikely to be significant beyond 50m from any excavation. The Proposed Grid Connection underground cable trench will be shallow in nature and as outlined in Section 9.5.2.22 of Chapter 9 of this EIAR will not interact with deep groundwater or cause any changes to groundwater flow or levels. Taking the above into account, no significant effects on the local groundwater table or flows which could affect the pNHA will occur due to the construction of the Proposed Project. **A complete source pathway receptor chain for likely significant effects on Ballynafagh Lake pNHA has been identified in the absence of mitigation. Therefore, further assessment is required.**	
Donadea Wood pNHA [001391] **Distance to the Proposed Wind Farm:** 11.8km at the nearest point **Distance to the Proposed Grid Connection:** 4.6km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 23.2km at the nearest point	› Broadleaved woodland	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. This pNHA is recognised for a terrestrial habitat and is located 4.6km from the Proposed Project at its closest point (i.e. the Proposed Grid Connection underground electrical cabling route). There is no potential pathway for likely significant effects on the pNHA. **No pathway for likely significant effect on Donadea Wood pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	No
Raheen Lough pNHA [000917] **Distance to the Proposed Wind Farm:** 16.6km at the nearest point	› Wetlands › Whooper Swan (*Cygnus cygnus*) › Goldeneye (*Bucephala clangula*) › Pochard (*Aythya ferina*)	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. No pathway for indirect effects as a result of water quality deterioration was identified as there is no surface water connectivity between the Proposed Project and this pNHA. Additionally, this pNHA is underlain by a separate GWB, the Portlaoise GWB, to the Project Site.	No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Grid Connection: 26.9km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 5.2km at the nearest point	› Mallard (*Anas platyrhynochos*) › Shoveler (*Spatula clypeata*) › Pintail (*Anas acuta*) › Greenshank (*Tringa nebularia)* › Jack Snipe (*Lymnocryptes minimus*) › Purple Sandpiper (*Calidris maritima*) › Heron (Ardea cinerea) › Kingfisher (*Alcedo atthis*) › Little Grebe (*Tachybaptus ruficollis*) › Great Crested Grebe (*Podiceps cristatus*)	The potential for *ex-situ* effects on the listed bird species where they occur outside of this pNHA has also been considered. The pNHA is located approximately 5.2km from the Project Site at its nearest point (Proposed Turbine Delivery Route accommodation area) and approximately 16.6km from the Proposed Wind Farm. As such, the Proposed Project is located outside of the core foraging range for the listed species (SNH, 2016; Johnston *et al*., 2013). Therefore, due to the intervening distance and the known foraging range for these species, there is no potential for *ex-situ* effects on species associated with this pNHA. **No pathway for likely significant effect on Raheen Lough pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	
Mouds Bog pNHA [000395] **Distance to the Proposed Wind Farm:** 5.9km at the nearest point **Distance to the Proposed Grid Connection:** 6.6km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 18.8km at the nearest point	› [7110] Active raised bogs* › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	There is no potential for direct effect as the Proposed Project is located entirely outside of these pNHAs. No pathway for likely significant effects on these pNHAs as a result of surface water quality deterioration was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and these pNHAs. Furthermore, as the habitats for which these pNHAs are recognised are terrestrial in nature and located over 5km from the Project Site, there is no potential for likely significant effects on these habitats as a result of the Proposed Project.	No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
This site is also an SAC (Table 6-5 above)		**No pathway for likely significant effect on Mouds Bog pNHA or Liffey at Osberstown pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, they are not considered further in this assessment.**	
Liffey At Osberstown pNHA [001395] **Distance to the Proposed Wind Farm:** 14.1km at the nearest point **Distance to the Proposed Grid Connection:** 6.0km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 27.6km at the nearest point	› Riverside vegetation › Scarce plant species – Dark leaved willow (*Salix myrsinifolia*) and Variegated horsetail (*Equisetum variegatum*)		No
Raheenmore Bog pNHA [000582] **Distance to the Proposed Wind Farm:** 16.4km at the nearest point. **Distance to the Proposed Grid Connection:** 28.4km at the nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 7.3km at the nearest point *This site is also an SAC (Table 6-5 above)*	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*		No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Pollardstown Fen pNHA [000396] **Distance to the Proposed Wind Farm:** 7.6km at the nearest point **Distance to the Proposed Grid Connection:** 9.5km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 19.2km at the nearest point *This site is also an SAC (Table 6-5 above)*	› [1013] Geyer's Whorl Snail (*Vertigo geyeri*) › [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*) › [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) › [7210] Calcareous fens with *Cladium marisus* and species of the *Caricion davallianae** › [7220] Petrifying springs with tufa formation (*Cratoneurion*)* › [7230] Alkaline fens	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. No pathway for indirect effects on the pNHA was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and this pNHA and therefore no potential for likely significant effects due to deterioration of water quality via surface water pathways. Furthermore, while this pNHA is recognised for a number of groundwater-dependent habitats and species, no pathway for likely significant effects as a result of groundwater quality deterioration or altered groundwater levels or flows was identified as this pNHA is underlain by a separate groundwater body, the Curragh aquifer catchments, to the Project Site. **No pathway for likely significant effect on Pollardstown Fen pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	No
Curragh (Kildare) pNHA [000392] **Distance to the Proposed Wind Farm:** 8.5km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 18.5km at the nearest point **Distance to the Proposed Grid Connection:** 11.1km at the nearest point	› Limestone bedrock › Wet heath › Dry heath › Lowland acid grassland › Golden plover (*Pluvialis apricaria*)	There is no potential for direct effects as the Proposed Project is located entirely outside of this pNHA. No pathway for likely significant effects on this pNHA as a result of surface water quality deterioration was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and this pNHA. Furthermore, as the habitats for which this pNHA is recognised are terrestrial in nature and located over 8km from the Project Site, there is no potential for likely significant effects on these habitats as a result of the Proposed Project. The potential for *ex-situ* effects on the species described within the site synopsis document where they occur outside of this pNHA has also been considered. Golden plover were recorded within the Core Ornithology Survey Area on numerous occasions during bird surveys undertaken to inform this EIAR (see Chapter 7 Ornithology for full details and survey results). This pNHA is	**Yes**

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		located approximately 8.5km from the Project Site at its nearest point as such, while located outside the core foraging range of this species (3km; SNH, 2016), the Project Site is located within the maximum foraging range for golden plover (11km; SNH, 2016). Therefore, on a highly precautionary basis and based on observations obtained during the extensive suite of ornithological surveys undertaken between 2020 and 2026, the population of golden plover utilising the Project Site may be associated with the Curragh (Kildare) pNHA population. Therefore, there is potential for likely significant effects on *ex situ* populations linked to the pNHA. **A complete source pathway receptor chain for likely significant effects on The Curragh (Kildare) pNHA has been identified in the absence of mitigation. Therefore, further assessment is required.**	
Murphy's Bridge Esker pNHA [001775] **Distance to the Proposed Wind Farm:** 22.5km at the nearest point **Distance to the Proposed Grid Connection:** 34.5km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 8.7km at the nearest point	› Calcareous grassland	There is no potential for direct effect as the Proposed Project is located entirely outside of these pNHAs. These pNHAs are recognised for terrestrial habitats and is located over 9km from the Proposed Project at their closest points. There is no potential pathway for likely significant effects on these pNHAs. **No pathway for likely significant effect on Murphy's Bridge Esker pNHA, Clonad Wood pNHA or Rahugh Ridge (Kiltober Esker) pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, they are not considered further in this assessment.**	No
Clonad Wood pNHA [000574] **Distance to the Proposed Wind Farm:** 28.8km at the nearest point **Distance to the Proposed Grid Connection:** 40.1km at the nearest point	› Deciduous woodland		No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Turbine Delivery Route accommodation areas: 9.2km at the nearest point			
Rahugh Ridge (Kiltober Esker) pNHA [000918] **Distance to the Proposed Wind Farm:** 21.1km at the nearest point **Distance to the Proposed Grid Connection:** 32.7km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 9.4km at the nearest point	› Oak-ash-hazel woodland		No
Charleville Wood pNHA [000571] **Distance to the Proposed Wind Farm:** 28.4km at the nearest point **Distance to the Proposed Grid Connection:** 40.2km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 9.5km at the nearest point	› [91E0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*) › [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)	The Proposed Construction Haul Route between Kilsaran Concrete (Bunaterin, Tullamore) and the Project Site is located along the existing N52 road, which passes through this pNHA. However, there will be no works required along the N52 to facilitate construction traffic, therefore no pathway for direct effects as a result of habitat loss or fragmentation was identified. There is no hydrological connectivity between the Project Site and this pNHA via surface or ground water pathways. There is no hydrological connectivity between the watercourses which flow through the Project Site and this pNHA, and this pNHA is underlain by a separate GWB, the Geashill GWB, to the Proposed Project. Therefore, no pathway for likely significant effects on this pNHA was identified as a result of ground or surface water quality deterioration. The potential for indirect effects arising from potential dust deposition during the transportation of construction materials along the Proposed Construction Haul Route to the Project Site was also	No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
This pNHA overlaps with the Proposed Construction Haul Routes along the existing N52 road. *This site is also an SAC (Table 6-5 above)*		considered. The Proposed Construction Haul Route which passes through this pNHA will be used by HGVs to deliver stone and ready-mix concrete from Kilsaran batching plant, Bunaterin, Co. Offaly to the Project Site. The Proposed Construction Haul Route runs along the existing N52 road, which is a tarmacadam surface, which will not generate significant dust according to Chapter 10 'Air Quality' Section 10.3.2.2 of this EIAR. Therefore, there is no potential for significant effects on the pNHA due to dust deposition during the transportation of construction materials to the Project Site. **No pathway for likely significant effect on Charleville Wood pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	
Ballina Bog pNHA [000390] **Distance to the Proposed Wind Farm:** 9.9km at the nearest point **Distance to the Proposed Grid Connection:** 14.3km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 16.5km at the nearest point	› Peatlands	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. No pathway for likely significant effects on Ballina Bog pNHA as a result of surface water quality deterioration was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and this pNHA. Furthermore, as the peatland habitats for which this pNHA is recognised are ombrotrophic, terrestrial in nature and located over 9km from the Project Site, there is no potential for likely significant effects on these habitats as a result of the Proposed Project. **No pathway for likely significant effect on Ballina Bog pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	No
Royal Canal pNHA [002103] **Distance to the Proposed Wind Farm:** 11.8km at the nearest point	› Canals › Otter (*Lutra lutra*) › Opposite-leaved Pondweed (*Groenlandia densa*)	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. No pathway for likely significant effects on the Royal Canal pNHA as a result of surface water quality deterioration was identified. There is no hydrological connectivity between the watercourses	No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Grid Connection: 14.3km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 18.9km at the nearest point	› Tassel stonewort (*Tolypella intricate*)	which flow through the Project Site and this pNHA. As such, there is no potential for likely significant effects on the habitats as a result of water quality deterioration as a result of the Proposed Project, and no potential for disturbance of otter associated with the pNHA. **No pathway for likely significant effect on Royal Canal pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	
Liffey Bank Above Athgarvan pNHA [001396] **Distance to the Proposed Wind Farm:** 15.6km at the nearest point **Distance to the Proposed Grid Connection:** 14.1km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 27.5km at the nearest point	› Open natural grassland	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. Liffey Bank Above Athgarvan pNHA is recognised for terrestrial grassland habitats and is located over 14km from the Proposed Project at its closest point. There is no potential pathway for likely significant effects on this pNHA. **No pathway for likely significant effect on Liffey Bank Above Athgarvan pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	No
Ballynabarny Fen pNHA [001573] **Distance to the Proposed Wind Farm:** 14.9km at the nearest point **Distance to the Proposed Grid Connection:** 19.9km at the nearest point	› Fen habitat › Variegated horsetail (*Equisetum variegatum*)	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. No pathway for likely significant effects on Ballynabarny Fen pNHA as a result of surface water quality deterioration was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and this pNHA, which is located along the western banks of the Royal Canal. Furthermore, as the peatland habitats for which this pNHA is recognised are ombrotrophic, terrestrial in nature and located over 9km from the Project Site, there is no potential for likely significant effects on these habitats as a result of the Proposed Project.	No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Turbine Delivery Route accommodation areas: 27.5km at the nearest point		The northernmost part of the Proposed Wind Farm (Ticknevin bog) lies within the same groundwater body (Trim) as Ballynabary Fen pNHA. The pNHA is recognised for a groundwater dependent habitat i.e. fens. Some dewatering may be required during the construction of the Proposed Project, which may cause temporary local changes in groundwater flows and levels. However, as outlined within Chapter 9 Water, water level impacts will be temporary and are unlikely to be significant beyond 50m from any excavation. Therefore, due to the intervening distance between the pNHA and the likely ZoI for hydrogeological effects, there is no potential for likely significant effects on the groundwater-dependent habitats within the pNHA as a result of impacts to groundwater levels or flows as a result of the construction of the Proposed Wind Farm. **No pathway for likely significant effect on Ballynabarny Fen pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	
Barrow Valley at Tankardstown Bridge pNHA [000858] **Distance to the Proposed Wind Farm:** 31.9km at the nearest point **Distance to the Proposed Grid Connection:** 35.9km at the nearest point **Distance to the Proposed Turbine Delivery Route accommodation areas:** 39.0km at the nearest point **Distance via Surface Water:** approximately 50.2km from the	› Lowland depositing river › Canal › Grassland › Marsh	There is no potential for direct effect as the Proposed Project is located entirely outside of this pNHA. There is surface water connectivity between the Project Site and this pNHA via drainage ditches and watercourses within the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route. However, this pNHA is located over 50km downstream of the Project Site at its nearest point (the Proposed Wind Farm). Therefore, due to the intervening distance between the Project Site and this pNHA, along with the attenuating and diluting properties of the intervening watercourse, any changes in water quality as a result of the Proposed Project would not have the potential to have a significant effect on the aquatic habitats associated with this pNHA. **No pathway for likely significant effect on Barrow Valley at Tankardstown Bridge pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, it is not considered further in this assessment.**	No

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Proposed Wind Farm at its nearest point. *This site located within the River Barrow and River Nore SAC*			
Poulaphouca Reservoir pNHA [000731] **Distance to the Proposed Wind Farm:** 26.2km at its nearest point. **Distance to the Proposed Grid Connection:** 18.5km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 39.5km at its nearest point. *This site is also an SPA (Table 6-5 above)*	› [A043] Greylag Goose (*Anser anser*) › [A183] Lesser Black-backed Gull (*Larus fuscus*)	There is no potential for direct effect as the Project Site is located entirely outside of this pNHA. There is no hydrological connectivity between the watercourses which flow through the Project Site and this pNHA, and the pNHA is underlain by a separate groundwater body, the Kilcullen GWB, to the Project Site. Therefore, there is no potential for indirect effects on the pNHA due to deterioration of water quality. The potential for *ex-situ* effects on bird species where they occur outside the pNHA is also considered. The pNHA is located approximately 18.5km from the Project Site at its nearest point (the Proposed Offsite Substation) and approximately 26.2km from the Proposed Wind Farm. Greylag goose has a core foraging range of 15-20km from night roosts during the winter season (SNH, 2016). However, this species was not recorded within the Core Ornithology Survey Area during any of the extensive ornithological surveys undertaken between 2020 and 2026 (see Chapter 7 Ornithology for full details and survey results). Therefore, there is no potential for likely significant effects on the population of this species associated with the pNHA due to *ex-situ* habitat loss, mortality or disturbance or displacement. Lesser black-backed gull were recorded on a number of occasions during bird surveys undertaken to inform this EIAR (see Chapter 7 Ornithology for full details and survey results). The majority of observations were of birds travelling or circling with several observations of birds foraging, roosting or loafing. There were no regular flight paths in any one direction to indicate that the birds observed onsite are commuting to/from Poulaphouca Reservoir pNHA. However, lesser black-backed gull have a large foraging range, with an overall mean foraging distance of 30.8km recorded for terrestrial environments (Thaxter *et al.*, 2025). Therefore, given that the Project Site lies within the foraging range of lesser black-backed gull from the Poulaphouca Reservoir pNHA, it	

Nationally Designated Sites and Distance from Project Site (km)	Features of Interest (as per the Site Synopsis documents for each NHA/pNHA)	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
		cannot be ruled out that the birds observed within the Core Ornithology Survey Area are associated with the SPA population. Taking a precautionary approach, the wintering lesser black-backed gull population within the Core Ornithology Survey Area is considered to have the potential to be associated with the population of Poulaphouca Reservoir pNHA. Therefore, there is potential for likely significant effects on *ex situ* populations linked to the pNHA. **A complete source-pathway-receptor chain for likely significant effects on Poulaphouca Reservoir pNHA has been identified in the absence of mitigation. Therefore, further assessment is required.**	

Designated Sites within the Likely Zone of Influence

Potential pathways for likely significant effects on the following European Sites were identified in the absence of mitigation and are assessed further in the NIS which has also been submitted with the planning application for the Proposed Project:

- The Long Derries, Edenderry SAC [000925]
- Ballynafagh Lake SAC [001387]
- Ballynafagh Bog SAC [000391]
- River Barrow and River Nore SAC [002162]
- Poulaphouca Reservoir SPA [004063]

Potential pathways for likely significant effects on the following Nationally Designated Sites were also identified in the absence of mitigation and as such are assessed further within this Biodiversity Chapter:

- The Long Derries, Edenderry pNHA [000925]
- Grand Canal pNHA [002104]
- Ballynafagh Bog pNHA [000391]
- Ballynafagh Lake pNHA [001387]
- Curragh (Kildare) pNHA [000392]
- Poulaphouca Reservoir pNHA [000731]

No potential for likely significant effects on any Ramsar Sites were identified as a result of the Proposed Project.

6.3.1.2 NPWS Article 17 Reporting

The most recent National Parks and Wildlife Service (NPWS, 2025) data on the recorded distribution of EU Habitats Directive Annex I listed habitats was reviewed in relation to the Project Site. Data is available in the form of the NPWS (2025) Article 17 reporting, and the 2019 GIS data, on '*The Status of EU Protected Habitats and Species in Ireland*' (NPWS, 2019).

The NPWS GIS datasets contain polygon data within the Project Site classified as Raised bog (active) [7110], located in Ballydermot South bog. Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)* important orchid sites [6210] is also present within the Long Derries, Edenderry SAC/pNHA, located immediately adjacent to the Project Site. Bog woodland [91D0] is located directly adjacent to the Project Site along the boundaries of Glashabaun North and South bogs. Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] are present at the location of Lullymore Heritage and Discovery Park, approximately 160m outside of the Project Site. Additional areas of Bog woodland [71D0] are located approximately 4.4km north of the Project Site, associated with Carbury Bog NHA, and areas of Active raised bog [7110] are also present approximately 5.5km west and 7.8km southeast of the Project Site, the latter being associated with Mouds Bog SAC/pNHA. An area mapped as Annex I *Molinia* meadows [6410] is present approximately 5.4km southwest of the Project Site.

Along the Proposed Grid Connection underground electrical cabling route, Alkaline fen [7230] is located approximately 250m and 1.6km to the north, and 1.4km to the south, all within Ballynafagh Lake SAC/pNHA. Areas of North Atlantic wet heaths with *Erica tetralix* [4010] are also located within Ballynafagh Lake SAC/pNHA, approximately 1.8km to the north of the Proposed Grid Connection underground electrical cabling route. Additionally, areas of Bog woodland [91D0] are also present approximately 2.1km to the north of the Proposed Grid Connection, associated with Hodgestown Bog NHA, and Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] is located approximately 1.7km to the south of the Proposed Grid Connection underground electrical cabling route, associated with Grand Canal pNHA.

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 Project Site, primarily within Lullybeg Butterfly Reserve and Lullymore West Nature Reserve, with further records from Killina, Lodge and Ballydermot North bogs.

The Annex II species Desmoulin's whorl snail (*Vertigo moulinsiana*) has also been recorded within Ballynafagh Lake SAC both up and downstream of the Proposed Grid Connection underground electrical cabling route, as well as by the Grand Canal at Cloncurry, approximately 1.7km to the southeast of the Project Site.

Atlantic salmon (*Salmo salar*) and brook lamprey (*Lampetra planeri*) are two Annex II listed fish species that have been mapped within hectads N52, N62, N63, N72 and N82 in which the Proposed Project is located, while Atlantic salmon has additionally been recorded within hectad N42. These species are both listed as QIs of the River Barrow and River Nore SAC. Additionally, there are nine records of white-clawed crayfish (*Austropotamobius pallipes*) within the Proposed Wind Farm site, within tributaries of the Figile River, as well as further records downstream of the Project Site within both the Slate and Figile Rivers. These records date to between 2009 and 2017. There are also several mapped records of Annex II otter (*Lutra lutra*) within tributaries of the Figile River in the Proposed Wind Farm site, as well as downstream of the Project Site within this watercourse. There are also records of otter at three of the watercourse crossings associated with the Proposed Grid Connection underground electrical cabling route, as well as up and downstream within the Slate River.

Six of the nine Irish bat species, all listed under Annex IV of the Habitats Directive, have been recorded within the hectads overlapping the Project Site. Common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Leisler's bat (*Nyctalus leisleri*) have been recorded within all six hectads (N42, N52, N62, N63, N72 and N82) in which the Proposed Project is located. Daubenton's bat (*Myotis daubentonii*) has been recorded from five hectads (N42, N62, N63, N72 and N82), while brown long-eared bat (*Plecotus auritus*) and whiskered bat (*Myotis mystacinus*) have each been recorded in two hectads (both N62 and N63).

There are also 14 records of the Annex V species Irish hare (*Lepus timidus*) within the Project Site, as well as seven records of common frog (*Rana temporaria*) and 14 records of pine marten (*Martes martes*), with further records each species within 100m of the Project Site. White cushion moss (*Leucobryum glaucum*) is also an Annex V listed bryophyte which has been mapped within the remnant raised bogs at Lodge Bog and Ticknevin Bog, between 0.1km and 0.9km outside the Project Site.

6.3.1.2.1 Other NPWS Datasets

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 Project Site.

During the National Survey of Native Woodlands 2003-2008, areas of native woodland were surveyed immediately adjacent to the Project Site, at Killinthomas Woods. These were identified as Mixed broadleaved/conifer woodland (WD1/WD2; Fossitt) and Oak-ash-hazel woodland (WN2), however were not identified as being Annex I in nature at the time of survey. This is identified within the Ancient and Long-Established Woodland dataset as being a *'Long-established woodland for which no evidence of antiquity could be found in older documentation'.*

An area of Bog woodland (WN7) and Oak-birch-holly woodland (WN1) was also surveyed during the National Survey of Native Woodlands 2003-2008 at the location of Lullymore Heritage and Discovery Park, located approximately 160m outside the Project Site. The area of oak-birch-holly woodland was identified as corresponding to Annex I Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]. This area was included within the Article 17 mapping outlined in the preceding section. The area of bog woodland did not correspond to any Annex I habitats. A small area of Bog

woodland/Mixed-broadleaved/conifer woodland (WN7/WD2) was also surveyed immediately to the south of the Proposed Grid Connection underground electrical cabling route along the R403 regional road, however this was not identified as corresponding to any Annex I habitats. Additional woodlands were surveyed as part of the National Survey of Native Woodlands 2003-2008 within the vicinity of the Project Site, however no further Annex I habitats were recorded.

During the Irish Semi-Natural Grassland Survey 2007-2012, two areas within the Project Site were surveyed. A Wet grassland (GS4) was surveyed at the location of Lullymore West Nature Reserve, extending beyond the Project Site, and a small area of Dry meadows and grassy verges (GS2) was surveyed approximately 280m to the south of this. Neither area was found to correspond to any Annex I grassland habitats. Areas of Wet grassland (GS4) and Marsh (GM1) were surveyed approximately 1.7km to the south of the Proposed Grid Connection underground electrical cabling route, within Grand Canal pNHA. The area of marsh was found to correspond to the Annex I habitat Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]. This area was included within the Article 17 mapping outlined in the preceding section. Additional grasslands were surveyed approximately 270m to the east, 540m to the north and 2.3km to the west of the Project Site, however no Annex I habitats were recorded.

No areas within or in the vicinity of the Project Site were included within the Grasslands Monitoring Survey 2015-2017 or the Floodplains and Callows Grasslands in Ireland 2023 datasets.

6.3.1.3 Vascular Plants

A search was undertaken of 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, The Ireland Red List No. 10 Vascular Plants (Wyse Jackson *et al.* 2016) or the Flora (Protection) Order 2022 had been recorded in the relevant hectads in which the Project Site is situated (N42, N52, N62, N63, N72 and N82). Records contained within this New Flora Atlas date from Pre-1970 up to 1999. Species of conservation concern for which there are records in these hectads are listed in Table 6-7 below.

Table 6-7 Species listed under Annex II of the Habitats Directive, the Flora Protection Order (2022) or the Irish Red List of Vascular Plants within hectads N42, N52, N62, N63, N72 or N82 – Pre 1970 up to 1999

Common name	Scientific name	Status	Hectads
Fragrant agrimony	*Agrimonia procera*	NT	N62
Black horehound	*Ballota nigra*	NT	N63, N82
Moonwort	*Botrychium lunaria*	NT	N82
Smooth brome	*Bromus commutatus*	NT	N42
Slender thistle	*Carduus tenuiflorus*	NT	N63, N72
Rough chervil	*Chaerophyllum temulum*	VU	N63
Corn marigold	*Chrysanthemum segetum*	NT	N72
Basil thyme	*Clinopodium acinos*	NT	N62, N63
Frog orchid	*Coeloglossum viride*	NT	N63, N72
Dwarf spurge	*Euphorbia exigua*	NT	N63, N82
Red hemp-nettle	*Galeopsis angustifolia*	VU	N62

Common name	Scientific name	Status	Hectads
Autumn gentian	*Gentianella amarella*	NT	N62, N63, N82
Opposite-leaved pondweed	*Groenlandia densa*	NT	N72
Henbane	*Hyoscyamus niger*	NT	N63
Green-winged orchid	*Orchis morio*	VU	N62, N63
Round-leaved wintergreen	*Pyrola rotundifolia* subsp. *rotundifolia*	NT	N63
Brown beak-sedge	*Rhynchospora fusca*	NT	N72
Green figwort	*Scrophularia umbrosa*	NT	N63, N72, N82
Least bur-reed	*Sparganium natans*	NT	N52, N63, N82
Marsh fern	*Thelypteris palustris*	NT	N62
Narrow-fruited cornsalad	*Valerianella dentata*	VU	N63
Vervain	*Verbena officinalis*	NT	N82

Red List Status – NT -Near Threatened, VU -Vulnerable (Wyse-Jackson et al., 2016)

The NPWS Flora (Protection) Order 2022 online map viewer[11] was also consulted on the 23rd of July 2026 for records of FPO species within or adjacent to the Project Site or the hectads overlapping the Project Site. Within hectad N62, and specifically monad (1km x 1km square) N6228, three records of red hemp-nettle (*Galeopsis angustifolia*) were identified, all dating to 1991 and located within Sheridan's Sand Pit, located over 600m outside the Project Site. Within hectad N42, and specifically monad N4627 there is a single record of opposite-leaved pondweed (*Groenlandia densa*) dating to 2011. The Grand Canal flows through this monad. A further nine records of opposite-leaved pondweed were identified in hectad N72, seven of which are located within monad N7826, along the Grand Canal near Kilmeague, Co. Kildare. The records of this species within hectad N72 date from 1898, 1992 and 1993. No FPO species were identified within the hectads N52, N63 or N82.

6.3.1.4 Bryophytes

A search of the NPWS online database for bryophytes[9] (non-vascular land plants comprising of mosses, hornworts and liverworts) was undertaken to establish whether there are records for protected bryophytes within and in the vicinity of the Project Site. The desktop search indicated that no protected bryophytes have been recorded within or adjacent to the Project Site.

6.3.1.5 National Biodiversity Data Centre Records

A search of the NBDC website was conducted in advance of undertaking field surveys between 2020 and 2026, and an updated search was carried out on the 8th of July 2026. This helped to inform survey effort and provide a baseline of likely species composition in the area. Records relating to protected fauna, pollinators and invasive species are presented in the following subsections.

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

6.3.1.5.1 Fauna

Records of protected fauna (excluding birds and pollinators) recorded from hectads N42, N52, N62, N63, N72 and N82 are provided in Table 6-8 below.

Table 6-8 NBDC records for protected species and species of conservation interest (excluding birds and pollinators) in hectads N42, N52, N62, N63, N72 and N82

Common name	Scientific name	Designation	Hectad
Otter	*Lutra lutra*	Annex II, Annex IV, WA	N42, N52, N62, N63, N72, N82
White-clawed crayfish	*Austropotamobius pallipes*	Annex II, Annex V, WA	N42, N52, N62, N72, N82
Brown Long-eared Bat	*Plecotus auritus*	Annex IV, WA	N42, N62, N63, N72, N82
Common Pipistrelle	*Pipistrellus pipistrellus*	Annex IV, WA	N52
Common Pipistrelle	*Pipistrellus pipistrellus sensu stricto*	Annex IV, WA	N42, N62, N63, N72, N82
Daubenton's Bat	*Myotis daubentonii*	Annex IV, WA	N42, N52, N63, N72, N82
Leisler's Bat	*Nyctalus leisleri*	Annex IV, WA	N42, N52, N62, N63, N72, N82
Nathusius' Pipistrelle	*Pipistrellus nathusii*	Annex IV, WA	N42, N82
Natterer's Bat	*Myotis nattereri*	Annex IV, WA	N72, N82
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	Annex IV, WA	N42, N52, N63, N82
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Annex IV, WA	N42, N52, N62, N63, N72, N82
Whiskered Bat	*Myotis mystacinus*	Annex IV, WA	N62, N63
Common Frog	*Rana temporaria*	Annex V, WA	N42, N52, N62, N63, N72, N82
Irish Hare	*Lepus timidus* subsp. *hibernicus*	Annex V, WA	N42, N52, N62, N63, N72, N82
Pine Marten	*Martes martes*	Annex V, WA	N42, N52, N62, N63, N72, N82
Badger	*Meles meles*	WA	N42, N52, N62, N63, N72, N82
Common Lizard	*Zootoca vivipara*	WA	N42, N72, N82
Fallow Deer	*Dama dama*	WA	N42, N52, N62, N63, N72

Common name	Scientific name	Designation	Hectad
Hedgehog	*Erinaceus europaeus*	WA	N42, N52, N62, N63, N72, N82
Irish Stoat	*Mustela erminea* subsp. *hibernica*	WA	N42, N52, N62, N63, N82
Pygmy Shrew	*Sorex minutus*	WA	N42, N52, N62, N63, N72, N82
Red Squirrel	*Sciurus vulgaris*	WA	N42, N52, N62, N63, N72, N82
Smooth Newt	*Lissotriton vulgaris*	WA	N42, N62, N63, N72, N82

Annex II, Annex IV, Annex V – of EU Habitats Directive; WA –Wildlife Acts (as amended).

6.3.1.5.2 Pollinator Species

Records of rare and protected pollinator species (butterflies, bees and moths) recorded from hectad N62 and tetrads N72B, N72C and N72H in which the pollinator and moth surveys were undertaken are provided in Table 6-9 below. Information on their key foodplant, habitat and when and how to find each species was also sourced from NBDC species profiles, Ireland's Red List No. 9: Macro-moths (Lepidoptera) (Allen *et al.,* 2016), *The Irish Butterfly Book* (Harding, 2021) and *Field guide to the Moths of Great Britain and Ireland* (Waring and Townsend, 2017) in order to inform survey effort and survey locations.

Table 6-9 NBDC records for rare and protected pollinator species in hectad N63 and tetrads N72B, N72C and N72H

Group	Species	Status	Key foodplant / habitat	When and how to find
Butterflies	**Marsh Fritillary** (*Euphydryas aurinia*)	Annex II, VU	Devil's-bit scabious	Adults late May–June on scabious-rich grassland; larval webs Aug–Sep on Devil's-bit Scabious.
	Wall (*Lasiommata megera*)	EN	Fine grasses, bare ground	Two broods (May–June, August–September); basks on bare/stony ground, esker edges and tracks.
	Large Heath (*Coenonympha tullia*)	VU	Hare's-tail cottongrass; bog	June–July on intact/cutover bog and wet heath; weak flier, keeps low over Eriophorum.
	Dark Green Fritillary (*Speyeria aglaja*)	VU	Marsh/dog violet; Knapweed nectar	July–August, fast-flying; nectars on Knapweed and thistles in open grassland.
	Dingy Skipper (*Erynnis tages*)	NT	Bird's-foot trefoil	Late April–June on warm, sparsely vegetated calcareous grassland; basks on bare ground.
	Grayling (*Hipparchia semele*)	NT	Fine grasses, bare ground	July–August on dry, stony/esker ground; very cryptic at rest, watch for short flights.

Group	Species	Status	Key foodplant / habitat	When and how to find
	Small Heath (*Coenonympha pamphilus*)	NT	Fine grasses	May–September; low, fluttery flight over short grassland; always rests with wings closed.
	Wood White (*Leptidea sinapis*)	NT	Vetches, bird's-foot trefoil	May–June (–Aug); slow, weak flight along scrub edges, tracks and clearings.
Bees	**Gooden's Nomad Bee** (*Nomada goodeniana*)	EN	Cleptoparasite of *Andrena*	Spring; around mining-bee aggregations on warm bare ground / esker banks.
	Gypsy Cuckoo Bee (*Bombus bohemicus*)	NT	Parasite of *Bombus lucorum* agg.	Spring–summer; in/around White-tailed Bumblebee nesting areas.
	Moss Carder Bee (*Bombus muscorum*)	NT	Clovers, vetches, knapweed	June–September on flower-rich grassland; ginger thorax, all-pale hairs.
	Red-tailed Bumblebee (*Bombus lapidarius*)	NT	Wide forage; knapweed, clovers	April–September; black with red tail; common on open grassland flowers.
Moths	**Forester** (*Adscita statices*)	EN	Common sorrel; grassland	June–July; metallic green day-flier on unimproved grassland, nectars on knapweed/scabious.
	Narrow-bordered Five-spot Burnet (*Zygaena lonicerae*)	VU	Bird's-foot trefoil / clovers	June–July day-flier; red-spotted; on damp/marshy unimproved grassland.
	Dark Tussock (*Dicallomera fascelina*)	NT	Heather, bilberry	July–August at light over heath/bog.
	Small Chocolate-tip (*Clostera pigra*)	NT	Creeping willow, sallow	Two broods; at light near damp scrub/bog.
	Small Purple-barred (*Phytometra viridaria*)	NT	Milkworts	May–July; small, can be disturbed by day on heath/grassland.
	Suspected (*Parastichtis suspecta*)	RE*	Willow, especially sallow (*Salix caprea*); birch also recorded in Britain and Ireland.	Larval/webs- April–June, Adults - Late July–August. Damp woodland, scrub, fen/carr and heath with willow (*Salix*) and sometimes birch (*Betula*). Young larvae in spun terminal shoots/buds; older larvae in spun or folded leaves on host plants.

Annex II - of EU Habitats Directive; Red List Status –NT – Near Threatened, VU – Vulnerable, EN – Endangered, RE – Regionally Extinct (Fitzpatrick et al., 2006; Regan et al., 2010; Allen et al., 2016)

** This species is listed as Regionally Extinct (RE) in Ireland's Red List No. 9: Macro-Moths (Lepidoptera) (Allen et al., 2016). However, based on records obtained from MothsIreland, this species has been recorded over 60 times within the vicinity of the Project Site since the publication of this document, with scattered records also from the wider area.*

6.3.1.5.3 Invasive Species

The NBDC database also contains records of invasive species from the relevant hectads. There are records for a number of species subject to restrictions under Regulations 49 and 50 and 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) from hectads N42, N52, N62, N63, N72 and N82. These are listed in Table 6-10 below.

Table 6-10 NBDC records for invasive species (hectads N42, N52, N62, N63, N72 and N82)

Common Name	Scientific Name	Hectad
American Mink	*Neovison vison*	N42, N52, N62, N63, N72, N82
Curly Waterweed	*Lagarosiphon major*	N82
Fallow Deer	*Dama dama*	N42, N52, N62, N63, N72
Grey Squirrel	*Sciurus carolinensis*	N42, N52, N62, N63, N72, N82
Himalayan Balsam	*Impatiens glandulifera*	N42, N82
Japanese Knotweed	*Reynoutria japonica*	N42, N62, N63, N72, N82
New Zealand Pigmyweed	*Crassula helmsii*	N63
Nuttall's Waterweed	*Elodea nuttallii*	N42, N62, N63, N82
Parrot's-feather	*Myriophyllum aquaticum*	N82
Rhododendron	*Rhododendron ponticum*	N42, N52, N63, N72, N82
Spanish Bluebell	*Hyacinthoides hispanica*	N62, N63, N82
Three-cornered Garlic	*Allium triquetrum*	N63
Zebra Mussel	*Dreissena polymorpha*	N42

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 2nd of July 2026. A response was received on the 8th of July 2026. Table 6-11 lists rare and protected species records obtained from NPWS.

Table 6-11 NPWS records for rare and protected species

Common name	Scientific name	Designation	Hectad
Badger	*Meles meles*	WA, LC	N42, N52, N62, N63, N72, N82

Common name	Scientific name	Designation	Hectad
Basil Thyme	*Clinopodium acinos*	NT	N52, N62, N63, N72
Brook Lamprey	*Lampetra planeri*	Annex II, LC	N82
Bugloss	*Lycopsis arvensis*	NT	N82
Cladonia ciliata var. *tenuis*	*Cladonia ciliata* var. *tenuis*	Annex V	N62, N72
Common Frog	*Rana temporaria*	Annex V, WA, LC	N42, N52, N62, N63, N72, N82
Common Lizard	*Zootoca vivipara*	WA, LC	N72
Cow-horn Bog-moss	*Sphagnum auriculatum*	Annex V, LC	N42
Desmoulin's Whorl Snail	*Vertigo moulinsiana*	Annex II, WA, EN	N72, N82
Fallow Deer	*Dama dama*	WA, LC	N63
Green Figwort	*Scrophularia umbrosa*	NT	N82
Green-flowered Helleborine	*Epipactis phyllanthes*	EN	N82
Green-winged Orchid	*Orchis morio*	VU	N42, N52, N62, N63
Hedgehog	*Erinaceus europaeus*	WA, LC	N62, N63
Henbane	*Hyoscyamus niger*	NT	N63
Irish Hare	*Lepus timidus* subsp. *hibernicus*	Annex V, WA, LC	N42, N52, N62, N63, N72, N82
Irish Stoat	*Mustela erminea* subsp. *hibernica*	WA, LC	N63
Marsh Fritillary	*Euphydryas aurinia*	Annex II, VU	N62
Narrow-mouthed Whorl Snail	*Vertigo angustior*	Annex II, VU	N82
Opposite-leaved Pondweed	*Groenlandia densa*	FPO, NT	N42, N72
Otter	*Lutra lutra*	Annex II, IV, WA, LC	N42,N52, N62, N63, N72
Pine Marten	*Martes martes*	Annex V, WA, LC	N52, N62, N63
Pygmy Shrew	*Sorex minutus*	WA, LC	N42, N52, N62, N63, N72, N82

Common name	Scientific name	Designation	Hectad
Red Hemp Nettle	*Galeopsis angustifolia*	FPO, VU	N62
Red Squirrel	*Sciurus vulgaris*	WA, LC	N52, N62, N63, N72
Reindeer Lichen	*Cladonia portentosa*	Annex V	N42, N62, N72, N82
Round-leaved Wintergreen	*Pyrola rotundifolia* subsp. *rotundifolia*	NT	N63, N82
Smooth Newt	*Lissotriton vulgaris*	WA, LC	N52, N62
Upright Brome	*Bromopsis erecta*	NT	N72
White-clawed Crayfish	*Austropotamobius pallipes*	Annex II, V, WA	N42, N52, N62, N63, N72, N82

Annex II, Annex IV, Annex V – of EU Habitats Directive; WA –Wildlife Acts (as amended); Red List Status – LC – Least Concern, NT – Near Threatened, VU – Vulnerable, EN – Endangered (Byrne et al., 2009; King et al., 2011; Wyse-Jackson et al., 2016; Marnell et al., 2019; Hodgetts and Lockhart, 2025).

6.3.1.7 Inland Fisheries Ireland

The '*Water Framework Directive Rivers Fish Ecological Status 2008 to recent*'[39] dataset from the Inland Fisheries Ireland open data portal was reviewed for reports covering any of the waterbodies downstream of the Project Site. The Proposed Wind Farm is located within the South-eastern River Basin District, the Proposed Grid Connection is located within the South-eastern River Basin District and the Eastern River Basin District, and the Proposed Turbine Delivery Route accommodation areas are located within the South-eastern River Basin District and the Shannon River Basin District.

Fish Ecological Status is presented in a rating scale from *High* to *Good, Moderate, Poor* and *Bad*, in descending order. The results are presented in Table 6-12 below, with colour coding from dark red to green, based on the Fish Ecological Status results. Further detail with regard to fisheries desk study data is available in the Aquatic Baseline Report (Appendix 6-3).

Table 6-12 Inland Fisheries Ireland data on Fish Ecological Status

Watercourse	Station Name	Hydrological Distance to Project Site (nearest point)	Species	Fish Ecological Status	Assessment Year
Figile River	Ticknevin_A	3.9km u/s	European eel; Lamprey sp.	Poor	2015
	Ticknevin_B	3.8km u/s	Brown trout; Stone loach; Three-spined stickleback	Moderate	2020
		0km	Dace; Roach	Bad	2021

[39] *Inland Fisheries Ireland [online] Available at: https://opendata-ifigeo.hub.arcgis.com/datasets/649f3be078b043178965547bd517bfda0_0/explore [Accessed 18/08/2026]*

Watercourse	Station Name	Hydrological Distance to Project Site (nearest point)	Species	Fish Ecological Status	Assessment Year
	Cushaling Br._A		Brown trout; Dace; Perch; Pike; Roach; Roach x Bream hybrid	Poor	2015
			Brown trout; Dace; Minnow; Perch; Roach	Poor	2015
	Bog Road_A	1.2km d/s	Dace; Perch; Pike; Roach	Bad	2021
			Dace; European eel; Perch; Roach; Roach x Bream hybrid	Bad	2015
	Clonbullogue_A	4.1km d/s	Dace; Perch; Pike; Roach	Bad	2015
Slate River	Ballyteige_B	2.3km d/s	Brown trout; Minnow	Moderate	2020
	Ballyteige_A		Brown trout; Lamprey sp.; Minnow; Perch; Roach; Stone loach; Three-spined stickleback	Moderate	2015
	NW of Robertstown_A	1.2km d/s	Brown trout; Three-spined stickleback	Moderate	2020
			Brown trout; Three-spined stickleback	Moderate	2015
	Glenaree_A	3.5km d/s	European eel; Stone loach	Bad	2020
	Agar Br._A	3.7km d/s	European eel; Minnow Roach; Stone loach	Poor	2020
	Tannery Park_A	7.6km d/s	Brown trout; Salmon	Good	2020
			Brown trout; Dace; Minnow; Salmon; Three-spined stickleback	Good	2015

Watercourse	Station Name	Hydrological Distance to Project Site (nearest point)	Species	Fish Ecological Status	Assessment Year
	Rathangan_A	7.7km d/s	Brown trout; Minnow; Salmon	Good	2020
			Brown trout; Dace; European eel; Minnow; Salmon; Stone loach	Good	2015
River Barrow	Pass Br._A*	17.8km	Dace; Minnow; Perch; Pike	Poor	2021
			Dace; Gudgeon; Minnow; Perch; Roach; Salmon	Poor	2015
			Bream; Brown trout; Dace; European eel; Gudgeon; Minnow; Perch; Pike; Roach; Roach x Bream hybrid; Salmon; Stone loach	Good	2009
	Pass Br._B*	18.1km	Dace; Minnow; Perch; Pike; Roach; Salmon	N/A	2021
			Brown trout; Dace; Gudgeon; Minnow; Perch; Pike; Roach; Salmon; Stone loach	Moderate	2015
			Brown trout; Dace; European eel; Gudgeon; Lamprey sp.; Minnow; Perch; Pike; Roach; Roach x Bream hybrid; Salmon; Stone loach; Three-spined stickleback	Good	2012

**Located within the River Barrow and River Nore SAC*

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 majority of the Project Site, excluding the most northerly section in Ticknevin Bog, the most

easterly section of the Project Site at the location of the Proposed Offsite Substation and two of the five Proposed Turbine Delivery Route accommodation areas, is located within the Barrow *Margaritifera* catchment. This catchment is classified as 'Catchments with previous records of *Margaritifera*, but current status unknown'. No mapped freshwater pearl mussel records are located within the Likely ZoI of the Proposed Project, with the nearest record approximately 73km from the Project Site and over 90km downstream.

6.3.1.9 Map of Irish Wetlands

The online Map of Irish Wetlands[13] provided by Wetlands Surveys Ireland and Foss Environmental was reviewed during the desk study for information relating to wetland sites within or in the vicinity of the Project Site. The results are presented in Table 6-13 below.

Table 6-13 Wetland sites within and in the vicinity of the Project Site

Site Name and Site Code from the online Map of Irish Wetlands	Site Evaluation	Main Wetland Type	Description	Data Source	Location
The Long Derries, Edenderry SAC (MIW_OF76)	**A Rating**: Internationally important	› Raised bog › Cutover bog › Alkaline fen › Poor fen › Scrub	Low esker ridge running from Edenderry to Rathangan. Main wetland interest occurs on eastern boundary which grades into peatland where calcareous runnels are interspersed with miniature peat flushes.	NPWS	Immediately adjacent to the Project Site
Ballysooghan Bog cNHA Ballydermot (MIW_KE28)	**B Rating**: Nationally Important	› Raised bog › Cutover bog › Bog woodland › Scrub	Raised bog remnant at edge of cutaway on the Kildare-Offaly County border. Raised bog with most of the high bog surface feeling spongy and wet underfoot and supporting active raised vegetation which is a priority EU habitat. The bog features a good, prominent cover of *Sphagnum* mosses.	IPCC 2012	Ballydermot South Bog – within Project Site
Lullymore West cNHA (MIW_KE34)	**B Rating**: Nationally Important	› Cutover bog › Poor fen › Alkaline fen › Bog woodland	Lullymore West is an important area of semi-natural grassland on the north western edge of Lullymore island. It supports 24 breeding colonies of the endangered Marsh Fritillary Butterfly (*Euphydryas aurinia*). Managed by IPCC.	IPCC 2012	Lullybeg Bog – immediately adjacent to the Project Site
Lullybeg Butterfly Reserve – Ballydermot (Lullymore) (MIW_KE49)	**B Rating**: Nationally Important	› Cutover bog	The Lullymore reserve area is the area of cutaway bog being managed by Butterfly	IPCC 2012	Lullymore Bog – within the Project Site

Site Name and Site Code from the online Map of Irish Wetlands	Site Evaluation	Main Wetland Type	Description	Data Source	Location
			Conservation Ireland for the marsh fritillary and as a butterfly transect.		
Lodge Bog South cNHA - Lodge (MIW_KE98)	**B Rating**: Nationally Important	› Raised bog › Cutover bog › Bog woodland	IPCC reserve consisting of remnant raised bog abutting Lullymore Island. Surrounded by cutover bog and bog woodland.	Kildare County Council / IPCC	Lodge Bog – within Project Site
Lodge Bog cNHA – Lodge (MIW_KE1)	**B Rating**: Nationally Important	› Raised bog › Cutover › Wet grassland › Scrub › Dystrophic lake	Lodge Bog supports a variety of 60 plants, insects, birds, mammals and amphibians, all of which are typical of raised bog habitats. The bog is an example of an active peat-forming raised bog habitat. Managed as nature reserve by IPCC	IPCC 2012	Lodge Bog – immediately adjacent to the Project Site
Cushaling River Valley (Kildare) (MIW_KE217)	**C Rating**: Local conservation value (high value)	› River › Wet grassland › Marsh › Bog woodland › Scrub	Low lying flood plain between industrially cutover bog and the Cushaling River. Wet grassland and marsh dominate either side of river. Bog woodland on peat occurs on each side adjacent to cutaway bog. Arterially drained in the past which has reduced wetland value.	Kildare County Council	Glashabaun South Bog – immediately adjacent to the Project Site
Cushaling East Wet Heath – Ballydermot (MIW_KE106)	**C Rating**: Local conservation value (high value)	› Wet heath › Cutover bog	This area was a wet heath on a remnant raised bog surrounded by extensive cutaway bare peat. It was dominated by *Calluna* and *Cladonia portentosa*.	Kildare County Council/ IPCC	Glashabaun South Bog – within the Project Site
West of Lugherra River (Kildare) (MIW_KE104)	**C Rating**: Local conservation value (high value)	› Wet heath › Cutover bog	Heathland dominated by *Calluna*, and *Cladonia portentosa*. Patches with extensive cover of *Rhynchospora alba* also occur. The peat is generally soft and wet, though there are areas where it is exposed and has dried out.	Kildare County Council/ IPCC	Glashabaun South Bog – within the Project Site

Site Name and Site Code from the online Map of Irish Wetlands	Site Evaluation	Main Wetland Type	Description	Data Source	Location
Crabtree river – Ballydermot (MIW_KE84)	**C Rating**: Local conservation value (high value)	› Cutover bog › Wet woodland (Oak, Ash, Alder) › Bog woodland	Woodland communities along the Crabtree river in industrial cutover area.	Kildare County Council / IPCC	Lullymore Bog – within the Project Site
Lullybeg Cutaway – Ballydermot (Lullymore) (MIW_KE202)	**C Rating**: Local conservation value (high value)	› Artificial Pond › Cutover bog	This area is flooded as a Kildare County Council/BnM project. It holds Lapwing and Whooper Swans in winter.	Kildare County Council	Lullymore Bog – within Project Site
Ballydermot (Lullymore) (MIW_KE214)	**C Rating**: Local conservation value (high value)	› Artificial Pond › Cutover bog › Poor fen › Scrub › River	The majority of this site is out of peat production and has now been zoned as a wetland area, with a small proportion zoned for biodiversity. Some rehabilitation work was carried out by BnM to block drains and develop wetland habitats.	Kildare County Council	Lullymore Bog – within Project Site
Lullymore Wetlands – Ballydermot (Lullymore) (MIW_KE86)	**C Rating**: Local conservation value (high value)	› Alkaline fen › Cutover bog › Lake	BnM cutaway bog abandoned, with regenerating wetland communities, drainage ditches, birch scrub and pioneer communities on bare peat.	Kildare County Council/ IPCC	Lullymore Bog – within Project Site
Plantation Fen cNHA- Ballydermot (Lullymore) (MIW_KE23)	**C Rating**: Local conservation value (high value)	› Cladium fen › Poor Fen	Cutaway raised bog area within BnM Lullymore Works.	NPWS	Lullymore Bog – within Project Site
Heritage Park Wood (MIW_KE75)	**C Rating**: Local conservation value (high value)	› Bog woodland › Cutover bog	A small woodland within the Lullymore Heritage Park. The wood is on the boundary between an area of mineral soil and cutover bog.	Kildare County Council	Lullymore Heritage Park – approximately 160m outside the Project Site

Site Name and Site Code from the online Map of Irish Wetlands	Site Evaluation	Main Wetland Type	Description	Data Source	Location
Lullymore east Cutaway – Lodge (MIW_KE96)	**C Rating**: Local conservation value (high value)	› Tall herb swamp › Cutover bog › Wet heath	Large expanse of industrial cutaway bog still being developed. Large deep drains with good vegetation cover provide a wildlife refuge as do pockets of semi-natural calcareous grassland, birch woodland and heathland.	Kildare County Council / IPCC	Lodge Bog – within Project Site
Drumsru Bog – Lodge (MIW_KE47)	**C Rating**: Local conservation value (high value)	› Raised bog › Bog woodland	Remnant of high bog at edge of Lullymore East Cutaway. There is a good cover of *Sphagna*, but not continuous. Some bare peat occurs and evidence of trampling by cattle occurs at the southern end.	IPCC 2012	Lodge Bog – within Project Site
Allenwood Road Wood (MIW_KE81)	**C Rating**: Local conservation value (high value)	› Bog woodland › Scrub › Cutover bog	An area of birch woodland on the edge of a cutover bog. Grey willow is frequent in wetter areas. The wood appears to flood seasonally, wetland species were recorded. Due to seasonal flooding in wetter areas birch is dying back.	Kildare County Council	East of Allenwood – immediately adjacent to the Proposed Grid Connection underground electrical cabling route
Downings North Bog (MIW_KE146)	**C Rating**: Local conservation value (high value)	› Bog woodland › Raised bog › Cutover bog	Area of degraded raised bog surrounded by birch woodland. In places bare peat predominates with limited bog flora. Elsewhere good regeneration of bog communities with complete moss cover.	Kildare County Council	West of Prosperous – immediately adjacent to the underground electrical cabling route
Ballydermot Bog Ballysooghan (Offaly) (MIW_OF48)	**C+ Rating**: County Conservation value	› Cutover bog › Bog woodland › Scrub › Raised bog › Wet grassland › River	This site is a lobe of intact bog appending a large, actively worked cutover bog owned by BnM. The bog features a good, prominent cover of *Sphagnum* moss with *Sphagnum pulchrum* being particularly noticeable. Restoration work undertaken.	IPCC 2012	Ballydermot South Bog – within Project Site

Site Name and Site Code from the online Map of Irish Wetlands	Site Evaluation	Main Wetland Type	Description	Data Source	Location
Lullymore East Bog Woodland cNHA (MIW_KE33	**C+ Rating**: County Conservation value	› Bog woodland › Cutover bog › Fen bog › Scrub	Birch woodland on cutover bog with thick dwarf shrub layer of heather and bilberry. *Sphagnum* cover quite thick in places. Cranberries locally abundant.	IPCC 2012	Lodge Bog – approximately 290m outside the Project Site
Ballydermot Bog Cushaling West (MIW_OF210)	**D Rating**: Local conservation value (moderate value)	Data pending › Tall herb swamp › Wet grassland › Cutover bog › Fen › Bog woodland › Scrub › River	Large cutover bog complex with marginal areas of bog woodland and degraded raised bog. The majority of the bog comprises cutaway bog habitat, with areas of establishing pioneer vegetation and birch scrub. There are extensive remnant and secondary habitats of some interest around the margins including scrub and bog woodland.	Wetland Surveys Ireland	Codd 2 – within the Project Site
Bog of Allen Killinthomas – Ballydermot (Kildare) (MIW_KE84)	**D Rating**: Local conservation value (moderate value)	› Cutover bog › Dystrophic lake › Bog lake › Bog woodland › Scrub	Cutover bog community, with bog holes, drainage ditches, regenerating acid bog communities, birch woodland and peat drying fields.	Kildare County Council / IPCC	Blackriver Bog – within Project Site
Ballydermot (MIW_KE215)	**D Rating**: Local conservation value (moderate value)	› Cutover bog › Bog woodland	Description pending	Kildare County Council	Blackriver Bog – within Project Site
Allenwood South West Bog -Lodge (MIW_KW101)	**D Rating**: Local conservation value (moderate value)	› Raised bog › Cutover bog	Raised bog with poor *Sphagnum* cover. Drains traverse and surround the bog and it is being cut. Face banks are about 2 metres high.	Kildare County Council / IPCC	Lodge Bog – within Project Site

Site Name and Site Code from the online Map of Irish Wetlands	Site Evaluation	Main Wetland Type	Description	Data Source	Location
Lodge (MIW_KE212)	**D Rating**: Local conservation value (moderate value)	› Raised bog › Cutover › Bog woodland › Scrub › Artificial pond › Poor fen	Cutover areas are of milled peat which are still in production. Wet communities more restricted to ditches, some of which are 2 m deep. Scrub and heather areas common on raised banks. Railway line ridge runs through centre with grassy community on it.	Kildare County Council	Lodge Bog – within Project Site
Ballybrack Bog (MIW_KE108)	**D Rating**: Local conservation value (moderate value)	› Raised bog › Cutover bog › Bog woodland	Area of cutover raised bog, some still being actively cut in patches. The surface has been recolonised by sedges and heathers. The surface is quite uneven due to machine tracks, drains and cutting.	Kildare County Council / IPCC	Killina Bog – within Project Site
Cloncreen Bog Wind Farm (MIW_OF214)	**D Rating:** Local conservation value (moderate value)	› Artificial pond › Wet grassland › Raised bog › Cutover bog › Bog woodland › Scrub › Fen	Large cutover bog complex with marginal areas of bog woodland and degraded raised bog. The majority of the bog comprises cutaway bog habitat, with areas of establishing pioneer vegetation and birch scrub/woodland and flooded areas with lakes created after restoration measures undertaken. There are remnant and secondary habitats of some interest around the margins including remnant high bog, scrub, cutover and bog woodland.	Wetland Surveys Ireland	Two accommodation areas associated with the Proposed Turbine Delivery Route are located within Cloncreen Wind Farm
Ballydermot Bog River Figile Valley (MIW_OF75)	**E Rating**: Local conservation value (low value)	› Cutover bog › Artificial pond › Reed swamp › Tall herb swamp › Marsh › Wet grassland › Bog woodland	River valley running between extracted bogs and including the River Figile.	IPCC	Codd 2 Bog– within the Project Site

Site Name and Site Code from the online Map of Irish Wetlands	Site Evaluation	Main Wetland Type	Description	Data Source	Location
		› Scrub			
Ballydermot Bog Lugherra (Offaly) (MIW_OF73)	**E Rating**: Local conservation value (low value)	› Cutover bog › Wet grassland › Scrub › Fen	Area of non annex bog woodland on marginal drained peat at edge of large cutover area. Only significant area of semi natural vegetation still left on the site. Extensive private peat extraction in area.	Irish Peatland Conservation Council	Glashabaun South Bog – Within the Project Site
Ballydermot (Derrybrennan) (MIW_KE216)	**E Rating**: Local conservation value (low value)	› Cutover bog › Poor fen › Scrub › Bog woodland	Cutaway bog area with scrub and more open rushy areas. Entire area planted with Sitka spruce which is now 60 cm tall.	Kildare County Council	Derrybrennan Bog – within the Project Site
Lullymore (MIW_KE213)	**E Rating**: Local conservation value (low value)	› Bog woodland › Cutover bog › Poor fen › Scrub › Artificial pond	Partially cutover bog site which is still being used to produce turf. Evidence of recent drain improvements and peat extraction.	Kildare County Council	Killina Bog – within Project Site
Ballydermot Bog Derries (Offaly) (MW_OF209	**E Rating**: Local conservation value (low value)	› Artificial pond › Raised bog › Cutover bog › Fen › Scrub › Wet grassland	The majority of the bog comprises cutaway bog habitat, with areas of establishing pioneer vegetation and birch scrub. There are extensive remnant and secondary habitats of some interest around the margins including scrub, some high bog, cutover and bog woodland.	Wetland Surveys Ireland	Glashabaun North Bog – within the Project Site
Ticknevin Bog (Offaly) (MIW_OF226)	**F Rating**: Unknown value – survey required	› Data pending › River › Wet grassland › Raised bog › Cutover bog › Bog woodland	Extensive re-vegetating raised bog cutover complex with a number of small marginal high bog areas remaining which have been affected by drainage and turf cutting.	Wetland Surveys Ireland	Ticknevin Bog – within the Project Site

Site Name and Site Code from the online Map of Irish Wetlands	Site Evaluation	Main Wetland Type	Description	Data Source	Location
		› Scrub › Artificial pond			
Cushaling South East Bog – Derries Codd Cutover South (Offaly) (MIW_OF74)	**F Rating**: Unknown value – survey required	› Cutover bog › Scrub › Raised bog › Wet grassland	Description pending	IPCC	Glashabaun North Bog – within the Project Site
Ballydermot Bog Clonbrown (Offaly) (MIW_OF216)	**F Rating**: Unknown value – survey required	Data pending › Dystrophic lake › River › Wet grassland › Cutover bog › Fen › Bog woodland › Scrub › Raised Bog	Large cutover bog complex with marginal areas of bog woodland and degraded raised bog. The majority of the bog comprises cutaway bog habitat, with areas of establishing pioneer vegetation and birch scrub/woodland and flooded areas with lakes. There are remnant and secondary habitats of some interest around the margins including remnant high bog, scrub, cutover and bog woodland.	Wetland Surveys Ireland	Ballydermot North Bog – within Project Site
Ballydermot Bog Codd (MW_OF211)	**F Rating**: Unknown value – survey required	Data pending › River › Wet grassland › Cutover bog › Bog woodland › Scrub › Artificial pond	Large cutover bog area with marginal areas of bog woodland and degraded raised bog. The majority of the bog comprises cutaway bog habitat, with areas of establishing pioneer vegetation and birch scrub. There are extensive remnant and secondary habitats of some interest around the northern and western margins including remnant high bog, scrub, cutover and bog woodland.	Wetland Surveys Ireland	Codd 2 Bog – within the Project Site

6.3.1.9.1 *Kildare Wetland Survey 2012*

The online mapper for the Kildare Wetland Survey 2012[40] provided by the Heritage Council was also reviewed during the desk study for information relating to wetland sites within or in the vicinity of the Project Site. This dataset provides habitat areas categorised using Fossitt (2000) classification.

A small area of Wet grassland (GS4) is partially mapped within the Proposed Wind Farm site. This area corresponds to the area of wet grassland which was mapped during the Irish Semi-Natural Grassland Survey 2007-2012 as outlined in Section 6.3.1.2.1 above and does not correspond to any Annex I habitats.

A small area of Bog woodland (WN7) is also mapped at the location of Lullymore Heritage and Discovery Park, located approximately 160m outside the Project Site, and a small area of Bog woodland/Mixed-broadleaved/conifer woodland (WN7/WD2) located immediately to the south of the Proposed Grid Connection underground electrical cabling route along the R403 regional road. These woodlands correspond to the areas surveyed during the National Survey of Native Woodlands 2003-2008 outlined in Section 6.3.1.2.1 above and was not found to correspond to any Annex I habitats.

Additionally, an area of Bog woodland (WN7), Cutover bog (PB4), Dense bracken (HD1) and Bog woodland (WN7) are located immediately to the south of the Proposed Grid Connection underground electrical cabling route at Downings North Bog, to the west of Prosperous, Co. Kildare.

At the location of Ballynafagh Lake SAC/pNHA, where the Proposed Grid Connection underground electrical cabling route crosses this European Site, the Blackwood Feeder Canal is mapped as Wet willow-alder-ash woodland/Reed and large sedge swamp (WN6/FS1), with mosaic habitats including Calcareous springs/Reed and large sedge swamp/Rich fen and flush (FP1/FS1/PF1) and Improved agricultural grassland/Marsh (GA1/GM1) also mapped to the north along the Blackwood Feeder Canal. Various areas and mosaics of Limestone/Marl lakes (FL3), Reed and large sedge swamps (FS1), Dry meadows and grassy verges (GS2), Wet grassland (GS4), Wet heath (HH3), Rich fen and flush (PF1), Bog woodland (WN7) and Scrub (WS1) are also mapped within Ballynafagh Lake SAC/pNHA to the north.

6.3.1.10 Baseline Hydrology and Hydrogeology

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.

6.3.1.10.1 *Regional and Local Hydrology*

Proposed Wind Farm

Within the Water Study Area, the vast majority of the Proposed Wind Farm site is located in the River Barrow surface water catchment within Hydrometric Area 14 of the South Eastern River Basin District. A small area in the north of Ticknevin Bog is located in the River Boyne surface water catchment within Hydrometric Area 07 of the Eastern River Basin District.

Regionally, within the River Barrow surface water catchment, the Proposed Wind Farm site is located in 3 no. river sub-catchments. The majority of the Proposed Wind Farm site is located within the Figile_SC_010 river sub-catchment, the southwest is located within the Figile_SC_020 river sub-catchment and the south/southeast is located within the Slate_SC_010 river sub-catchment.

[40] *Heritage Council Maps: Kildare Wetland Survey 2012 [online] Available at: https://www.heritagemaps.ie/datasets/heritagecouncil::kildare-wetland-survey-2012-polygon [Accessed 28/07/2026]*

Within the Figile_SC_010 river sub-catchment, the Proposed Wind Farm site is mapped in 3 no. WFD river sub-basins: the Abbeylough_010, Figile_020 and Figile_030 WFD river sub-basins.

- Within the Abbeylough_010 WFD river sub-basin, the Abbeylough Stream (EPA Code: 14A01) flows to the west along the northern boundary of Derrybrennan Bog where it discharges into the Figile River (EPA Code: 14F01).
- Within the Figile_020 WFD river sub-basin, the Figile River flows to the west, between Glashabaun South and Glashabaun North bogs. A tributary of the Figile River, referred to by the EPA as the Lullymore East Stream (EPA Code: 14L11) is mapped to flow to the west from the western boundary of Lodge Bog. This stream dissects the northern sections of Lullymore and Lullybeg bogs and forms the boundary between Blackriver Bog to the west and Glashabaun South Bog to the east before it discharges into the Figile River. A smaller stream, referred to by the EPA as the Lullybeg Stream (EPA Code: 14L13), flows around the eastern, southern and western perimeter of Lullybeg Bog before it discharges into the Lullymore East Stream. Another stream, assigned the same name (Lullybeg) on the EPA database, flows from south to north through the western section of Blackriver Bog before it discharges into the Figile River.
- Within the Figile_030 WFD river sub-basin, the Figile River flows to the northwest, separating Codd 1 in the south from Codd 2 in the north. A small tributary of the Figile River, the Clonbrown Stream (EPA Code: 14C32) is mapped to flow to the north along the eastern boundary of Ballydermot North Bog before it discharges into the Figile River close to the east of Codd 1 Bog. The EPA also map a stream referred to as the Cloncant Stream (EPA Code: 14C41) to flow to the southwest, dissecting Codd 2 Bog before discharging into the Figile River. Further north, Ticknevin Bog is drained by 2 no. streams which merge at its southern boundary to form the Codd Stream (EPA Code: 14C44). The Codd stream flows in a south westerly direction through The Long Derries, Edenderry SAC [000925]. The Codd Stream flows to the south, along the northwestern boundary of Glashabaun North before it flows to the west and discharges into the Ballyleakin Stream (EPA Code: 14B22). This stream discharges into the Figile River to the northwest of Codd 1 Bog.

Within the Figile_SC_020 river sub-catchment, the Proposed Wind Farm site is mapped within the Figile_050 WFD river sub-basin. Within this WFD river sub-basin, the Figile River is mapped to flow to the south approximately 2km west of the Proposed Wind Farm site. Several streams are mapped to originate at the western boundary of the Proposed Wind Farm site. The Clonbullogue Stream (EPA Code: 14C53) to the west of Ballydermot North Bog and the Ballygarrett Stream (EPA Code: 14B30) to the west of Ballydermot South Bog. These streams merge just upstream of their confluence with the Figile River.

Within the Slate_SC_010 river sub-catchment, the Proposed Wind Farm site is mapped within the Slate_050 and Slate_060 WFD river sub-basins. Within the Slate_050 WFD river sub-basin, the Killinagh Upper Stream (EPA Code: 14K17) is mapped to flow along the southeastern boundary of Lodge Bog before it discharges into the Slate River (EPA Code: 14S01). A second tributary of the Slate River is mapped to originate at the western boundary of Lodge Bog, referred to by the EPA as the Drumsru Stream (EPA Code: 14D19). The Slate River flows to the southwest, approximately 80m from the south of Lodge Bog. Within the Slate_060 WFD river sub-basin, the Slate River is located approximately 1km south of Barnaran Bog. There are no watercourses mapped in the immediate vicinity of the Proposed Wind Farm site within this WFD river sub-basin.

Further downstream, the Slate River flows through Rathangan and confluences with the Figile River approximately 6.6km southwest of the Proposed Wind Farm site. The Figile River continues to flow to the south before it discharges into the River Barrow to the north of Monasterevin.

Within the River Boyne surface water catchment, the Proposed Wind Farm site is located within the Boyne_SC_010 river sub-catchment and the Boyne_010 WFD river sub-basin. The Clonkeen Stream

(EPA Code: 07C36) is mapped to flow along the northern boundary of Ticknevin Bog before it flows to the northwest and discharges into the River Boyne (EPA Code: 07B04) approximately 2km north of the Proposed Wind Farm. The River Boyne continues to flow to the northwest before it veers to the northeast close to its confluence with the Yellow River (approximately 7km northwest of the Proposed Wind Farm).

The accommodation works along the Proposed Turbine Delivery Route are located in the Figile_010, Figile_020 and Tullamore_010 river sub-catchments. The Proposed Turbine Delivery Route accommodation areas are generally distant from any EPA mapped watercourses and outside of the 50 metre hydrological buffer zones. However, a works area is located approximately 30m southeast of the EPA mapped Rathvilla or Rathclonbrackan Stream (EPA Code: 14R12). All other works areas are located in excess of 50m from natural watercourses.

For the purposes of this EIAR, the names of rivers and streams correspond to those assigned in the EPA database. Some watercourses are identified by different names on local basemaps and OSI Discovery Series mapping. For example, the Figile River is referred to as the Cushaling River along the section of river flowing between Glashabaun North and Glashabaun South Bogs. Similarly, the Lullybeg Stream which flows around the perimeter of Lullybeg Bog, is also known as the Crabtree River, while the Lullybeg Stream within Blackriver Bog is referred to as the Black River. The EPA nomenclature is used throughout this chapter as it represents the most up to date and authoritative hydrological database available within Ireland.

Proposed Grid Connection

Within the Water Study Area the vast majority of the Proposed Grid Connection is located in the River Barrow surface water catchment. A small area in the east of the Proposed Grid Connection is located in the Liffey and Dublin Bay surface water catchment within Hydrometric Area 09 of the Eastern River Basin District.

Regionally, within the River Barrow surface water catchment, the majority of the Proposed Grid Connection is located in Slate_SC_010 river sub-catchment with a very small area in the west mapped within the Figile_SC_010 river sub-catchment. Within the River Liffey and Dublin Bay surface water catchment, the Proposed Grid Connection is located in Liffey_SC_050 river sub-catchment.

Within the Slate_SC_010 river sub-catchment, the Proposed Grid Connection is mapped in 5 no. WFD river sub-basins: the Slate_010, Slate_020, Slate_030, Slate_040 and Slate_050 WFD river sub-basins. There are a total of 11 no. watercourse crossings within this sub-catchment (7 no. crossings over EPA mapped watercourses, 1 no. crossing under the Grand Canal and 3 no. crossings over unmapped watercourses). These crossings are listed below:

- Within the Slate_050 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the EPA mapped Killinagh Upper Stream (EPA Code: 14K17) along the R414 at an existing stone arch bridge. This stream flows to the south before discharging into the Slate River (EPA Code: 14S01).
- Within the Slate_050 WFD river sub-basin, the Proposed Grid Connection underground cabling route is mapped to cross the Grand Canal Main Line East (Barrow) approximately 200m to the west of Shee Bridge. The proposed crossing will utilise HDD and will not interact with Shee Bridge.
- Within the Slate_040 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the Upper Ballynakill Stream (EPA Code: 14U09) to the east of Allenwood along the R403 at an existing clear span bridge.
- There is an additional stone arch bridge crossing over a watercourse which is not included in the EPA database within the Slate_040 WFD river sub-basin. This crossing is located approximately 700m east of the Upper Ballynakill Stream along the R403.

- Within the Slate_020 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the Slate River (EPA Code: 14S01) along the R403 at Quigley's Bridge (Stone Arch Bridge).
- There are also an additional 2 no. EPA mapped crossings over the Slate River to the east of Quigley's Bridge (Whilst these crossings are mapped by the EPA – no crossings were recorded during surveys of the Proposed Grid Connection underground cabling route. The crossings are assumed to be piped or culvert crossings).
- There is also a crossing over the Blackwood feeder canal, which is designated as part of the Ballynafagh Lake SAC, to the east of Quigley's Bridge. This crossing is a pipe or culvert crossing along the R403.
- Within the Slate_010 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the Brockagh Stream (EPA Code: 14B73) at Dagwelds Cross. This stream flows north where it discharges into the Slate River (EPA Code: 14S01). This is an existing pipe or culvert crossing along the R403 (no crossing was recorded during surveys).
- There is also a crossing over a non EPA mapped watercourses, located approximately 630m to the east of the EPA mapped Brockagh Stream along the R403 to the west of Prosperous, Co. Kildare. This is an existing culvert crossing.
- Within the Slate_010 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the Temp Stream (EPA Code: 14A46) at Black Stick Cross Roads in Prosperous, Co. Kildare. This is a pipe or culvert crossing along the R403.

Within the Figile_SC_010 river sub-catchment, the Proposed Grid Connection underground cabling route is mapped in Figile_020 WFD river sub-basin. There are no crossings over EPA mapped watercourses within this WFD river sub-basin.

Within the Liffey_SC_050 river sub-catchment, the Proposed Grid Connection is mapped within the Awillyinish Stream_010 WFD river sub-basin. There are no crossings proposed over EPA mapped watercourses within this sub-catchment. The closest EPA mapped watercourse to the Proposed Offsite Substation is the Goatstown Stream (EPA Code: 09G16), mapped approximately 970m to the south. A small drain is located approximately 10m to the southwest of the Proposed Offsite Substation. This feature is not included in the EPA blueline database but is shown on the OSI Discovery Series Mapping and text on local 6" basemapping also indicates a streambed at this location. Site surveys undertaken to inform Chapter 9 Water of the EIAR revealed that this feature is heavily vegetated, contains little water and is separated from the Proposed Offsite Substation by an existing hedgerow.

Table 6-14 summarises the location of the Proposed Project infrastructure with respect to the WFD catchments, sub-catchments and river sub-basins.

Table 6-14 WFD Catchments, sub-catchments and river-basins and Proposed Project infrastructure

Catchment	Sub-Catchment	River Sub-Basin	Proposed Project Infrastructure
Barrow (14)	Slate_SC_010	Slate_010	Proposed Grid Connection underground electrical cabling route
		Slate_020	Proposed Grid Connection underground electrical cabling route
		Slate_030	Proposed Grid Connection underground electrical cabling route
		Slate_040	Proposed Grid Connection underground electrical cabling route

Catchment	Sub-Catchment	River Sub-Basin	Proposed Project Infrastructure
		Slate_050	Proposed Grid Connection underground electrical cabling route and Proposed Enhancement Areas
		Slate_060	8 no. Proposed Turbines, 2 no. construction compounds, access roads, peat and spoil areas, and Proposed Enhancement Areas
	Figile_SC_010	Abbeylough_010	1 no. Proposed Turbine, 1 no. construction compound, access roads, peat and spoil areas, and Proposed Enhancement Areas
		Figile_020	16 no. Proposed Turbines, 2 no. construction compounds, Proposed Onsite Substation, site access roads, met mast, Proposed Grid Connection underground electrical cabling route, peat and spoil areas, and Proposed Enhancement Areas
		Figile_030	19 no. Proposed Turbines, 4 no. construction compounds, access roads, relay mast, met mast, peat and spoil areas, Proposed Enhancement Areas and Proposed Turbine Delivery Route accommodation works
	Figile_SC_020	Figile_040	Proposed Turbine Delivery Route accommodation works
		Figile_050	2 no. Proposed Turbines and Proposed Enhancement Areas
Boyne (07)	Boyne_SC_010	Boyne_010	Access roads
Liffey and Dublin Bay (09)	Liffey_SC_050	Awillyinish Stream_010	Proposed Grid Connection underground electrical cabling route, Proposed Offsite Substation, access roads and 1 no. construction compound
Lower Shannon Catchment (25A)	Tullamore_SC_010	Tullamore_020	Proposed Turbine Delivery Route accommodation works

6.3.1.10.2 Proposed Wind Farm - Existing Site Drainage

The Proposed Wind Farm and Proposed Onsite Substation are located within a former peat extraction site. Due to the historic peat extraction activities at the Proposed Wind Farm site, this part of the Project Site has been artificially drained in order to lower the peat water table. The timing of the initial site preparation works (vegetation clearance and drainage insertion) varied across the Proposed Wind Farm site. The site preparation works were first completed in 1935 at Lullymore, Lullybeg and Killina bogs, whilst the last bogs which underwent site preparation and drainage works were Ticknevin and Codd 2 bogs in 1973 (estimated date based on available aerial imagery).

Currently surface water (or runoff water) is drained from the Proposed Wind Farm site via a network of field drains typically spaced at 15 to 20m intervals, piped drains, main drains, headland drains, and silt ponds. Much of the Proposed Wind Farm site is drained by gravity however there are 10 no. existing pumps located around the bogs. These include pumping stations in each of the following bogs; Ticknevin Bog, (P37/010), Glashabaun North Bog (P37/008), Codd 1 Bog (P37/012), Ballydermot South (P37-011) and Blackriver Bog (P37/007). Several of these locations contain more than 1 no. pump. Pumping stations have also been decommissioned at Lodge (P37-013) and Codd 1 (P37-014). Following peat extraction activities, drainage by gravity in these areas of the Proposed Wind Farm site was no longer feasible as the water level in the surrounding streams were higher than the water level within the bogs. The field drains discharge to main drains which flow via gravity, or are pumped, towards the perimeter of the site where they discharge to larger headland drains. These headland drains eventually discharge to large silt (settlement) ponds (IPC licence settlement ponds). The silt ponds are used to trap sediment and prevent elevated levels of suspended sediment arising in effluent from the drained peatland. Treated surface water is then discharged at outfall points where the effluent flows into off-site drainage channels which in turn discharge into the local stream and river network.

Drainage of the bogs which comprise the Proposed Wind Farm site, as well as Lodge Bog within which the Proposed Onsite Substation is located, currently operating under IPC licence from the EPA (P0503-01). The drainage system has been operating in accordance with this existing IPC licence, with all drainage water from the bogs being discharged via an appropriately designed silt pond treatment arrangement.

There are a total of 26 no. surface water discharge locations across the Proposed Wind Farm site. These discharge locations are situated downstream of settlement ponds, with the treated and attenuated water from the bog drainage system being discharged to outfall drains which in turn discharge to local watercourses. The vast majority of the bogs comprising the Proposed Wind Farm site discharge directly into the Figile River or smaller tributary streams which in turn discharge into the Figile River. Meanwhile, the drainage from Lodge Bog discharges into a local stream which is a tributary of the Slate River. Downstream of the Proposed Wind Farm, the Slate River also discharges into the Figile River. Therefore, all surface waters from the Proposed Wind Farm eventually end up in the Figile River, and the River Barrow further downstream.

Outfalls generally discharge into outfall drains with the flowpaths along these outfall drains to the nearest EPA mapped watercourse ranging from 15m to 1.32km. Several of the EPA mapped watercourses have been integrated into the existing bog drainage system. The EPA map natural watercourses upstream of several IPC licence settlement ponds. These sections of the streams have been altered and integrated into the existing bog drainage system, upstream of the settlement ponds. Note that SW68, SW69 and SW70 in Ticknevin Bog are located along two unnamed EPA mapped watercourses. These watercourses have been integrated into the existing bog drainage system. Similarly, SW65 and SW65A in Blackriver Bog are located in close proximity (15-20m) to the EPA mapped Lullybeg 14 Stream. Note that this stream is mapped to extend into the bog and has also been integrated into the existing bog drainage system, upstream of these outfall locations.

6.3.1.10.3 Surface Water Body Status

River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive (WFD). The online EPA map viewer[41] provides access to water quality information at individual waterbody status for all the River Basin Districts in Ireland. The EPA map viewer was consulted on June 25th 2026 regarding the water quality status of the river which run within and directly adjacent to the Project Site. The WFD River Waterbody Status 2019-2024 for the watercourses which flow through the Project Site have been assessed in Table 6-15.

[41] https://gis.epa.ie/EPAMaps/

Table 6-15 Watercourses on site with relevant water quality statuses

River Waterbody	Status 2010-2015	Status 2013-2018	Status 2016-2021	Status 2019-2024	3rd Cycle Risk Status	WFD Pressures
Figile_SC_010 river sub-catchment						
Abbeylough_010	Unassigned	Poor	Moderate	Moderate	At Risk	Peat Drainage and Extraction
Figile_010 (Upstream of Project Site)	Poor	Poor	Poor	Poor	At Risk	Hydromorphology, Industry, Urban Wastewater and Peat Drainage and Extraction
Figile_020	Moderate	Moderate	Moderate	Moderate	At Risk	Peat Drainage and Extraction
Figile_030	Moderate	Moderate	Moderate	Moderate	At Risk	Peat Drainage and Extraction
Figile_SC_020 river sub-catchment						
Figile_040	Moderate	Moderate	Moderate	Poor	At Risk	Peat Drainage and Extraction
Figile_050	Good	Good	Poor	Poor	At Risk	Agriculture and Peat Drainage and Extraction
Figile_060	Good	Good	Good	Good	Not at Risk	None
Slate_SC_010 river sub-catchment						
Slate_010	Unassigned	Moderate	Poor	Poor	At risk	Hydromorphology, anthropogenic and urban runoff
Slate_020	Poor	Poor	Poor	Poor	At risk	Agriculture and urban wastewater
Slate_030	Unassigned	Poor	Poor	Poor	At risk	Agriculture and forestry
Slate_040	Poor	Poor	Poor	Poor	At risk	Hydromorphology and Peat Drainage and Extraction
Slate_050	Moderate	Moderate	Moderate	Moderate	At Risk	Hydromorphology and Peat Drainage and Extraction
Slate_060	Moderate	Moderate	Moderate	Moderate	At Risk	Urban run-off
Slate_070	Good	Moderate	Moderate	Moderate	At Risk	Agriculture, Hydromorphology, Urban Wastewater and Peat Drainage and Extraction
Boyne_SC_010 river sub-catchment						
Boyne_010	Moderate	Moderate	Moderate	Poor	At Risk	Domestic Wastewater, Hydromorphology and Peat Drainage and Extraction
Boyne_020	Moderate	Moderate	Poor	Moderate	At Risk	Agriculture, Hydromorphology and Urban Run-off

River Waterbody	Status 2010-2015	Status 2013-2018	Status 2016-2021	Status 2019-2024	3rd Cycle Risk Status	WFD Pressures
Boyne_030	Good	Moderate	Good	Good	Not at Risk	None
Liffey_SC_050 river sub-catchment						
Awillyinish Stream_010	Unassigned	Unassigned	Moderate	Moderate	Under review	None
Liffey_100	Moderate	Moderate	Good	Good	Not at risk	None
Heavily Modified Waterbodies						
Grand Canal Main Line (Boyne)	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Not at risk	None
Grand Canal Main Line East (Barrow)	Unassigned	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Not at risk	None
Grand Canal Barrow Line	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Under review	None

Status– WFD River Waterbody Status 2013-2018 Risk – WFD River Waterbodies Risk

6.3.1.10.4 EPA Biological Q-Rating

The Biotic Index of Water Quality (BIWQ) was developed in Ireland by the EPA. Q-values are assigned using a combination of habitat characteristics and structure of the macro-invertebrate community within the waterbody. Individual macro-invertebrate families are classified according to their sensitivity to organic pollution and the Q-value is assessed based primarily on their relative abundance within a sample. Q-values form a rating scale from *High* to *Good, Moderate, Poor* and *Bad*, in descending order. Table 6-16 illustrates the respective Q-value status results from monitoring stations located along rivers which flow through the Project Site or along rivers which are fed directly by watercourses which flow through or around the Project Site. The results are colour coded based on the Q-value results.

Table 6-16 Water quality monitoring stations and associated Q values

River	Station ID	Location	EPA Q-Rating (Year)	Q-Value Status
Figile_SC_010 river sub-catchment				
Figile River	RS14F010050	Bridge S of Ticknevin Bridge	2023	**Q2-3 (Poor)**
	RS14F010100	Cushaling Bridge	2023	**Q3-4 (Moderate)**
	RS14F010200	Kilcumber Bridge	2023	**Q3-4 (Moderate)**
Figile_SC_020 river sub-catchment				
Figile River	RS14F010300	Figile - Bridge in Clonbullogue	2024	**Q3 (Poor)**
	RS14F010400	Derrygarran Bridge	2023	**Q3 (Poor)**
Slate_SC_010 river sub-catchment				
Slate River	RS14S010020	Quigley's Bridge	2023	**Q3 (Poor)**
	RS14S010050	Ford Bridge	2023	**Q3 (Poor)**
	RS14S010100	Agar Bridge	2023	**Q3-4 (Moderate)**
	RS14S010150	E Bridge Rathangan (Opp Church)	2023	**Q3-4 (Moderate)**

River	Station ID	Location	EPA Q-Rating (Year)	Q-Value Status
	RS14S010210	Slate - 100 m d/s Bridge near Spencer Br	2023	Q3-4 (Moderate)
	RS14S010300	River Bridge	2023	Q3-4 (Moderate)
Boyne_SC_010 river sub-catchment				
Boyne River	RS07B040200	Boyne Bridge	2024	Q3-4 (Moderate)
	RS07B040300	Kinnafad Bridge	2024	Q3-4 (Moderate)
Liffey_SC_050 river sub-catchment				
Liffey River	RS09L011500	Alexandra Br Clane	2025	Q4 (Good)

6.3.1.10.5 *Hydrogeology*

Proposed Wind Farm

The Proposed Wind Farm site is underlain by several mapped bedrock geological formations including the Lucan Formation, Ballyadams Formation, Allenwood Formation, Waulsortian Limestones and Boston Hill Formation. The Lucan Formation is classified as Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones (LI). The Ballyadams Formation is classified as Regionally Important Aquifer - Karstified (diffuse) (Rkd) and the Waulsortian Limestones and the Boston Hill Formation are classified as Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones (LI).

In terms of Groundwater Bodies (GWBs), the Proposed Wind Farm site is mapped to be underlain by a total of 4 no. GWBs. The western section of the Proposed Wind Farm is mapped within the Cushina GWB (IE_SE_G_048), the centre is mapped within the Bagenalstown Upper GWB (IE_SE_G_153), the east is mapped within the Kildare GWB (IE_SE_G_077) and the north is mapped within the Trim GWB (IE_EA_G_002).

The GSI's GWB Characterisation Reports were consulted to provide additional information for each of the underlying GWBs. These reports are available as https://www.gsi.ie/programmes-projects/groundwater/groundwater-activities/understanding-irelands-groundwater/groundwater-bodies/.

The GSI's Cushina GWB Characterisation Report (GSI, 2003) states that this GWB is located in eastern Co. Offaly but also extends into counties Laois and Kildare. The topography in the area is extremely low lying to the north with some small hills in the south. In general, the land surface slopes to the centre and south of the body towards the River Figile. The GWB is composed primarily of low permeability rocks, although localised zones of enhanced permeability do occur. Recharge occurs diffusely through the subsoils and via outcrops. The aquifers within the GWB are generally unconfined but may become locally confined where the subsoil is thicker and/or lower permeability. Most flow in this aquifer will occur near the surface. Regional groundwater flow is from north to south, but on a local scale, groundwater discharges to the streams and rivers crossing the aquifer. Flow path lengths are variable and will depend on the degree of karstification of the limestone and hence its purity. Groundwater discharges to the numerous small streams crossing the aquifer, and to the springs and seeps.

The GSI's Bagenalstown GWB Characterisation Report (GSI, 2003) states that the Barrow Valley has been divided into three areas (Daly & Wright 1979): (i) A recharge area along the slopes of the Castlecomer Plateau where the water table is 15 – 30mbgl. and there is an annual water level fluctuation of 10-20m. (ii) An intermediate area where the aquifer is covered by extensive till deposits of 10-20m thickness, the water table is usually within 5-15m of the surface with an annual fluctuation of less than 7.5m. Both confined and unconfined conditions exist here, depending on the subsoil. (iii) A discharge zone occurs where the aquifer comes in contact with the Barrow River either directly or

through the overlying sands and gravels. Here the water table is within 5m of the surface and fluctuations will be less than 2.5m and mostly controlled by the levels in the river.

The GSI's Kildare GWB Characterisation Report (GSI, 2003) states that this aquifer is located northwest of Kildare town. Recharge to the GWB will be highest in exposed areas and there may also be some flow of groundwater into the aquifer from adjacent groundwater bodies. Groundwater flow will be through a poorly developed karstic system over most of the area (i.e. the karst network is poorly connected and there are no well-developed karst conduits). The extent of the karstic development will depend partly on the nature and thickness of the overlying strata. There are numerous hydrogeological settings in the area due to the variation in subsoil (bog, till, outcrop and major gravel aquifers), the degree of structural deformation (from intense faulting in the area of Allenwood to little or none in the south) and the variety of rock type and hence aquifer types. Such variations make broad statements fallible and individual site investigation will be essential to understanding any given location of interest.

The GSI's Trim GWB Characterisation Report (GSI, 2003) states that this GWB is extends from northeast Offaly through Meath and narrows towards Navan and Slane. The area is generally low-lying with some hillier areas to the southeast. The aquifers are classified as Locally important aquifer which is generally moderately productive and there are small areas of Regionally important karstified aquifer dominated by diffuse flow, Locally important aquifer which is moderately productive only in local zones and Poor aquifer which is generally unproductive except for local zones aquifers. The variety in the structural deformation of the rock increases the complexity of the conceptual model for the area. Firstly, the area northeast of Navan including the highly fractured Lucan formation will have a different groundwater flow system than the low-lying aquifer, which comprises the remainder of the GWB. This difference in geological structure can be seen in all aspects of the conceptual model i.e. recharge, groundwater flow and discharge. The intense structural deformation in the northeast of the GWB has given rise to the development of karstic groundwater flow systems. Although karst features can be expected throughout the GWB, it is in the northeast with the more fractured bedrock where karstification will be greatest. Both point and diffuse recharge occur over the area of this GWB. Point recharge is known to occur at the contact between the non-calcareous rocks and the limestones. This form of recharge is most likely to occur over the cleaner and more fractured limestones. Diffuse recharge is a more widespread process occurring over the entire area of the GWB. This will be the main recharge process in the large lowland areas of this GWB. Groundwater flow will be from local areas of high recharge e.g. areas of thin subsoils in the uplands, to the main surface water bodies overlying the aquifer, such as the Boyne. Discharge from the aquifer is also varied. Water will leave the aquifer in a diffuse nature as baseflow along riverbeds and also as point source at springs. The development of a karstic groundwater system has a key influence on the transportation of pollutants to receptors. Groundwater flow will be faster and more concentrated along karstic conduits.

The Proposed Turbine Delivery Route accommodation areas are underlain by Locally Important Bedrock Aquifers, and the Geashill and Rhode GWBs. Given the minor and localised nature of the Proposed Turbine Delivery Route accommodation works, and the limited depth and extent of excavation anticipated, the works are not expected to result in significant interaction with the underlying groundwater regime. Accordingly, detailed site-specific assessment of the underlying aquifer and groundwater body at each accommodation works location is not considered necessary.

Proposed Grid Connection

Within the Water Study Area, the majority of the Proposed Grid Connection is mapped within the Kildare GWB (IE_SE_G_077; describe above in relation to the Proposed Wind Farm) with some area in the east mapped within the Dublin GWB (IE_EA_G_008).

Details from the GSI's Initial Characterisation Report for the Kildare GWB are provided above.

The GSI's Dublin GWB Characterisation Report (GSI, 2003) states that this GWB occupies a large area extending across the County Dublin from Malahide to Blackrock west across the whole county and extending into Kildare and Meath as far as Kilcock. The area is mostly low-lying with very little surface

topography. The GWB is composed of moderate permeability karstified limestone. Very small areas of low permeability impure limestones are incorporated with this GWB, since they are isolated and do not alter significantly the flow system. Groundwater flow occurs along fractures, joints and major faults. There are a number of warm springs located within this GWB, which suggest deep groundwater circulation is possible. Recharge occurs diffusely through the subsoils and via outcrops. Most flow in this aquifer will occur near the surface. Flow path lengths are not considered to be on a regional scale, and are typically less than 1km in length. Groundwater discharges to the numerous streams and rivers crossing the aquifer, and to the springs and seeps towards the coast.

The GWBs underlying the Proposed Project infrastructure are presented in Table 6-17 below.

Table 6-17 WFD groundwater bodies and Proposed Project infrastructure

GWB	Proposed Project Infrastructure
Cushina	14 no. Proposed Turbines, Access Roads, Peat and Spoil Areas, 4 no. Construction compounds and Proposed Enhancement Areas
Bagenalstown Upper	29 no. Proposed Turbines, Access Roads, Peat and Spoil Areas, 5 no. Construction compounds and Proposed Enhancement Areas
Trim	3 no. Proposed Turbines, Access Roads, Peat and Spoil Areas and Proposed Enhancement Areas
Kildare	1 no. Proposed Turbine, Access Roads, Peat and Spoil Areas, Proposed Onsite Substation, Proposed Grid Connection underground cable route, and Proposed Enhancement Areas
Dublin	Proposed Grid Connection underground cable route, Proposed Offsite Substation, steel masts and associated hardstands for the OHL

6.3.1.10.6 Groundwater Body Status and Risk

Local GWB status and risk results are available from www.catchments.ie and are summarised in Table 6-18 below. This status is defined based on the quantitative status and chemical status of each GWB.

Within the Water Study Area, all GWBs underlying the Project Site achieved 'Good' status in the latest three WFD cycles (2013-2018, 2016-2021 and 2019-2024). The Cushina, Bagenalstown and Kildare GWBs have been deemed to be "not at risk" of failing to meet their respective WFD objectives. The Trim GWB is "at risk" while the risk status of the Dublin GWB is currently under review. No significant pressures have been identified to be impacting upon the Cushina, Bagenalstown, Kildare or Dublin GWBs. The Trim GWB is listed to be under significant pressure from agriculture, anthropogenic and domestic wastewater.

Table 6-18 WFD groundwater body status

Groundwater body	Status 2013-2018	Status 2016-2021	Status 2019-2024	3rd Cycle Risk Status	WFD Pressures
Cushina	Good	Good	Good	Not at risk	None
Bagenalstown Upper	Good	Good	Good	Not at risk	None
Kildare	Good	Good	Good	Not at risk	None
Trim	Good	Good	Good	At risk	Agriculture, Anthropogenic and Domestic Waste water

Groundwater body	Status 2013-2018	Status 2016-2021	Status 2019-2024	3rd Cycle Risk Status	WFD Pressures
Dublin	Good	Good	Good	Under review	None

6.3.1.10.7 *Groundwater Vulnerability*

The GSI describe groundwater vulnerability as a term used to represent the natural ground characteristics that determine the ease with which groundwater may be contaminated by human activities. Groundwater vulnerability embodies the characteristics of the intrinsic geological and hydrogeological features at a site that determine the ease of groundwater contamination. Groundwater vulnerability is related to recharge acceptance, whereby in areas where recharge occurs more readily, a higher quantity of contaminants will have access to groundwater.

Proposed Wind Farm

The GSI mapped groundwater vulnerability rating of the bedrock aquifers underlying Proposed Wind Farm site ranges from 'Low' to 'High'. The vast majority of the Proposed Wind Farm is mapped as having 'Low' and 'Moderate' groundwater vulnerability. Meanwhile, a very small, isolated pocket of 'High' groundwater vulnerability is mapped in the centre and northeast of the Proposed Wind Farm within the Lullybeg, Lullymore, Glashabaun South and Derrybrennan bogs.

The majority of the Proposed Wind Farm infrastructure (wind turbines, construction compounds etc) avoids the areas mapped as having 'High' groundwater vulnerability. 28 no. Proposed Turbines, 5 no. temporary construction compounds and 1 no. met mast are mapped in areas of low groundwater vulnerability. 18 no. Proposed Turbines, 3 no. temporary construction compounds and 1 no. met mast are mapped in areas of moderate groundwater vulnerability. The only Proposed Wind Farm infrastructure mapped in areas of high groundwater vulnerability comprises approximately 720m of access road between Proposed Turbine 40 and Proposed Turbine 43, approximately 110m access road between Proposed Turbine 43 and Proposed Turbine 44 and approximately 170m access road to the south of Proposed Turbine 45.

Based on site walkover surveys and site investigations (1,026 no. peat probes and 46 no. trial pit excavations at the Proposed Wind Farm site and an additional 7 no. trial pits and 3 no. boreholes in land adjacent to Codd 1 Bog), the Proposed Wind Farm site is overlain by peat deposits with an average thickness of 1.6m. The peat is predominantly underlain by lacustrine clay described as gravelly SILT/CLAY with some cobbles and boulders. Bedrock was not encountered in any of the trial pit excavations completed at the Proposed Wind Farm site which extended to a maximum depth of 4.7m. Given the presence of low permeability peat at the surface of Proposed Wind Farm site which is in turn underlain by low permeability lacustrine clay, the groundwater vulnerability at the Proposed Wind Farm site is considered to be predominantly 'Low'. Some local areas of 'Moderate' or 'High' groundwater vulnerability may occur where the overburden deposits are thin.

The Proposed Turbine Delivery Route accommodation areas are mapped in areas of low to high groundwater vulnerability.

Proposed Grid Connection

The vast majority of the Proposed Grid Connection underground electrical cabling route, the Proposed Onsite Substation and the Proposed Offsite Substation are mapped in areas of 'Low' and 'Moderate' groundwater vulnerability. Only approximately 1.76km of the Proposed Grid Connection underground cabling route along the R403 to the east of Allenwood is mapped in an area of 'High' groundwater

vulnerability. This area corresponds to the area mapped by the GSI to be underlain by the Locally Important Roberstown Gravel Aquifer.

6.3.1.11 Existing Baseline Habitat Mapping

The habitats within the Proposed Wind Farm site have been mapped in detail by the BnM between 2009 and 2016. This information has been reviewed as part of the baseline ecological data. Detailed GIS shapefiles of all habitat mapping prepared was received from BnM and ground-truthed by MKO when undertaking detailed habitat assessments and relevés of the Proposed Project infrastructure footprint. In addition to detailed habitat mapping of the part of the Project Site located within the Allen Bog Group by BnM, the following documents were also reviewed:

- Bord na Móna Biodiversity Action Plan 2010-2015 (BnM, 2010)
- Bord na Móna Biodiversity Action Plan 2016-2021(BnM, 2016)

The Bord na Móna Biodiversity Action Plan 2016-2021 outlines that cutaway bog rehabilitation has occurred at Lullymore Bog, Co. Kildare between 2006 and 2015, through outfall blocking and maintenance, wetland creation, drainage re-alignment and fertiliser treatment in order to enhance the wetland complex and rehabilitate the areas of bare peat. This area is approximately 250ha in extent and comprises largely fen and birch woodland habitats, with small patches of rich *Cladium* fen emerging, and 3ha of broadleaved woodland on a mineral island also leased from Lullymore Heritage and Discovery Centre, outside the Project Site.

At Lullybeg, Co. Kildare, the Biodiversity Action Plan also states that conservation management and scrub control had occurred since 2010 and was ongoing in 2016 at the time of writing the Biodiversity Action Plan. This management remains ongoing in collaboration with Butterfly Conservation Ireland. This area comprises a diverse grassland, with marsh fritillary on site. It is also stated that this species is known to occur on '*marginal areas of regenerating cutaway*' of Lullymore Bog, which is located within the Project Site.

6.3.1.11.1 National Peatlands Park

The '*National Peatlands Park – Ballydermot Boglands Area'* brochure, prepared by the National Peatlands Park Group, was also reviewed. This document identifies a number of sites of ecological interest within the Proposed Wind Farm site and surrounding areas. These sites comprise a range of habitats, and records of protected and notable species are also highlighted. A summary of the sites and their ecological features is provided in Table 6-19 below. Many of these areas are congruent with those identified within the Map of Irish Wetlands as described in Table 6-13 above.

Table 6-19 Ballydermot Site List as identified within the National Peatlands Park – Ballydermot Boglands Area brochure

Site No.	Site Name	Key Ecological Features of Interest	Within the Project Site
1, 18, 20, 21, 26, 27	Allenwood South / Lodge Bog Wetlands, including Lodge Bog Nature Reserve and Lullymore East Bog Woodland	Rehabilitating cutaway bog, developing wetlands, remnant raised bog and birch woodland. Lodge Bog Nature Reserve (approximately 35 ha) is undergoing hydrological restoration. Marsh fritillary reported at Lullymore East Cutaway.	Partially – Lodge Bog Nature Reserve and Lullymore East Bog Woodland are located outside of the Project Site
2	Ballybrack Bog	Extensive bare peat with potential for rewetting and development of wetland and peat-forming habitats.	No – adjacent to the Proposed Wind Farm site
3, 23	Ballydermot and Lullybeg Cutaway	Flooded cutover bog with open water, reed swamp, wet heath, poor fen and flush, fen, marsh, wet grassland, scrub, bog woodland and potential *Cladium mariscus* fen. Berms containing	Yes

Site No.	Site Name	Key Ecological Features of Interest	Within the Project Site
		gravel and marl holding plants characteristic of calcareous grassland also present in dry areas.	
4	Ballydermot (Derrybrennan)	Cutover bog, scrub, conifer plantation, dry grassland and recolonising bare ground. Previous wall brown butterfly (*Lasiommata megera*) records.	Yes
5	Ballydermot / Clonbrown Cutover Complex	Severely cutover bog with potentially shallow residual peat.	Yes
6	Ballysooghan Bog cNHA (i.e. Cloonroosk Bog, Ballydermot South)	Raised bog historically described as actively peat-forming with approximately 75% *Sphagnum* cover; historical golden bog-moss (*Sphagnum pulchrum*) records.	Yes
7	Cloncannon Bog West	Relatively intact raised bog with vegetation reported as analogous to Annex I priority active raised bog. Large heath butterfly (*Coenonympha tullia*) reported as present.	No – approximately 0.6km west of the Proposed Wind Farm site
8	Bog of Allen, Killinthomas–Ballydermot	Cutover bog with potential for rehabilitation through rewetting, subject to peat depth.	Yes
9	Cushaling River	River and associated riparian woodland described as relatively unmodified.	Yes
10	Blundell Aqueduct	Grand Canal aqueduct; brochure identifies architectural and industrial heritage interest but no specific ecological features.	No – 1.4km northwest of the Proposed Wind Farm site
11	Crabtree River	Species-rich riverbanks with willow, birch and hawthorn scrub. Otter feeding and possible breeding habitat.	Yes
12	Cushaling East Wet Heath, Ballydermot	Bare peat, raised bog, wet heath, revegetating cutover bog and scrub reported. Wet drains support keeled skimmer (*Orthetrum coerulescens*) and blue damselflies.	Yes
13, 14	Cushaling River / River Figile and Cushaling River Valley	Riparian woodland, freshwater marsh, wet grassland and flooded fields. Suitable habitat for otter and bats.	Partially – WC-WF-04 crosses over the Cushaling River between Codd 1 and Codd 2 Bogs
15	Cushaling West Cutover Bog	Extensive severely cutover bog, largely bare peat, with potentially shallow residual peat.	Yes
16	The Long Derries, Edenderry SAC [000925]	Annex I orchid-rich calcareous grassland. Wall brown, dingy skipper (*Erynnis tages*), small heath (*Coenonynmpha pamphilus*) and common blue (*Polyommatus icarus*) butterflies; marsh fritillary breeding on adjoining heath.	No
17	Derries Codd Cutover South	Cutover bog, bare peat, scrub and reed swamp. Calcareous railway embankment supports species-rich grassland flora, with potential orchid habitat.	Yes
19	Grand Canal Greenway	Slow-moving canal habitat with otter recorded.	No – approximately 0.2km north of the Proposed Wind Farm site

Site No.	Site Name	Key Ecological Features of Interest	Within the Project Site
22	Lullybeg Butterfly Reserve	Rehabilitated cutaway bog (approximately 10 ha) managed since 2010 by Butterfly Conservation Ireland, with marsh fritillary, dark green fritillary (*Speyeria aglaja*), wall brown and small heath. 26 no. butterfly species reported within the reserve. Moth species recorded also include small chocolate-tip (*Clostera pigra*), dark tussock (*Dicallomera fascelina*), small purple-barred (*Phytometra viridaria*) and narrow-bordered five-spot burnet (*Zygaena lonicerae*)	Yes
24	Lullybeg Marsh Fritillary Site	Woodland, scrub, dry grassland, dry heath and cutover bog. Marsh fritillary, dark green fritillary, silver-washed fritillary (*Argynnis paphia*), small heath and red-tipped clearwing moth (*Synanthedom formicaeformis*) reported.	Yes
25	Lullymore	Cutaway bog, bare peat, birch and willow scrub, woodland and species-rich grassland on thin peat and marl. Small heath butterfly population present.	Yes
28	Lullymore Heritage and Discovery Park Wood	Birch–purple moor-grass woodland transitioning to ash–ivy woodland; wetland pools and cutover bog. Moth species recorded include the Suspected moth (*Parastichtis suspecta*), forester moth (*Adscita statices*), dark tussock and small chocolate-tip. Common lizard, common frog, smooth newt , Irish hare, red squirrel and a rich Odonata fauna recorded within the wetlands and woods.	No – approximately 0.3km east of the Proposed Wind Farm site
29	Lullymore West Nature Reserve	Species-rich calcareous and acid grassland, fen, woodland and cutaway raised bog (approximately 4.5 ha). 23 no. butterfly species recorded, including marsh fritillary, and diverse Odonata including 10 no. dragonfly species and 8 no. damselfly species, Corridor to the south supports round-leaved wintergreen (*Pyrola rotundifolia* ssp. *rotundifolia*) and alder buckthorn (*Frangula alnus*).	No – adjacent to the Proposed Wind Farm site
30	Lullymore Wetlands	Rehabilitated cutaway bog (approximately 100 ha) developing into fen with scrub and woodland.	Yes
31	North of Heritage Park Wood	Mixture of bog woodland and woodland on mineral soils.	No – approximately 0.4km east of the Proposed Wind Farm site
32	Plantation Fen cNHA	Fen with common cottongrass (*Eriophorum angustifolium*), purple moor-grass (*Molinia caerulea*) and patches of *Sphagnum*, birch and willow scrub. Irish hare feeding habitat.	Yes
33	Umeras Bog	Rehabilitating cutaway bog, bare peat, pioneer poor fen, birch woodland, wet grassland and degraded raised bog. Potential large heath butterfly habitat and adjoining marsh fritillary breeding habitat.	No – approximately 5.2km south of the Proposed Wind Farm site
34	West of Lugherra River	Deep bare peat with restoration potential. Remnant raised bog with breeding large heath and green hairstreak (*Callophrys rubi*) butterflies.	Yes
35	Murphy's Wood	Mature mixed woodland on mineral and peat soils. Red squirrel, pine marten and badger reported.	Yes

6.3.1.12 Conclusions of the Desktop Study

The desktop study has provided information about the existing environment in hectads N42, N52, N62, N63, N72, and N82 within which the Project Site is located. The vast majority of the Project Site is located within the Barrow surface water catchment within Hydrometric Area 14 of the South Eastern River Basin District, with a small area in the north of Ticknevin Bog located within the Boyne surface water catchment within Hydrometric Area 07 of the Eastern River Basin District, and a small area in the east of the Proposed Grid Connection located in the Liffey and Dublin Bay surface water catchment within Hydrometric Area 09 of the Eastern River Basin District. The Proposed Turbine Delivery Route accommodation areas are located within the South Eastern River Basin District and the Shannon River Basin District.

The following European and Nationally Designated Sites were identified as being within the Likely ZoI of the Proposed Project, as outlined in Section 6.3.1.1 above:

- The Long Derries, Edenderry SAC/pNHA [000925]
- Ballynafagh Lake SAC/pNHA [001387]
- Ballynafagh Bog SAC/pNHA [000391]
- River Barrow and River Nore SAC [002162]
- Poulaphouca Reservoir SPA/pNHA [004063/000731]
- Grand Canal pNHA [002104]
- Curragh (Kildare) pNHA [000392]

The desk study also identified a variety of protected faunal species known to occur within and in proximity to the Project Site, including several species of bats, marsh fritillary, white-clawed crayfish, lamprey spp, Atlantic salmon, common frog, otter and pine marten. Given the records of these species within and near the Project Site as well as the presence of suitable peatland, woodland and aquatic habitats, there is potential for a number of these species to occur within and downstream of the Project Site. The Project Site is located within a freshwater pearl mussel 'sensitive area', however it is not hydrologically linked to any known freshwater pearl mussel point records. The mammal species recorded within the relevant hectad have widespread range and distributions in Ireland and are likely to be recorded frequently throughout Ireland (Marnell *et al,* 2009).

The desk study revealed that the presence of Article 17 mapped Annex I Active raised bog [7110] within the southwest of the Project Site, in Ballydermot South Bog. A number of other Annex I habitats including Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)* important orchid sites [6210], Bog woodland [91D0] and Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] were also identified adjacent to and in close proximity to the Project Site. A number of rare or protected flora have also been recorded within the hectads in which the Project Site is located.

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

6.3.2 Baseline Ecological Survey Results

6.3.2.1 Description of Habitats and Flora within the Project Site

Ther Proposed Wind Farm site is located within part of the Allen Bog Group, i.e. including for 14 no. individual bogs. These include the following: Ballydermot North, Ballydermot South, Barnaran, Blackriver, Codd 1, Codd 2, Derrybrennan, Glashabaun North, Glashabaun South, Killina, Lodge, Lullybeg, Lullymore and Ticknevin Bogs. A figure showing the relative locations of each of these bogs within the Project Site is provided in Figure 6-7 below.

As outlined in Section 6.2.3.1 above, between 2021 and 2026, MKO ecologists visited the Proposed Wind Farm site to ground-truth the results of BnM habitat surveys and mapping and to undertake detailed habitat and botanical surveys, given the time that has passed and the dynamic nature of the habitats. The habitat descriptions in this section are based on the walkover surveys and detailed vegetation surveys undertaken by MKO in 2024, 2025 and 2026. Detailed surveys were also undertaken along the Proposed Grid Connection (see Section 6.3.2.1.7 below) and at the Proposed Turbine Delivery Route accommodation areas (see Section 6.3.2.1.8 below). Detailed botanical data from relevés recorded at key infrastructure locations across the Project Site are provided in the Botanical Assessment Report, Appendix 6-1 of this EIAR. Habitat maps of the Project Site are provided in Figures 6-9a-f. Maps showing the Proposed Project infrastructure footprint overlaying the Habitat Maps are shown in Figures 6-10a-f. All habitats described below have been classified in accordance with Fossitt (2000).

Large areas of the cutover bog have been in industrial peat extraction by BnM until relatively recently (June 2020) and are characterised by bare peat. Where areas of the cutover bog have been out of commercial peat production for a significant period of time, i.e. since the early 90s, these areas have since largely revegetated, primarily by secondary *Calluna*-dominated communities, birch (*Betula* spp.) dominated scrub and bog woodland, pioneer poor fen communities characterised by common cottongrass (*Eriophorum angustifolium*) and small areas of grassland which occur mostly along the decommissioned railway lines traversing the Proposed Wind Farm site. These habitats occur in variable habitat mosaics within the Project Site as shown in the Habitat Map in Figures 6-9a-f which show the location and relative cover of the habitats recorded within the Project Site. The habitats are described in greater detail in the sections below.

In addition to the habitats of the cutover bog, there are also a number of small areas of remnant uncut raised bog at various locations throughout the Project Site, predominantly around the margins of the Proposed Wind Farm site.

Waterbodies within the Project Site include a network of drainage ditches, small streams/watercourses classified as lowland depositing rivers, small areas of standing open water and artificial silt ponds.

660000
665000
670000
730000
725000

N

Ticknevin
Glashabaun North
Derrybrennan
Codd 2
Glashabaun South
Killina
Codd 1
Lullybeg
Lullymore
Lodge
Ballydermot North
Blackriver
Barnaran
Ballydermot South

0 1 2 km

Map Legend

- Project Site

Bogs

- Ballydermot North
- Ballydermot South
- Barnaran
- Blackriver
- Codd 1
- Codd 2
- Derrybrennan
- Glashabaun North
- Glashabaun South
- Killina
- Lodge
- Lullybeg
- Lullymore
- Ticknevin

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Locations of 14 no. bogs within the Project Site

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-7	1:42,000
Drawn By	Checked By	Date
TS	KB	22/10/2026

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

6.3.2.1.1 *Raised bog (PB1)*

There are a number of areas of remnant uncut raised bog habitat within the Proposed Wind Farm site. These are classified as **Raised bog (PB1)**. Large sections of this habitat are located within Glashabaun South, Blackriver and Ballydermot South Bogs, with smaller remnant areas also present in a number of locations along the margins of the Proposed Wind Farm site. Large areas are also present beyond the Project Site in Ticknevin Bog.

The potential for areas 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) has been 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). A number of relevés were taken within areas of remnant raised bog within the Proposed Wind Farm site, and are presented in Section 3 of the Botanical Assessment Report, Appendix 6-1. The results of these vegetation composition assessments (in line with Fernandez *et al.,* 2014) have been considered alongside eco-hydrological modelling in order to interpret the habitats present and their potential to conform to Annex I ARB and DRB.

Areas of raised bog within the Proposed Wind Farm site are generally bordered by tall (2-5m), vertical facebanks with man-made drains around the margins (Plate 6-1) and are degraded in nature due to the presence of drainage ditches throughout as well as ongoing turbary in several sections. These drains are generally inserted in parallel channels which result in firm, dry ground conditions in several areas, such as in Glashabaun South Bog and in the marginal areas of the majority of the remnant raised bogs throughout the Project Site. The vegetation communities in these areas are typically characterised by a high cover of ling heather (*Calluna vulgaris*) with cross-leaved heath (*Erica tetralix*), deergrass (*Trichophorum germanicum*), common cottongrass (*Eriophorum angustifolium*) and hare's-tail cottongrass (*Eriophorum vaginatum*) frequently recorded (Plate 6-2). Species occurring in smaller amounts also include round-leaved sundew (*Drosera rotundifolia*), bog asphodel (*Natrhecium ossifragum*), bog-rosemary (*Andromeda polifolia*) and white-beak sedge (*Rhynchospora alba*), particularly where ground conditions grade into wetter sections. Cover of *Sphagnum* bog mosses is generally low in these areas, comprising the species *Sphagnum capillifolium, S. rubellum, S. tenellum* and *S. papillosum* most frequently. Where ground conditions are slightly wetter, including within the man-made drains, the species *S. cuspidatum* was also recorded. Other bryophytes and lichens recorded include *Hypnum jutlandicum, Cladonia portentosa, Cladonia uncialis, Odontoschisma sphagni* and, where areas of bare eroding peat are present, *Campylopus introflexus.* These dry, degraded sections of raised bog which generally lack any pools or microtopography correlate most closely to the *Marginal* ecotope per Fernandez *et al.* (2014), grading towards *Facebank* ecotope at the very margins, where erosion channels were also occasionally present.

The area of remnant raised bog at the location of the proposed amenity boardwalk in the south of Ballydermot South Bog was characterised by firm ground conditions with no evidence of burning, erosion or bare peat, slight microtopographic hummocks of *Sphagnum capillifolium* and ling heather (*Calluna vulgaris*), and an absence of any pools. Species composition comprised dominant ling heather (*Calluna vulgaris*) approximately 25cm in height on average, with cross-leaved heath (*Erica tetralix*), white-beak sedge (*Rhynchospora alba*), common cottongrass (*Eriophorum angustifolium*), bog rosemary (*Andromeda polifolia*), round-leaved sundew (*Drosera rotundifolia*), the bryophytes *Sphagnum capillifolium, S. papillosum, S. tenellum, S. austinii, Campylopus atrovirens, Hypnum jutlandicum, Odontoschisma sphagni* and the lichens *Cladonia portentosa* and *C. uncialis.* This area most closely correlated to the *Marginal* ecotope per Fernandez *et al.* (2014), however using hydro-ecological modelling it was not found to conform to Annex I DRB. As such, in line with Article 17 Reporting (NPWS, 2025), this habitat is considered *'Supporting Raised bog habitat'.*

The wettest areas of remnant raised bog within the Project Site were located within the large area in Ballydermot South Bog (also known as Cloonroosk Bog). This habitat was found to support a greater abundance of bog asphodel (*Narthecium ossifragum*) and white beak sedge (*Rhychospora alba*) in lawns, with a greater abundance, cover and diversity of *Sphagnum* species, including *S. subnitens, S. medium and S. pulchrum*. Assessments undertaken approximately 50m from the margins of Cloonroosk Bog found that, while in general this wetter area was softer underfoot, it was not quaking in nature and was not characterised by standing water/pools or associated with lawns of *Sphagnum*. This area was found to best align with the *Sub-marginal* ecotope per Fernandez *et al.* (2014). Using eco-hydrological modelling, Annex I DRB was identified throughout large sections of Cloonroosk Bog, located approximately 125m from the Proposed Turbine 13 hardstand and 90m from the proposed peat and spoil area associated with Proposed Turbine 13, outside the ZoI of the Proposed Project (see Section 9.5.2.23 of Chapter 9 Water of the EIAR and Section 6.4.2.1.1 below for detailed impact assessments). Drainage ditches are largely present throughout Cloonroosk and have been blocked as part of restoration efforts, contributing to its higher quality status. This area likely grades towards *Sub-central* and *Central* ecotopes towards the centre of the high bog, with pockets of Annex I ARB present in the highest quality areas.

The majority of the remaining remnant raised bog areas, including those within Blackriver and Glashabaun South Bogs, are largely dry and degraded in nature throughout, with altered vegetation and *Sphagnum* compositions. Based on vegetation analysis of the marginal areas of these remnant raised bogs (i.e. the areas which are located within 150m of the Proposed Project infrastructure) best correspond to *Marginal* ecotopes, in line with Fernandez *et al.* (2014). As per Fernandez *et al.* (2014) *Marginal* ecotopes can correspond to the Annex I habitat DRB [7120]. This is supported by eco-hydrological modelling, which shows the presence of DRB within areas of raised bog in Blackriver Bog (see Figures 6-1-2, Appendix 6-1 Botanical Assessment Report). A large area of DRB is located within the raised bog approximately 200m to the north of Proposed Turbine 10 hardstand, approximately 170m north of the proposed internal cabling route and peat and spoil area associated with Proposed Turbine 10 at its closest. DRB has also been mapped using eco-hydrological modelling within the raised bog approximately 190m northwest of Proposed Turbine 39, approximately 150m from the peat and spoil area associated with Proposed Turbine 39 at its closest. A small pocket of DRB was also identified via eco-hydrological modelling in the south of Blackriver Bog, approximately 260m west of the Proposed Turbine 5 hardstand and 210m from the proposed internal cabling route associated with Proposed Turbine 5 at its closest.

An additional area of DRB was identified in Ticknevin Bog, approximately 720m to the west of the Proposed Wind Farm site, and 1.2km from the nearest Proposed Project infrastructure (i.e. Proposed Turbine 32). This area was not subject to detailed vegetation surveys given its location outside the Project Site and relative distance to the Proposed Project infrastructure footprint. No further areas of Annex I ARB or DRB were identified within the Project Site during either vegetation composition assessments or using eco-hydrological modelling. In line with Article 17 reporting (NPWS, 2025), all other areas of remnant, uncut raised bog within the Project Site which neither conform to Annex I ARB nor DRB, are considered *'Supporting Raised bog habitat'.*



Plate 6-1 A high vertical facebank and drainage ditch at the margins of the remnant Raised bog (PB1) in the north of Blackriver Bog



Plate 6-2 The area of Raised bog (PB1) in the north of Glashabaun South Bog, which is dry and degraded in nature.

6.3.2.1.2 *Cutover bog (PB4) and Revegetating Habitats*

The vast majority of the Proposed Wind Farm site, with the exception of small remnant sections of raised bog, comprises cutover raised bog or cutaway peat classified as **Cutover bog (PB4)**. Where peat cutting has ceased relatively recently on large areas of the Project Site, e.g. large parts of Ballydermot South, Ticknevin, Barnaran and Codd Bogs, these areas are dominated by bare peat with little growth of vegetation (Plate 6-3). Evidence of recent turbary activity was also observed in some areas (Plate 6-4).

Where peat extraction has ceased for longer periods of time, areas of the cutover bog are in various stages of revegetation with secondary cutover habitats. While ultimately this habitat is classified as **Cutover bog (PB4)** as per Fossitt (2000), the revegetating secondary habitats of the cutover bog are also described and classified below in terms of their closest corresponding Fossitt code where possible. Therefore, many of the habitats described below will be classified first and foremost as Cutover bog (PB4) with the closest corresponding Fossitt code (e.g. Poor fen and flush (PF2), Scrub (WS1), Wet grassland (GS4) also provided to capture the diversity and non-homogenous nature of the revegetating secondary habitats present.

For example, where peat extraction recently ceased in June 2020 and the cutover bog is in the early stages of recolonisation, areas consist of mosaics of bare peat and pioneer open cutaway communities, including pioneer ling heather (*Calluna vulgaris*) dominated secondary ***Calluna*-dominated vegetation**[42] (Plate 6-5), pioneer **Poor fen (PB4/PF2)**, **Scrub (PB4/WS1)** and dry grassland habitats.

Where peat production/extraction has ceased for some time (prior to June 2020), e.g. much of Lullybeg Bog and Glashabaun South Bog, mosaics of well-established ***Calluna*-dominated vegetation**, **Poor fen (PB4/PF2)** type communities as well as downy birch (*Betula pubescens*) and grey willow (*Salix cinerea*) dominated **Scrub (PB4/WS1)** and dry **Bog woodland (WN7**[43]**)** are present.

A small number of areas of cutover bog within the Proposed Wind Farm site, particularly those in low lying areas, are much wetter in nature with some standing water. These often occur in association with areas of **Poor fen and flush (PB4/PF2)** and **Reed and large sedge swamp (PB4/FS1)** communities.

The potential for cutover bog habitats within the Proposed Wind Farm site to correspond to either Annex I ARB [7110] or Annex I DRB [7120] has been considered. 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 DRB, the 2025 Article 17 Report states,

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[42] *This secondary vegetation community has no direct corresponding Fossitt habitat code as it was not found to closely to conform to either typical dry heath (HH1) or wet heath (HH3) communities as described within Fossitt (2000).*
[43] *Bog woodland is not mapped with the Fossitt classification PB4/WN7 as this habitat, by definition within Fossitt (2000), includes areas of this habitat on cutover bog. These habitats within the Proposed Wind Farm site are highly established, therefore the Cutover bog (PB4) clarification was not considered necessary.*

"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 Project Site were not found to correspond to either ARB or DRB. The vast majority of the cutover bog was found to be dry in nature and have either no or low *Sphagnum* cover. No areas of cutover bog met the criteria to be considered ARB as per Smith and Crowley (2020).

The following sub-sections provide a description of the secondary habitats that have begun to form on the cutover bog following cessation of peat extraction/milling.



Plate 6-3 Cutover bog (PB4) dominated by bare peat at the location of Proposed Turbine 18.



Plate 6-4 Freshly cut peat bricks left out for drying in Blackriver Bog, showing ongoing local turbary activities.



Plate 6-5 Cutover bog dominated by bare peat, in the early stages of recolonisation by ling heather (Calluna vulgaris) secondary Calluna-dominated community in Ballydermot South Bog.

Calluna-dominated communities on Cutover bog

Secondary ***Calluna*-dominated communities** within the Proposed Wind Farm site are largely dominated by ling heather (*Calluna vulgaris*) (Plate 6-6), common cottongrass (*Eriophorum angustifolium*) and purple moor grass (*Molinia caerulea*) on dry, drained peat with a low cover of *Sphagnum* species. The bryophyte *Campylopus introflexus* was also recorded regularly throughout the Proposed Wind Farm site within this habitat.

This habitat regularly occurs alongside and forms mosaics with other habitats including scrub, with immature self-seeded birches (*Betula* spp.) and willows (*Salix* spp.) frequently growing throughout these communities (Plate 6-7). Other encroaching species recorded include sitka spruce (*Picea sitchensis*), rowan (*Sorbus aucuparia*), Scot's pine (*Picea abies*) and European gorse (*Ulex europaeus*). This habitat also frequently grades into bare peat, with pockets of bare peat also common within the habitat blocks as *Calluna* revegetates more recently cutover areas.

Where ground conditions are wetter, species including cross-leaved heath (*Erica tetralix*), white beak sedge (*Rhynchospora alba*), bog asphodel (*Narthecium ossifragum*), tormentil (*Potentilla erecta*) and *Sphagnum* bog mosses are present in greater abundances (Plate 6-8).

Revegetating cutover bog habitats within the Proposed Wind Farm 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 *Calluna*-dominated communities which have established on the cutover bog within the Proposed Wind Farm 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 *Calluna*-dominated communities growing on cutover bog within the Proposed Wind Farm site do not conform to Annex I heath habitats. They are secondary, cutover 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.



Plate 6-6 Ling heather (Calluna vulgaris) dominated secondary community at the location of the Proposed Met Mast no. 2 in the west of the Proposed Wind Farm site.



Plate 6-7 Secondary Calluna-dominated community with encroaching downy birch (Betula pubescens) scrub (WS1)



Plate 6-8 Secondary Calluna-dominated community with higher abundance of white-beak sedge (Rhynchospora alba) and Sphagnum bog mosses

Poor fen and flush (PB4/PF2)

Poor fen and flush (PB4/PF2) occurs within the Proposed Wind Farm site predominantly as pioneer poor fen vegetation which has started to establish following the cessation of peat harvesting, with some areas of well-established poor fen and flush where the habitats have developed over longer timeframes. The habitat is widespread but highly variable, mostly occurring as a mosaic along with bare peat and often with encroaching scrub.

The majority of poor fen within the Proposed Wind Farm site occurs as pioneer vegetation. These areas are most commonly dominated by common cottongrass (*Eriophorum angustifolium*) with other sedges and rushes including soft rush (*Juncus effusus*), sharp-flowered rush (*Juncus acutiflorus*), jointed rush (*Juncus articulatus*), toad rush (*Juncus bufonius*), common yellow sedge (*Carex viridula*) and hare's tail cottongrass (*Eriophorum vaginatum*) also frequent (Plate 6-9). Other commonly recorded species within these pioneer habitats include water mint (*Mentha aquatica*), marsh willowherb (*Epilobium palustre*), great willowherb (*Epilobium hirsutum*), bulrush (*Typha* latifolia), reed canary grass (*Phalaris arundinacea*), marsh arrowgrass (*Triglochin palustre*), with encroaching ling heather (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*) and downy birch (*Betula pubescens*).

Wetter areas of poor fen with standing water are associated with more established poor fen communities (Plate 6-10). These habitats have a greater diversity of species, particularly within the broadleaved component, and were found to include marsh pennywort (*Hydrocotyle vulgaris*), lesser spearwort (*Ranunculus flammula*), round-leaved sundew (*Drosera rotundifolia*), bog pondweed (*Potamogeton polygonifolia*), lesser bladderwort (*Utricularia minor*), meadowsweet (*Filipendula ulmaria*), common valerian (*Valeriana officinalis*), tormentil (*Potentilla erecta*), bog rosemary (*Andromeda polifolia*), water plantain (*Alisma plantago-aquatica*), gypsywort (*Lycopus europaeus*) and white beak sedge (*Rhynchospora alba*). Bryophytes identified within these areas of poor fen also

include *Bryum pseudotriquetrum*, *Calliergonella cuspidata*, *Marchantia polymorpha* and *Aneura pinguis*.

Established poor fen is scattered across the Proposed Wind Farm site and is located within the Proposed Project infrastructure footprint at the location of Proposed Turbine 11 and to the east of Proposed Turbine 46.



Plate 6-9 Area of pioneer Poor fen (PB4/PF2) dominated by common cottongrass (Eriophorum angustifolium) in Lodge Bog, in a mosaic with areas of bare peat.



Plate 6-10 Area of more developed Poor fen (PB4/PF2) with standing water at the location of the Proposed Turbine 11 hardstand.

Reed and large sedge swamps (PB4/FS1)

Where cutover bog has become waterlogged and dominated by reeds, large grasses or sedges, it is classified as **Reed and large sedge swamps (PB4/FS1)**. This habitat is sparse across the Proposed Wind Farm site, generally occurring only in small pockets. A larger area of reed swamp is located at the Proposed Turbine 23 (Plate 6-11).

This area of habitat comprises a high proportion of standing water, with vegetation dominated by common cottongrass (*Eriophorum angustifolium*), marsh arrowgrass (*Triglochin palustris*) and bulrush (*Typha latifolia*). Other species commonly recorded in reed swamps within the Project Site include soft rush (*Juncus effusus*), jointed rush (*Juncus articulatus*), water horsetail (*Equisetum fluviatile*), watercress (*Nasturtium officinale*), slender rush (*Juncus tenuis*), marsh willowherb (*Epilobium palustre*) and redshank (*Persicaria maculosa*), as well as grey willow (*Salix cinerea*) and downy birch (*Betula pubescens*) saplings.



Plate 6-11 Area of Reed and large sedge swamp (PB4/FS1) at the location of the Proposed Turbine 23.

6.3.2.1.3 Woodland, Scrub, Treeline and Hedgerows

Large areas of the Proposed Wind Farm site where peat harvesting activities have ceased for some time (i.e. prior to June 2020) have become recolonised with Scrub (PB4/WS1) and Bog woodland (WN7) habitats, particularly where ground conditions are dry. The Project Site also has small areas of linear Hedgerows (WL1) and Treelines (WL2), and sections of Conifer plantation (WD4) are present particularly in the east of the Proposed Wind Farm site. Small areas of Mixed broadleaved woodland (WD1) and Oak-ash-hazel woodland (WN2) are also present within the Project Site, outside of the Proposed Project infrastructure footprint. These habitats are each described in detail in the following sections. The habitat Dense bracken (PB4/HD1) is also included in this section.

Scrub (PB4/WS1)

Throughout the Proposed Wind Farm site, **Scrub (PB4/WS1)** is common where it is developing on drier areas of cutover bog.

This habitat is generally dominated by downy birch (*Betula pubescens*), silver birch (*Betula pendula*) and grey willow (*Salix cinerea*) (Plate 6-12), with smaller amounts of eared willow (*Salix aurita*) and goat willow (*Salix caprea*) also recorded. The understorey within this habitat is generally dry in nature and species-poor, comprising various mixes of ling heather (*Calluna vulgaris*), brambles (*Rubus fruticosus* agg.) and purple moor grass (*Molinia caerulea*). Other species less commonly recorded within scrub habitats include gorse (*Ulex europaeus*), raspberry (*Rubus idaeus*), tormentil (*Potentilla erecta*), lodgepole pine (*Pinus contorta*), sessile oak (*Quercus petraea*), soft rush (*Juncus effusus*), sweet vernal grass (*Anthoxanthum odoratum*), marsh arrowgrass (*Triglochin palustris*), marsh thistle (*Cirsium palustre*), rowan (*Sorbus aucuparia*), colt's foot (*Tussilago farfara*), marsh horsetail (*Equisetum palustre*), wild carrot (*Daucus carota*), rosebay willowherb (*Chamaenerion angustifolium*), devil's-bit scabious (*Succisa pratensis*), wild angelica (*Angelica sylvestris*), tormentil (*Potentilla erecta*) and common knapweed (*Centaurea nigra*).

Where grasses or heath species are present in higher abundances, scrub commonly forms mosaics with habitats including dry meadows and grassy verges (PB4/GS2), *Calluna*-dominated vegetation and pioneer poor fen (PB4/PF2) communities. Where scrub species were found growing greater than 4 metres in height, it was classified as bog woodland (WN7 as per Fossitt, 2000). These habitats are described in detail in the relevant sections below.



Plate 6-12 Area of downy birch (Betula pubescens)-dominated Scrub (PB4/WS1) to the south of Proposed Turbine 27.

Bog woodland (WN7)

Birch-dominated **Bog woodland (WN7)** is common throughout the Proposed Wind Farm site and is present in large areas particularly within Glashabaun North, Glashabaun South, Ballydermot North and Barnaran Bogs. These woodlands are commonly found growing in blocks separated by large drainage ditches (FW4) and rides usually dominated by grasses or bracken (Plate 6-13). This habitat also commonly occurs as narrow linear strips in association with drainage ditches (Plate 6-14). Where these linear habitats are >4m in width, they are classified as linear bog woodland (as per Fossitt, 2000).

Bog woodland within the Project Site is largely dominated by downy birch (*Betula pubescens*) and silver birch (*Betula pendula*) (Plate 6-15) with grey willow (*Salix cinerea*) also abundant in some areas. Other occasional tree species include eared willow (*Salix aurita*), hawthorn (*Crataegus monogyna*), rowan (*Sorbus aucuparia*), Scot's pine (*Pinus sylvestris*), lodgepole pine (*Pinus contorta*) and oak saplings (*Quercus* spp.). The shrub layer commonly consists of brambles (*Rubus fruticosus* agg.), ivy (*Hedera helix*) and bracken (*Pteridium aquilinum*) with honeysuckle (*Lonicera periclymenum*), raspberry (*Rubus idaeus*), golden scaly male fern (*Dryopteris affinis*), broad buckler fern (*Dryopteris dilatata*), ling heather (*Calluna vulgaris*) and broom (*Cytisus scoparius*) also frequently recorded. The ground flora is often of low diversity, however where the canopy is less dense, grasses including purple moor grass (*Molinia caerulea*), sweet vernal grass (*Anthoxanthum odoratum*), common bent grass (*Agrostis capillaris*) and false oat grass (*Arrhenatherum elatius*), are found growing abundantly, and rarely floating sweet grass (*Glyceria fluitans*) where ground conditions are wetter. Other species recorded within bog woodland within the Project Site include herb Robert (*Geranium robertianum*),

common dog violet (*Viola riviniana*), marsh horsetail (*Equisetum palustre*), wild strawberry (*Fragaria vesca*), marsh willowherb (*Epilobium palustre*), marsh bedstraw (*Galium palustre*), and the rushes hard rush (*Juncus inflexus*), soft rush (*Juncus effusus*) and jointed rush (*Juncus articulatus*).

The bryophytes recorded within the bog woodlands include *Thuidium tamariscinum, Kindbergia praelonga*, *Eurhynchium striatum*, *Orthotrichum affine*, *Loeskeobryum brevirostre*, *Polytrichum juniperinum*, *Polytrichum commune, Calliergonella cuspidata*, *Hypnum cupressiforme, Eurhychium striatum, Lophocolea bidentata* and *Frullania dilatata*.

The bog woodlands within the Project Site were recorded growing on cutover bog which is predominantly dry in nature with little to no *Sphagnum* cover. As such, no areas of this habitat growing upon cutover bog were found to conform to Annex I Bog Woodland [91D0].



Plate 6-13 Area of Dry meadows and grassy verges (PB4/GS2) and Dense bracken (PB4/HD1) separating two blocks of Bog woodland (WN7) in Barnaran Bog.



Plate 6-14 Linear areas of Bog woodland (WN7) located in Ballydermot South Bog.



Plate 6-15 Downy birch (Betula pubescens) dominated Bog woodland (WN7) at the location of Proposed Turbine 34.

Oak-ash-hazel woodland (WN2)

An area of woodland classified as **Oak-ash-hazel woodland (WN2)** is present in the north of Lullybeg Bog, along the Crabtree River to the west of Proposed Turbine 36. This woodland comprises ash (*Fagus sylvatica*), grey willow (*Salix cinerea*), hazel (*Corylus avellana*), holly (*Ilex aquifolium*) and goat willow (*Salix caprea*), as well as occasional beech (*Fagus sylvatica*) (Plate 6-16). The understorey was dominated by brambles (*Rubus fruticosus* agg.) and ivy (*Hedera helix*). This habitat is located entirely outside of the Proposed Project infrastructure footprint.



Plate 6-16 Area of Oak-ash-hazel woodland (WN2) present along the Crabtree River

Mixed broadleaved woodland (WD1)

An area of woodland classified as **Mixed broadleaved woodland (WD1)** is present to the west of Proposed Turbine 36, in Lullybeg Bog within the Proposed Wind Farm site. Species recorded within this area of woodland include grey willow (*Salix cinerea*), ash (*Fagus sylvatica*), goat willow (*Salix caprea*), holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) as well as occasional non-native sycamore (*Acer pseudoplatanus*) (Plate 6-17). The understorey comprised ivy (*Hedera helix*), brambles (*Rubus fruticosus* agg.), hedge bindweed (*Calystegia sepium*) and occasional meadowsweet (*Filipendula ulmaria*) and silverweed (*Potentilla anserina*). This habitat is located entirely outside of the Proposed Project infrastructure footprint.



Plate 6-17 Mixed broadleaved woodland (WD1) located to the west of Proposed Turbine 36

Hedgerows (WL1) and Treelines (WL2)

Hedgerow (WL1) and **Treeline (WL2)** habitats make up a very small proportion of the habitats within the Project Site. As outlined in the section above relating to bog woodland, many of the linear treelines within the Project Site, which are largely associated with drainage ditches, are over 4m in width and are therefore classified as linear stretches of bog woodland (WN7).

These habitats are present at the location of the Proposed Offsite Substation and in the accommodation areas along the Proposed Turbine Delivery Route and are described accordingly below.

Conifer plantation (WD4)

A large area of **Conifer plantation (WD4)** managed by Coillte is located in the east and northeast of the Project Site, within Killina, Lullymore, Lullybeg and Glashabaun South Bogs, with further areas of conifer forestry also recorded within Derrybrennan and Ballydermot North Bogs (Plate 6-18). A number of forestry sub-compartments are present in this area, with the coniferous components of the plantations comprising mixes of sitka spruce (*Picea sitchensis*), Norway spruce (*Picea abies*), lodgepole pine (*Pinus contorta*), Corsican pine (*Pinus nigra*), and Monterey pine (*Pinus radiata*), with varying percentages of broadleaves including willows (*Salix* spp.), birches (*Betula* spp.), and oaks (*Quercus* spp.). These plantations are of mixed maturity, with planting dates between 1983 and 2019. Due to the high cover of birch and willow scrub within the area of conifer plantation in Killina Bog, this area is mapped within the habitat mapping as a mosaic with scrub (i.e. WD4/WS1).



Plate 6-18 Conifer plantation (WD4) within Killina Bog, at the location of the Proposed Enhancement Area.

Dense bracken (PB4/HD1)

Areas of the habitat **Dense bracken (PB4/HD1)** on cutover bog are dominated by the fern bracken (*Pteridium aquilinum*). This habitat occurs in small pockets throughout the Proposed Wind Farm site, along the edges of roads and tracks, as well as in rides between areas of Bog woodland (WN7) (Plate 6-19).



Plate 6-19 Dense bracken (HD1) present within a ride between areas of Bog woodland (WN7) to the north of Turbine 16.

6.3.2.1.4 Grassland Habitats

Grassland habitats are present in small areas in throughout the Project Site. These habitats are typically dry in nature, comprising Dry calcareous and neutral grassland (PB4/GS1), particularly along the decommissioned railway lines, as well as Dry meadows and grassy verges (PB4/GS2) and Wet grassland (PB4/GS4) in places. These habitats are described in detail in the following sections.

Grassland habitats present at the location of the Proposed Offsite Substation are outlined separately in Section 6.3.2.1.7 below.

Dry calcareous and neutral grassland (PB4/GS1)

Small areas of **Dry calcareous and neutral grassland (PB4/GS1)** were recorded growing along the decommissioned railway lines throughout the Proposed Wind Farm site (Plate 6-20). These areas were frequently recorded as early recolonising habitats upon the calcareous substrate of the decommissioned railway lines. The railway lines have been removed as part of the decommissioning requirements of the IPC Licence, however the limestone gravel that formerly underlaid the railway lines remains along many of its stretches, creating calcareous ground conditions.

A diversity of plant species was identified growing along these areas, predominantly comprising calcareous species along with a mixture of species characteristic of the surrounding scrub and peatland. These include yellow-wort (*Blackstonia perfoliata*), wild carrot (*Daucus carota*), glaucous sedge (*Carex flacca*), yellow mignonette (*Reseda lutea*), fairy flax (*Linum catharticum*), salad burnet (*Sanguisorba minor*), colt's foot (*Tussilago farfara*), ribwort plantain (*Plantago lanceolata*), black medick (*Medicago lupulina*), fern-grass (*Catapodium rigidum*), yarrow (*Achillea millefolium*), fireweed (*Chamaenerion angustifolium*), common knapweed (*Centaurea nigra*), silverweed (*Potentilla anserina*), common ragwort (*Jacobaea vulgaris*), yellow rattle (*Rhinanthus minor*), red fescue (*Festuca rubra*), glaucous sedge (*Carex flacca*), false oat grass (*Arrhenatherum elatius*), tormentil (*Potentilla erecta*), dandelion

(*Taraxacum officinale*), wild strawberry (*Fragaria vesca*), purple moor grass (*Molinia caerulea*), yarrow (*Achillea millefolium*), bird's foot trefoil (*Lotus corniculatus*), sweet vernal grass (*Anthoxanthum odoratum*), quaking grass (*Briza media*), cow parsley (*Anthriscus sylvestris*), field horsetail (*Equisetum arvense*), cock's-foot grass (*Dactylis glomerata*), self-heal (*Prunella vulgaris*) and common centaury (*Centaurium erythraea*). Few bryophytes such as *Flexitrichum gracile*, *Fissidens taxifolius* and *Encalypta streptocarpa* were also identified along these former railways. Small pockets of calcareous grassland were also infrequently recorded in scattered areas throughout the Project Site outside of these linear railways (Plate 6-21).

The Red-listed species basil thyme (*Clinopodium acinos*) was also frequently recorded along the decommissioned railway lines, as described in Section 6.3.2.2 below.

The calcareous grasslands within the Project Site were recorded growing on cutover bog and along decommissioned railway lines. In line with Irish Wildlife Manual 102 *The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats* (Martin *et al.,* 2018), no areas of this habitat were found to conform to Annex I Semi-natural dry grasslands and scrub facies on calcareous substrates [6210].



Plate 6-20 Area of Dry calcareous and neutral grassland (PB4/GS1) growing along a former railway line in Glashabaun North Bog.



Plate 6-21 Area of developed Dry calcareous and neutral grassland (PB4/GS1) in Ballydermot North Bog.

Dry meadows and grassy verges (PB4/GS2)

Small areas of dry grassland classified as **Dry meadows and grassy verges (PB4/GS2)** were encountered on the dryest areas of cutover bog within the Proposed Wind Farm site, frequently along the margins of existing machine tracks through cutover bog (Plate 6-22). The dominant grasses within this habitat across the Project Site were Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), rough meadow grass (*Poa trivialis*), purple moor grass (*Molinia caerulea*), creeping bent (*Agrostis stolonifera*), false oat grass (*Arrhenatherum elatius*), and quaking grass (*Briza media*). Other species commonly recorded within dry meadows included field horsetail (*Equisetum arvense*), silverweed (*Potentilla anserina*), meadowsweet (*Filipendula ulmaria*), cat's-ear (*Hypochaeris radicata*), knapweed (*Centaurea nigra*), meadow vetchling (*Lathyrus pratensis*), creeping cinquefoil (*Potentilla reptans*), coltsfoot (*Tussilago farfara*), tormentil (*Potentilla erecta*), great willowherb (*Epilobium hirsutum*), creeping thistle (*Cirsium arvense*), dandelion (*Taraxacum officinale*), creeping buttercup (*Ranunculus repens*), common ragwort (*Jacobaea vulgaris*), common hogweed (*Heracleum sphondylium*), bittersweet nightshade (*Solanum dulcamara*), devil's bit scabious (*Succisa pratensis*), spear thistle (*Cirsium vulgare*), bird's foot trefoil (*Lotus corniculatus*), common chickweed (*Stellaria media*), common spotted orchid (*Dactylorhiza fuchsii*), fragrant orchid (*Gymnadenia conopsea*), meadow thistle (*Cirsium dissectum*), ribwort plantain (*Plantago lanceolata*), carnation sedge (*Carex panicea*), hedge bindweed (*Calystegia sepium*), tufted vetch (*Vicia cracca*), fireweed (*Epilobium angustifolium*), common centaury (*Centaurium erythraea*), groundsel (*Senecio vulgaris*), field scabious (*Knautia arvensis*), and hemp agrimony (*Eupatorium cannabinum*) (Plate 6-23).

This habitat was regularly recorded as a mosaic with Scrub (PB4/WS1), with brambles (*Rubus fruticosus* agg.), nettles (*Urtica dioica*), downy birch (*Betula pubescens*), grey willow (*Salix cinerea*), and ling heather (*Calluna vulgaris*) encroaching.



Plate 6-22 Grassy verges (PB4/GS2) present at the edges of existing machine tracks at the location of Proposed Turbine 25.



Plate 6-23 Dry meadows and grassy verges (PB4/GS2) growing in association with Dense bracken (PB4/HD1) near the margins of Codd 2 Bog

Wet grassland (PB4/GS4)

Areas of cutover bog that have begun to revegetate with **Wet grassland (PB4/GS4)** were recorded within small areas of the Proposed Wind Farm site. These habitats are most commonly dominated by purple moor grass (*Molinia caerulea*) (Plate 6-24). Other species recorded within revegetating wet grasslands commonly include jointed rush (*Juncus articulatus*), water mint (*Mentha aquatica*), sweet vernal grass (*Anthoxanthum odoratum*), Yorkshire fog (*Holcus lanatus*), marsh thistle (*Cirsium palustre*), cat's-ear (*Hypochaeris radicata*), yellow sedge (Carex *viridula*), glaucous sedge (*Carex flacca*), wild carrot (*Daucus carota*), colt's foot (*Tussilago farfara*) and more rarely wild angelica (*Angelica sylvestris*), common valerian (*Valeriana officinalis*), spear thistle (*Cirsium vulgare*), redshank (*Persicaria maculosa*), brooklime (*Veronica beccabunga*), knotgrass (*Polygonum aviculare*), slender St John's-wort (*Hypericum pulchrum*), groundsel (*Senecio vulgaris*) and common spotted orchid (*Dactylorhiza fuchsii*).



Plate 6-24 Area of purple moor grass (Molinia caerulea) dominated Wet grassland (PB4/GS4) that has recolonised cutover bog in Blackriver Bog.

6.3.2.1.5 *Artificial Habitats*

Buildings and artificial surfaces (BL3)

A number of existing public and private paved roads are present through the Proposed Wind Farm site and are classified as **Buildings and artificial surfaces (BL3)**. These include the L1001/L3001 local road that traverses the centre of the Proposed Wind Farm in a north-south direction, as well as the R414 which traverses the eastern section of the Proposed Wind Farm site, to the west and north of Lodge Bog. A smaller gravel access road is also located to the east of the L1001/L3001 (Plate 6-25); however this road changes to Recolonising bare ground (ED3) as it traverses north.

Site Entrance 1A to the Proposed Wind Farm is located to the north of the Edenderry Power Station in the west of the Project Site and overlaps with the existing access road to the existing Cushaling Wind Farm for a distance of approximately 850m (Plate 6-26).



Plate 6-25 Existing gravel road located to the west of Proposed Turbine 2, classified as Buildings and artificial surfaces (BL3).



Plate 6-26 The existing access road to Cushaling Wind Farm, classified as Buildings and artificial surfaces (BL3), overlaps with the Proposed Wind Farm access track for a distance of approximately 850m in the west of the Project Site.

Recolonising bare ground (ED3)

Where areas of bare ground (excluding bare peat) and tracks through the Project Site been left undisturbed, they have revegetated with opportunistic colonising vegetation and are classified as **Recolonising bare ground (ED3)**. A large area of this habitat is present along the main access road of the Proposed Wind Farm in the west of the Proposed Wind Farm site, where recolonising plants are underlain by dense wood chippings (Plate 6-27).

This habitat is also present at the proposed temporary construction compound to the east of Proposed Turbine 14, where the species broadleaf plantain (*Plantago major*), jointed rush (*Juncus articulatus*), black medick (*Medicago lupulina*), devil's-bit scabious (*Succisa pratensis*), rough meadow grass (*Poa trivialis*), sweet vernal grass (*Anthoxanthum odoratum*), yarrow (*Achillea millefolium*) and cat's-ear (*Hypochaeris radicata*) have begun to recolonise (Plate 6-28).



Plate 6-27 Area of Recolonising bare ground (ED3) along the Proposed Wind Farm access road in the west of the Project Site.



Plate 6-28 The proposed temporary construction compound located to the east of Proposed Turbine 14 is located in an area of Recolonising bare ground (ED3).

6.3.2.1.6 Watercourses and Waterbodies

The Proposed Wind Farm site is traversed by a network of Drainage ditches (FW4) throughout the cutover bog habitats, as well as within some sections of remnant Raised bog (PB1). The Project Site is largely drained by a number of tributaries of the Figile and Slate Rivers, which flow through the Proposed Wind Farm. Silt ponds are also present in several locations within the Project Site, as well as other areas of open water. These habitats are described in detail in the following sections.

Lowland depositing rivers (FW2)

The Project Site is drained by a number of EPA mapped watercourses within and surrounding the Project Site, as outlined in Section 6.3.1.10 above. These are classified as **Lowland depositing rivers (FW2)** and include a number of tributaries of the Figile River (Plate 6-29) and the Slate River which both discharge downstream into the River Barrow. The River Barrow is designated as the River Barrow and River Nore SAC approximately 9.8km south of the Project Site, and at a distance of approximately 17km downstream of the Project Site at its nearest point. A small tributary of the River Boyne also flows along the northern boundary of the Project Site, to the north of Ticknevin Bog.

These mapped watercourses have been modified and straightened in several areas in association with historical turbary activities within the Project Site. A map showing the location of watercourses draining and surrounding the Project Site is shown in Figure 6-8 below.

Watercourse Crossings within the Proposed Wind Farm site

As outlined in Section 4.4.1.11 of this EIAR, there are a total of 15 no. watercourse crossing locations associated with the Proposed Wind Farm infrastructure footprint over natural watercourses (rivers and streams). While an additional crossing of the EPA blue line mapping is located to the east of Proposed Turbine 8, during the surveys undertaken this was found to be highly modified and best characterised as a drain (FW4) therefore it is not considered in the table below. The main crossing locations are over the Figile River (WC-WF-04 and WC-WF 07), and both of these crossings will be completed using clear-span crossings. Existing bridges are present at these locations, and these will be dismantled and replaced as part of the Proposed Wind Farm, following the methodologies set out in Section 4.9.1.7 of this EIAR. The watercourses at each of the 15 no. crossings are described in further detail in Section 4.1 of the Aquatic Baseline Report, Appendix 6-3.

Table 6-20 Watercourse Crossings within the Proposed Wind Farm

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-01 Existing crossing over the Clonbrown Stream, approximately 270 west/ southwest of Proposed Turbine 8	Existing Crossing to be removed and a new crossing will be constructed. Box culvert/ Bottomless. **In-stream works may be required.**	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-WF-02 Proposed crossing over the Clonbrown Stream, approximately 300m west of Proposed Turbine 8	New Crossing to facilitate Site Entrance 3C, a secondary entrance off the L-3001. Box Culvert / Bottomless Culvert / Pipe. **In-stream works may be required.**	
WC-WF-03 Existing crossing over the Clonbrown Stream, approximately 630m southwest of Proposed Turbine 9	Existing Crossing to facilitate Site Entrance 3D – along proposed amenity track. No structural upgrade necessary to existing crossing. Floated track for amenity use only. No in-stream works required.	

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-04 Existing crossing over the Figile River between Codd 1 and Codd 2 Bogs	Existing Crossing – The existing crossing will be demolished and replaced with a Clear span bridge to facilitate the internal site access road south west of Proposed Turbine 26 over the Figile River. **In-stream works required.**	 
WC-WF-05 Existing crossing over the Ballykilleen Stream, approximately 470m east of Proposed Site Entrance A	Existing Culvert Crossing – Facilitating Site Entrance 1A. No in-stream works required.	

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-6 Existing crossings over the Figile River, approximately 650m east of Proposed Site Entrance A	Existing Clear Span Bridge Crossing – Facilitating Site Entrance 1A. No in-stream works required.	 
WC-WF-07 Existing crossing over the Figile River between Glashabaun North and Glashabaun South Bogs	Existing bridge to be demolished and replaced with a clear-span bridge. **In-stream works required.**	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-WF-08 Existing crossing over the Lullymore East Stream, approximately 340m east of Proposed Turbine 39 (amenity track)	Existing crossing to be used. Floated access track for amenity use only. No in-stream works required.	
WC-WF-09 Proposed crossing over the Lullymore East Stream, approximately 300m east of Proposed Turbine 39	No existing crossing, proposed new crossing. Clear Span Bridge / Bottomless Culvert. No in-stream works required.	

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-10 Proposed crossing over the Lullymore East Stream, approximately 130m south of Proposed Turbine 36	No existing crossing, proposed new crossing. Clear Span Bridge / Bottomless Culvert. No in-stream works required.	
WC-WF-11 Proposed crossing over the Lullybeg Stream, approximately 170m east of Proposed Turbine 38	No existing crossing, proposed new crossing. Clear Span Bridge / Bottomless Culvert. No in-stream works required.	
WC-WF-12 Existing crossing over the Lullybeg Stream, approximately 600m south of Proposed Turbine 35	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road south of Proposed Turbine 35. Bottomless culvert. **In-stream works may be required.**	

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-13 Existing crossing over the Lullybeg Stream, approximately 300m north of Proposed Turbine 34	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road north of Proposed Turbine 34. Bottomless culvert. **In-stream works may be required.**	
WC-WF-14 Existing crossing over the Lullybeg Stream, approximately 420m southeast of Proposed Turbine 10	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road to Proposed Turbine 10. Box Culvert / Bottomless Culvert / Pipe **In-stream works may be required.**	 

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-15 Proposed crossing over the Lullybeg Stream, approximately 410m northeast of Proposed Turbine 9	New Crossing – crossing to facilitate Proposed Road to Proposed Turbines 9 and 10. Box Culvert / Bottomless Culvert / Pipe. **In-stream works may be required.**	

The watercourses above are also described in the Aquatic Baseline Report which is included as Appendix 6-3 of this EIAR. During the baseline aquatic surveys undertaken in 2021, the Annex I habitat Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] was identified at the Ballygarret River confluence, approximately 3.5km downstream of the Project Site. At the time of survey, the river in this location was heavily-modified but retained some semi-natural characteristics. Macrophyte growth was very high with a diversity of both emergent and submerged species. Given the presence of indicator species (EC, 2013; Devaney *et al.,* 2013) various-leaved pondweed (*Potamogeton gramineus*), curled pondweed (*Potamogeton crispus*), spiked water milfoil (*Myriophyllum spicatum*) and common water starwort (*Callitriche stagnalis*), in addition to aquatic moss species *Fontinalis antipyretica* which was recorded occasionally on small boulders and cobble, the aquatic vegetation community was considered representative of the Annex I habitat Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]. This survey site was not revisited during the baseline aquatic surveys undertaken in 2024 or 2026, and no other areas with the potential to conform to this Annex I habitat were identified in any other locations during the 2024 or 2026 surveys.



Plate 6-29 Tributary of the Figile River, a Lowland depositing river (FW2), located in Blackriver Bog.

665000 670000 675000 680000

735000 730000 725000 720000

N

T32 T31 T30 T29 T27 T28 T23 T24 T26 T25 T22 T20 T21 T17 T19 T18 T16 T15 T10 T09 T08 T07 T06 T05 T04 T03 T02 T01 T33 T34 T35 T36 T37 T38 T39 T40 T41 T42 T45 T43 T44 T46 T11 T12 T13 T14

WCWF01 WCWF02 WCWF03 WCWF04 WCWF05 WCWF06 WCWF07 WCWF08 WCWF09 WCWF10 WCWF11 WCWF12 WCWF13 WCWF14 WCWF15

WCGCR01 WCGCR02 WCGCR03 WCGCR04 WCGCR05 WCGCR06 WCGCR07 WCGCR08 WCGCR09 WCGCR10 WCGCR11

0 1.5 3 km

Map Legend

- Project Site

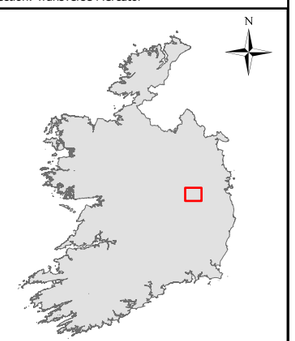
Turbine Layout

- 220
- 200
- Proposed Relay Mast
- Proposed Met Mast
- Proposed Telecommunications Tower
- Watercourse crossing
- Joint Bays
- WFD Watercourses
- Existing OHL
- Internal 33kV Cable Trench
- Proposed Internal 33kV Cabling
- Proposed OHL
- Proposed Grid Connection Underground 220KV electrical cabling
- New Road
- Upgrades to Existing Roads
- TDR Accommodation
- Proposed Amenity Links Centreline
- Proposed Pedestrian Amenity Boardwalk
- Turbine Hardstands

Layer

- Diversion Routs
- Proposed Construction Haul Routes
- Proposed Turbine Delivery Route
- Temporary Construction Compounds
- Proposed Peat and Spoil Areas
- Proposed Security Hut
- Proposed Car parking
- Proposed Set Down Area
- Proposed Onsite 110kV GIS Substation
- Proposed Onsite 220kV GIS Substation
- Proposed Offsite Substation Tower Build Area
- Proposed Offsite Substation Crane Pad
- Proposed Offsite 220kV GIS Substation

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



SITE LOCATION - NOT TO SCALE

Drawing Title
WFD Watercourses within the Project Site

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-8	1:70,000
Drawn By	Checked By	Date
OM	KB	23/10/2026

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

Drainage ditches (FW4)

The Proposed Wind Farm site is extensively drained by **Drainage ditches (FW4)** that run throughout the cutover bog habitats. These channels range from approximately 0.5m in width up to 5m in width, with water flow generally very slow to stagnant and with a silty peat substrate. Where the drains were more recently dug for peat extraction, the banks are generally devoid of vegetation, vertical-sided and over 1m deep (Plate 6-30), however over time many of the drains throughout the Proposed Wind Farm site have eroded, now with much shallower, vegetated banks (Plate 6-31). Common components of vegetated drains include bulrush (*Typha latifolia*), water mint (*Mentha aquatica*), marsh horsetail (*Equisetum palustre*), yellow flag iris (*Iris pseudacorus*), soft rush (*Juncus effusus*), toad rush (*Juncus bufonius*), lesser spearwort (*Ranunculus flammula*) and marsh pennywort (*Hydrocotyle vulgaris*), as well as floating vegetation including pondweeds (*Potamogeton* spp.) and common duckweed (*Lemna minor*). Small saplings of scrubby species such as grey willow (*Salix cinerea*), downy birch (*Betula pubescens*) and ling heather (*Calluna vulgaris*) were also regularly recorded as riparian vegetation.

The drains within large areas of Lodge and Lullymore Bogs have undergone drain blocking as part of peatland enhancement and rehabilitation measures.



Plate 6-30 Narrow, vertical-sided Drainage ditch (FW4) on bare peat at the location of proposed Turbine 10.



Plate 6-31 Wet, vegetated Drainage ditch (FW4) with eroded banks in Ballydermot South Bog.

Other artificial lakes and ponds (FL8)

Silt ponds are present at various locations throughout the Proposed Wind Farm site and have been classified as **Other artificial lakes and ponds (FL8)** (Plate 6-32). As bogs have been developed and the draining of areas of bog by gravity was no longer feasible, pumping stations were installed at several of these silt ponds in order to drain part or all of the catchment.



Plate 6-32 Pumping station and silt pond located in Ballydermot South Bog

Open water

Several areas of open water are present in the wettest and lower lying areas of the Proposed Wind Farm site, often associated with poor fen and flush and reed and large sedge swamp communities, as outlined in the preceding sections. The areas of open water in these habitats were generally small in size at the time of survey but are subject to seasonal fluxes in water levels (Plate 6-33). Open water also occurs commonly within mosaics of bare peat where ground conditions naturally flood, as well as where deep excavations of peat have created permanent pools of water (Plate 6-34).

A larger area of open water is present at the location of Proposed Turbine 6 (Plate 6-35) in which soft rush (*Juncus effusus*) and common reed (*Phragmites australis*) are growing at the edges. This area is surrounded by predominantly bare peat.



Plate 6-33 Areas of open water associated with pioneer Poor fen (PB4/PF2) communities in Derrybrennan Bog.



Plate 6-34 Area of open water where deep excavations have resulted in permanent pools of water in Glashabaun South bog.



Plate 6-35 Area of open water at the location of Proposed Turbine 6 in Ballydermot North Bog, with little revegetation.

6.3.2.1.7 Habitats along the Proposed Grid Connection

The underground cabling required to facilitate the Proposed Grid Connection will be laid beneath the surface of the internal site road network and public road. The Proposed Grid Connection will originate at the Proposed Onsite Substation, which is located in the northeast of Lodge Bog, within the townland of Allenwood South, before travelling east along the public road network to the location of the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare.

Habitats at the Location of the Proposed Onsite Substation

The Proposed Onsite Substation is located in the north of Lodge Bog, Co. Kildare. The habitats in this location are dominated by **Cutover bog (PB4)** comprising large areas of bare peat, with early colonisation of species such as common cottongrass (*Eriophorum angustifolium*) and downy birch (*Betula pubescens*) saplings (Plate 6-36). Where ground conditions are wetter, pioneer **Poor fen (PB4/PF2)** occurs in a mosaic with **Scrub (PB4/WS1)** (Plate 6-37), with small areas of standing water present. Vegetation in these areas is dominated by common cottongrass (*Eriophorum angustifolium*) with smaller amounts of hare's-tail cottongrass (*Eriophorum vaginatum*), soft rush (*Juncus effusus*) and marsh thistle (*Cirsium palustre*), with the scrub species downy birch (*Betula pubescens*) and grey willow (*Salix cinerea*), and the bryophyte *Bryum pseudotriquetrum*.

A small section of cutover bog within the footprint of the Proposed Onsite Substation was very dry in nature, with a gravel substrate and recolonisation of species such as cat's-ear (*Hypochaeris radicata*), creeping bent (*Agrostis stolonifera*), barren strawberry (*Potentilla sterilis*), colt's foot (*Tussilago farfara*), wild carrot (*Daucus carota*), common ragwort (*Jacobaea vulgaris*), field horsetail (*Equisetum arvense*) and lesser trefoil (*Trifolium dubium*) (Plate 6-38). This area was therefore classified as **Recolonising bare ground (ED3)**.

A small section of the Proposed Onsite Substation is located within a high field previously used for material storage. This area occurs as a narrow strip approximately 30m wide in the westernmost area of the Proposed Onsite Substation and is bordered by a vertical facebank approximately 1.2-2m high (Plate 6-39). As the acrotelm has previously been removed from this area it is classified as cutover bog. This area has revegetated with a ***Calluna*-dominated community** with a small amount of downy birch (*Betula pubescens*) and grey willow (*Salix cinerea*) saplings, bracken (*Pteridium aquilinum*) and *Campylopus introflexus* colonisation also present (Plate 6-40). A deep drain approximately 4m in depth is also present through the centre of this area.



Plate 6-36 Cutover bog (PB4) at the location of the Proposed Onsite Substation, dominated by bare peat with some early colonisation



Plate 6-37 A mosaic of pioneer Poor fen (PB4/PF2) and Scrub (PB4/WS1) on cutover bog at the location of the Proposed Onsite Substation



Plate 6-38 Area of Recolonising bare ground (ED3) on cutover bog at the location of the Proposed Onsite Substation



Plate 6-39 The facebank of high field at the location of the Proposed Onsite Substation, classified as cutover bog with secondary Calluna-dominated communities



Plate 6-40 Secondary Calluna-dominated community within the high field at the location of the Proposed Onsite Substation

Habitats along the Proposed Grid Connection Underground Electrical Cabling Route

The underground electrical cabling route will originate at the Proposed Onsite Substation and travel approximately 0.5km north on internal access roads through an area consisting largely of **Cutover bog (PB4)** dominated by bare peat, with sections of pioneer **Poor fen (PB4/PF2)** and **Scrub (PB4/WS1)** also present. The route then passes through a narrow section of scrub and **Bog woodland (WN7)** along the road margins before exiting the Proposed Wind Farm site via the R414 regional road.

It is proposed that the Proposed Grid Connection underground electrical cabling route will continue east along R414 road for approximately 2.2km through the townland of Allenwood South. The cabling route will be laid entirely within the existing road corridor in this location, which is classified as **Buildings and artificial surfaces (BL3)**. There is one watercourse crossing (WC-GCR-01) along this stretch of cable route, at the Killinagh Upper Stream, a tributary of the Slate River. The cables will be laid using Flatbed Formation Under– Type B or Flatbed Formation Over– Type C (refer to Section 4.9.1.7 of Chapter 4 for further detail) within the existing road corridor. No instream works will be required. This is a **Depositing/lowland river (FW2)**, a full description of which is included in Section 4.2.1 (aquatic survey site G1) of the Aquatic Baseline Report, included as Appendix 6-3 of this Biodiversity Chapter.

The Proposed Grid Connection underground electrical cabling route will then cross under the Grand Canal via HDD approximately 0.4km west of Shee Bridge (WC-GCR-02). The watercourse in this location is classified as a **Canal (FW3)** and flows slowly in a westerly direction. At the time of survey, the canal was mature and well-vegetated with a 10m-wide channel and depths between 1 and 2m. The littorals supported frequent heterophyllous common clubrush (*Schoenoplectus lacustris*) and yellow lily (*Nuphar lutea*). Mare's-tail (*Hippuris vulgaris*), blue water speedwell (*Veronica anagallis-aquatica*), water plantain (*Alisma plantago-aquatica*), amphibious bistort (*Persicaria amphibia*) and fine-leaved water dropwort (*Oenanthe aquatica*) were all occasional. The central and deeper navigation channel supported abundant heterophyllous arrowhead (*Sagittaria sagittifolia*). Small areas along exposed gravel and cobble margins supported delicate stonewort (*Chara virgata*). The invasive macrophyte New Zealand pigmyweed (*Crassula helmsii*) was also occasional. This species is listed on 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) - see Section 6.3.2.3 below in relation to invasive species). The largely open banks supported common species of the canal corridor such as yellow iris (*Iris pseudacorus*), meadowsweet (*Filipendula ulmaria*), hedge bindweed (*Calystegia sepium*), reed canary grass (*Phalaris arundinacea*), nettle (*Urtica dioica*) and scattered sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and beech (*Fagus sylvatica*). Full details on the baseline aquatic conditions at this watercourse crossing are detailed in Section 4.2.2 (aquatic survey site G2) of the Aquatic Baseline Report in Appendix 6-3 to this Biodiversity Chapter.

The Proposed Grid Connection underground electrical cabling route then merges onto the R403 regional road and continues eastwards for approximately 8.5km through the townlands of Allenwood Middle, Allenwood North/Derrymullen, Brockagh, Graigues, Blackwood, Coolree, Downings North and Curryhills before turning right on the local L6002 road. The Proposed Grid Connection underground electrical cabling route will be laid entirely within the existing road corridor, which is classified as **Buildings and artificial surfaces (BL3)**, and passes through the villages of Allenwood and Prosperous, Co. Kildare. The predominant habitats bordering this section of the route have been assessed as **Improved agricultural grasslands (GA1), Arable crops (BC1)** and sections of woodlands and **Conifer plantation (WD4)**, bordered by **Treelines (WL2)** and **Hedgerows (WL1)**. There are a further 9 no. watercourse crossings along this stretch of the Proposed Grid Connection underground electrical cabling route (WC-GCR-03 to WC-GCR-11), all of which will be constructed using Flatbed Formation Under– Type B or Flatbed Formation Over– Type C (refer to Section 4.9.1.7 of Chapter 4 for further detail) methodology within the existing road corridor. These are located at the Upper Ballynakill River, Blackwood feeder canal, Brockagh River, a number of locations along the Slate River, an unnamed tributary of the Slate River and two unmapped channels. Full details on the baseline aquatic conditions at each of these watercourse crossing are detailed in Sections 4.2.3 to Section 4.2.11 (aquatic survey sites

G3-G9) of the Aquatic Baseline Report in Appendix 6-3 to this Biodiversity Chapter. The Blackwood feeder canal is also designated as part of the Ballynafagh Lake SAC and pNHA.

The Proposed Grid Connection underground electrical cabling route will continue south along the L6002 road for approximately 0.8km through the townlands Curryhills and Killybegs. The Proposed Grid Connection underground electrical cabling route turns right into Site Entrance 7M crossing agricultural fields classified as **Improved agricultural grassland (GA1)** into the area of the Proposed Offsite Substation, in the townland of Killybegs, Co. Kildare.

Habitats at the Location of the Proposed Offsite Substation

The Proposed Offsite Substation is located within two fields in the townland of Killybegs, Co. Kildare. The northeastern portion of the Proposed Offsite Substation is located within a highly managed agricultural field classified as **Improved agricultural grassland (GA1).** This habitat is dominated by perennial rye grass (*Lolium perenne*) with small amounts of Yorkshire fog (*Holcus lanatus*), white clover (*Trifolium repens*) and creeping buttercup (*Ranunculus repens*) also present (Plate 6-41).

To the south of this managed and grazed area, this field is fenced off from livestock and is classified as **Dry meadows and grassy verges (GS2).** This habitat is dominated by grasses including cock's-foot grass (*Dactylis glomerata*), rough meadow grass (*Poa trivialis*), Yorkshire fog (*Holcus lanatus*), Timothy grass (*Phleum pratense*) and crested dog's tail (*Cynosurus cristatus*), as well as creeping buttercup (*Ranunculus repens*), broad-leaved dock (*Rumex obtusifolius*), silverweed (*Potentilla anserina*), meadow vetchling (*Lathyrus pratensis*), ribwort plantain (*Plantago lanceolata*), nettles (*Urtica dioica*) and hairy sedge (*Carex hirta*) (Plate 6-42).

This habitat transitions into **Wet grassland (GS4)** towards the western portion of the field with a high cover of hard rush (*Juncus inflexus*) and sharp-flowered rush (*Juncus acutiflorus*), as well as the sedges brown sedge (*Carex disticha*), hairy sedge (*Carex hirta*) and glaucous sedge (*Carex flacca*) (Plate 6-43). A diversity of forbs including meadowsweet (*Filipendula ulmaria*), water mint (*Mentha aquatica*), great willowherb (*Epilobium hirsutum*), meadow vetchling (*Lathyrus pratensis*) and marsh woundwort (*Stachys palustris*) are also present in this area. The western field, at the location of the Proposed Temporary Construction Compound 10 associated with the Proposed Offsite Substation, also comprises wet grassland with similar species present, however this area is transitioning into dense grey willow **Scrub (GS4/WS1)** (Plate 6-44).

A **Treeline (WL2)** comprising mature and semi-mature ash (*Fraxinus excelsior*) and hawthorn (*Crataegus monogyna*) trees delineates the eastern and western fields, as well as the southern field boundaries. To the east of the Proposed Offsite Substation is a mature treeline of ash (*Fraxinus excelsior*) and beech (*Fagus sylvatica*) (Plate 6-45).



Plate 6-41 The Proposed Offsite Substation is partially located within an Improved agricultural grassland (GA1) field.



Plate 6-42 The eastern portion of the Proposed Offsite Substation is classified as Dry meadows and grassy verges (GS2).



Plate 6-43 Much of the Proposed Offsite Substation is located a field of rush-dominated Wet grassland (GS4)



Plate 6-44 The Proposed Temporary Construction Compound 10 for the Proposed Offsite Substation is located within a field of Wet grassland/Scrub (GS4/WS1).



Plate 6-45 The eastern field boundary is delineated by a mature ash (Fraxinus excelsior) and beech (Fagus sylvatica) treeline.

Watercourse Crossings along the Proposed Grid Connection Underground Electrical Cabling Route

There are a number of EPA mapped watercourses along the Proposed Grid Connection underground electrical cabling route, as outlined in Section 6.3.1.10 above. The watercourses in these locations are generally classified as **Lowland depositing rivers (FW2)** and include a number of tributaries of the Slate River, as well as **Canals (FW3)** at the Grand Canal and the Blackwood feeder canal.

The Proposed Grid Connection underground electrical cabling route will involve 11 no. crossings over watercourses (7 no. crossings over EPA mapped watercourses, 1 no. crossing under the Grand Canal and 3 no. crossings over unmapped watercourses). No in-stream works are required along the Proposed Grid Connection underground electrical cabling route. Watercourse crossing methodologies are detailed in Section 4.9.2.7 of Chapter 4 of this EIAR and listed in Table 6-21 below, starting with the watercourse crossing closest to the Proposed Onsite Substation and progressing eastwards towards the Proposed Offsite Substation. The watercourses at each of the 11 no. crossings are described in further detail in Section 4.2 of the Aquatic Baseline Report, Appendix 6-3.

Table 6-21 Watercourse crossings along the Proposed Grid Connection Underground Electrical Cabling Route

Crossing ID and Location	Works Proposed	Photo(s)
WC-GCR-01 Killinagh Upper Stream, Allenwood South	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 
WC-GCR-02 Grand Canal, approximately 150m west of Shee Bridge	HDD No in-stream works required	

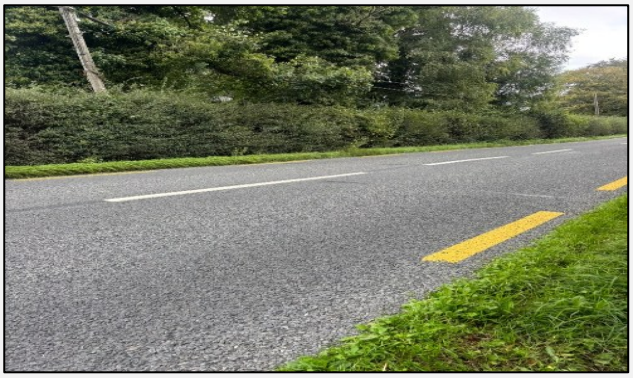
Crossing ID and Location	Works Proposed	Photo(s)
WC-GCR-03 Upper Ballynakill River, Derrymullen	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 
WC-GCR-04 Unmapped channel, R403 road crossing, Derrymullen	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-GCR-05 Slate River, Quigley's Bridge	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 

Crossing ID and Location	Works Proposed	Photo(s)
WC-GCR-06 Slate River, New Bridge	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 
WC-GCR-07 Blackwood feeder canal, R403 crossing	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-GCR-08 Slate River, Blackwood	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 

Crossing ID and Location	Works Proposed	Photo(s)
WC-GCR-09 Brockagh River, Dagwelds Cross	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 
WC-GCR-11 Unmapped channel, R403 road crossing, Downings North	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-GCR-10 Unnamed Stream, Black Stick Crossroads	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 

6.3.2.1.8 Habitats at the Proposed Turbine Delivery Route Accommodation Areas

Road and junction widening are sometimes required along roads to accommodate the large vehicles used to transport turbine components to wind farm sites. The Proposed Turbine Delivery Route for the Proposed Project has been the subject of a route assessment to determine if any works are required along its length. These comprise 'overrun' areas where the delivery vehicle's wheels run over land, and 'oversail' where the length of the turbine part being delivered will result in its swing across an airspace.

A number of accommodation areas have been identified along the Proposed Turbine Delivery Route, as outlined in Chapter 15 of this EIAR. Of these, five accommodation areas include works which require planning permission are therefore included in this Biodiversity Chapter for assessment. The habitats present at each these five accommodation areas are outlined in the following subsections.

Location 1 – R402/R420 Junction (ITM Grid Ref.: X 641917, Y 721602)

This accommodation area is located at the junction of the R402 and R420 Regional Roads. This area comprises a gravelled area classified as **Recolonising bare ground (ED3)** with recolonisation of grassy species typical of road verges including scentless mayweed (*Tripleurospermum inodorum*), creeping thistle (*Cirsium arvense*), greater plantain (*Plantago major*), white clover (*Trifolium repens*), great willowherb (*Epilobium hirsutum*), silverweed (*Potentilla anserina*), Yorkshire fog (*Holcus lanatus*), false oat-grass (*Arrhenatherum elatius*), common ragwort (*Jacobaea vulgaris*), red clover (*Trifolium pratense*), field horsetail (*Equisetum arvense*), creeping cinquefoil (*Potentilla reptans*), spear thistle (*Cirsium vulgare*), bush vetch (*Vicia sepium*), black medick (*Medicago lupulina*), ribwort plantain (*Plantago lanceolata*) and smooth sow-thistle (*Sonchus oleraceus*) (Plate 6-46). As outlined in Section 15.1.6.2.1 of this EIAR, the area on the northeast corner of the junction will be surfaced to accommodate the wheels of the abnormally sized delivery vehicles.

A **Treeline (WL2)** of ash (*Fraxinus excelsior*), hazel (*Corylus avellana*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and hornbeam (*Carpinus betulus*) is also present at this location on the north side of the R420 (Plate 6-47). A small portion of this treeline will require removal as part of the Proposed Turbine Delivery Route accommodation works. A bat habitat suitability appraisal of the trees in this location was undertaken, and the results are outlined in Section 6.3.3.2.1 below and Section 4.3.1.5 of the Bat Report, included as Appendix 6-2.



Plate 6-46 Proposed Turbine Delivery Route accommodation area 1 comprises a large area of Recolonising bare ground (ED3) at the junction of the R402 and R420 Regional Roads.



Plate 6-47 Treeline (WL2) present at the location of Proposed Turbine Delivery Route accommodation area 1.

Location 2 – R402/L2025 Junction in Ballinagar (ITM Grid Ref.: X 644098, Y 724134)

This accommodation area is located in the west of Ballinagar village along the R402 Regional Road and comprises a small **Amenity grassland (GA2)** associated with a public green space (Plate 6-48). As outlined in Section 15.1.6.2.1 of this EIAR, this area will be required temporarily to provide an over-run area for the delivery of the abnormally sized loads, with an additional area required to provide for oversail of the blade tip.

A short, mixed **Treeline (WL2)** comprising silver birch (*Betula pendula*), hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), and non-native cypress and poplar trees (Plate 6-49) is also present in this location. This treeline will require removal as part of the Proposed Turbine Delivery Route accommodation works. A bat habitat suitability appraisal of the trees in this location was undertaken, and the results are outlined in Section 6.3.3.2.1 below and Section 4.3.1.5 of the Bat Report, included as Appendix 6-2.



Plate 6-48 Proposed Turbine Delivery Route accommodation area 2 comprises an Amenity grassland (GA2) in the west of Ballinagar village.



Plate 6-49 Short section of mixed Treeline (WL2) located at Proposed Turbine Delivery Route accommodation area 2.

Location 3 – L1003/Cloncreen Wind Farm Junction (ITM Grid Ref.: X 656076, Y 726927)

This accommodation area is located at the western entrance to the existing Cloncreen Wind Farm, from the local L1003 road. This entrance has been fenced and blocked off since the construction of the wind farm and now comprises an **Earth bank (BL2)** of bare peat spoil (Plate 6-50). As outlined in Section 15.1.6.2.1 of this EIAR, this existing boundary will be removed in order to facilitate turbine delivery.

To the south, this accommodation area also overruns an area of peaty substrate that has revegetated with **Scrub (WS1)** comprising alder (*Alnus glutinosa*), gorse (*Ulex europaeus*), grey willow (*Salix cinerea*) and brambles (*Rubus fruticosus* agg.) (Plate 6-51). The understorey component comprised colt's foot (*Tussilago farfara*), tormentil (*Potentilla erecta*), great willowherb (*Epilobium hirsutum*), creeping bent grass (*Agrostis stolonifera*), creeping thistle (*Cirsium arvense*), meadowsweet (*Filipendula ulmaria*), dandelion (*Taraxacum officinale*), creeping buttercup (*Ranunculus repens*), Yorkshire fog (*Holcus lanatus*), marsh woundwort (*Stachys palustris*), brambles (*Rubus fruticosus* agg.), common figwort (*Scrophularia nodosa*), common ragwort (*Jacobaea vulgaris*), common hogweed (*Heracleum sphondylium*) and bittersweet nightshade (*Solanum dulcamara*). This area will be temporarily surfaced in order to accommodate the largest vehicles.



Plate 6-50 Proposed Turbine Delivery Route accommodation area 3 enters the existing Cloncreen Wind Farm from the west, through an entrance currently blocked with a peat Earth bank (BL2)



Plate 6-51 Scrub (WS1) present at Proposed Turbine Delivery Route accommodation area 3 in the west of the existing Cloncreen Wind Farm

Locations 4 and 5 – Cloncreen Wind Farm (ITM Grid Refs.: X 658860, Y 727063; and X 659989, Y 727593)

These accommodation areas are located within the existing Cloncreen Wind Farm, at two junctions within the internal wind farm road network. The existing tracks in these locations are classified as **Buildings and artificial surfaces (BL3)** and, as outlined in Section 15.1.6.2.1 of this EIAR, will require minor temporary remedial works to accommodate the abnormally sized loads generated by the Proposed Project.

At both Locations 4 and 5, the road verge comprises **Cutover bog (PB4)** with a small amount of recolonisation of species including colt's-foot (*Tussilago farfara*), sweet vernal-grass (*Anthoxanthum odoratum*), deergrass (*Trichophorum germanicum*), cat's-ear (*Hypochaeris radicata*) and soft-rush (*Juncus effusus*) present at the time of survey (Plate 6-52, Plate 6-53).



Plate 6-52 Existing gravel road through Cloncreen Wind Farm at the Proposed Turbine Delivery Route accommodation area 4



Plate 6-53 Existing gravel road through Cloncreen Wind Farm at the Proposed Turbine Delivery Route accommodation area 5

662500

665000

727500

725000

N

T27
T23
T24
T42
T26
T25
T41
T22
T39
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665000

Map Legend

Project Site

Proposed Turbine

220

200

Habitat Type

- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Other artificial lakes and ponds (FL8)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Raised bog (PB1)
- Cutover bog (PB4)
- Cutover bog (PB4), Calluna-dominated vegetation
- Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1), Wet grassland (GS4)
- Cutover bog (PB4), Reed and large sedge swamps (FS1)
- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2), Scrub (WS1)
- Cutover bog (PB4), Wet grassland (GS4)
- Cutover bog (PB4), Dense bracken (HD1)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Scrub (WS1), Wet grassland (GS4)
- (Mixed) broadleaved woodland (WD1)
- Conifer plantation (WD4)
- Oak-ash-hazel woodland (WN2)
- Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Maps

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-9a	1:20,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

MKO

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

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T25

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Map Legend

Project Site

Proposed Turbine

220

200

Habitat Type

- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Other artificial lakes and ponds (FL8)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
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- Cutover bog (PB4), Calluna-dominated vegetation
- Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)
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- Cutover bog (PB4), Reed and large sedge swamps (FS1)
- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Wet grassland (GS4)
- Cutover bog (PB4), Dense bracken (HD1)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation, Scrub (WS1)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Scrub (WS1), Wet grassland (GS4)
- (Mixed) broadleaved woodland (WD1)
- Conifer plantation (WD4)
- Oak-ash-hazel woodland (WN2)
- Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Maps

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-9b	1:20,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

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

665000

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T22 T21 T20 T19 T17 T16 T18 T10 T09 T39 T40 T36 T37 T38 T35 T07 T34 T33 T06 T15 T08 T11 T05 T03 T12 T13 T04 T02 T14

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Map Legend

Project Site

Proposed Turbine

220

200

Habitat Type

- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Other artificial lakes and ponds (FL8)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Raised bog (PB1)
- Cutover bog (PB4)
- Cutover bog (PB4), Calluna-dominated vegetation
- Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1), Wet grassland (GS4)
- Cutover bog (PB4), Reed and large sedge swamps (FS1)
- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1), Wet grassland (GS4)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2), Scrub (WS1)
- Cutover bog (PB4), Wet grassland (GS4)
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- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Wet grassland (GS4)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Scrub (WS1), Wet grassland (GS4)
- (Mixed) broadleaved woodland (WD1)
- Conifer plantation (WD4)
- Oak-ash-hazel woodland (WN2)
- Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Maps

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-9c	1:20,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

MKO

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

667500 670000 672500

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T45 T44 T42 T43 T41 T40 T36 T37 T38 T35 T07 T34 T33 T06 T01 T05 T03

0 1 2 km

Map Legend

Project Site

Proposed Turbine

220

200

Habitat Type

- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Other artificial lakes and ponds (FL8)
- Raised bog (PB1)
- Cutover bog (PB4)
- Cutover bog (PB4), Calluna-dominated vegetation
- Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1), Wet grassland (GS4)
- Cutover bog (PB4), Reed and large sedge swamps (FS1)
- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2), Scrub (WS1)
- Cutover bog (PB4), Wet grassland (GS4)
- Cutover bog (PB4), Dense bracken (HD1)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation, Scrub (WS1)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Wet grassland (GS4)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Scrub (WS1), Wet grassland (GS4)
- (Mixed) broadleaved woodland (WD1)
- Conifer plantation (WD4)
- Conifer plantation (WD4), Scrub (WS1)
- Oak-ash-hazel woodland (WN2)
- Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Maps

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-9d	1:20,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

645000

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Scale: 1:5,000

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Scale: 1:5,000

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Map Legend

Project Site

Proposed Turbine

220

200

Habitat Type

Earth banks (BL2)

Buildings and artificial surfaces (BL3)

Recolonising bare ground (ED3)

Other artificial lakes and ponds (FL8)

Improved agricultural grassland (GA1)

Amenity grassland (improved) (GA2)

Dry meadows and grassy verges (GS2)

Raised bog (PB1)

Cutover bog (PB4)

Cutover bog (PB4), Calluna-dominated vegetation

Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)

Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)

Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1), Wet grassland (GS4)

Cutover bog (PB4), Reed and large sedge swamps (FS1)

Cutover bog (PB4), Dry calcareous and neutral grassland (GS1)

Cutover bog (PB4), Dry calcareous and neutral grassland (GS1), Wet grassland (GS4)

Cutover bog (PB4), Dry meadows and grassy verges (GS2)

Cutover bog (PB4), Dry meadows and grassy verges (GS2), Scrub (WS1)

Cutover bog (PB4), Wet grassland (GS4)

Cutover bog (PB4), Dense bracken (HD1)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation, Scrub (WS1)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Wet grassland (GS4)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)

Cutover bog (PB4), Scrub (WS1)

Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)

Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)

Cutover bog (PB4), Scrub (WS1), Wet grassland (GS4)

(Mixed) broadleaved woodland (WD1)

Conifer plantation (WD4)

Conifer plantation (WD4), Scrub (WS1)

Oak-ash-hazel woodland (WN2)

Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Maps

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-9f	1:102,000
Drawn By	**Checked By**	**Date**
TS	KB	27/10/2026

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

682000

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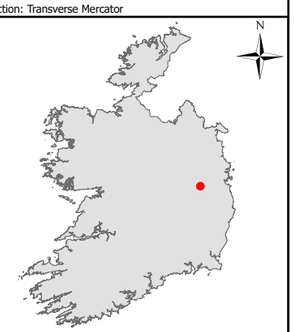
Map Legend

Project Site

Habitat Type

- Buildings and artificial surfaces (BL3)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Wet grassland (GS4)
- Wet grassland (GS4), Scrub (WS1)

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



SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Maps

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-9e	1:8,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

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

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Map Legend

- Project Site

Proposed Turbine
- 220
- 200
- Proposed Project Infrastructure Footprint

Habitat Type
- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Other artificial lakes and ponds (FL8)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Raised bog (PB1)
- Cutover bog (PB4)
- Cutover bog (PB4), Calluna-dominated vegetation
- Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1), Wet grassland (GS4)
- Cutover bog (PB4), Reed and large sedge swamps (FS1)
- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2), Scrub (WS1)
- Cutover bog (PB4), Wet grassland (GS4)
- Cutover bog (PB4), Dense bracken (HD1)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)
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- (Mixed) broadleaved woodland (WD1)
- Conifer plantation (WD4)
- Oak-ash-hazel woodland (WN2)
- Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Habitat Maps with Proposed Project Layout

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-10a	1:20,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

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

662500

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Map Legend

Project Site

Proposed Turbine

220

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Proposed Project Infrastructure Footprint

Habitat Type

Buildings and artificial surfaces (BL3)

Recolonising bare ground (ED3)

Other artificial lakes and ponds (FL8)

Improved agricultural grassland (GA1)

Dry meadows and grassy verges (GS2)

Raised bog (PB1)

Cutover bog (PB4)

Cutover bog (PB4), Calluna-dominated vegetation

Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)

Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)

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Cutover bog (PB4), Dry meadows and grassy verges (GS2)

Cutover bog (PB4), Wet grassland (GS4)

Cutover bog (PB4), Dense bracken (HD1)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation, Scrub (WS1)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)

Cutover bog (PB4), Scrub (WS1)

Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)

Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)

Cutover bog (PB4), Scrub (WS1), Wet grassland (GS4)

(Mixed) broadleaved woodland (WD1)

Conifer plantation (WD4)

Oak-ash-hazel woodland (WN2)

Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Maps with Proposed Project Layout

Project Title

Ballydermot Wind Farm Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-10b	1:20,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

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

665000

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T22 T21 T20 T17 T19 T16 T15 T18 T10 T39 T40 T36 T37 T38 T35 T09 T07 T34 T33 T06 T08 T11 T05 T03 T12 T13 T04 T02 T14

0 1 2 km

Map Legend

Project Site

Proposed Turbine

220

200

Proposed Project Infrastructure Footprint

Habitat Type

- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Other artificial lakes and ponds (FL8)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Raised bog (PB1)
- Cutover bog (PB4)
- Cutover bog (PB4), Calluna-dominated vegetation
- Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)
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- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1), Wet grassland (GS4)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2), Scrub (WS1)
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- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation
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- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)
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- (Mixed) broadleaved woodland (WD1)
- Conifer plantation (WD4)
- Oak-ash-hazel woodland (WN2)
- Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Habitat Maps with Proposed Project Layout

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-10c	1:20,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

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

667500
670000
672500
727500
725000
722500
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Map Legend

Project Site

Proposed Turbine

220

200

Proposed Project Infrastructure Footprint

Habitat Type

Buildings and artificial surfaces (BL3)

Recolonising bare ground (ED3)

Other artificial lakes and ponds (FL8)

Raised bog (PB1)

Cutover bog (PB4)

Cutover bog (PB4), Calluna-dominated vegetation

Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)

Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)

Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1), Wet grassland (GS4)

Cutover bog (PB4), Reed and large sedge swamps (FS1)

Cutover bog (PB4), Dry calcareous and neutral grassland (GS1)

Cutover bog (PB4), Dry meadows and grassy verges (GS2)

Cutover bog (PB4), Dry meadows and grassy verges (GS2), Scrub (WS1)

Cutover bog (PB4), Wet grassland (GS4)

Cutover bog (PB4), Dense bracken (HD1)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation, Scrub (WS1)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Wet grassland (GS4)

Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)

Cutover bog (PB4), Scrub (WS1)

Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)

Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)

Cutover bog (PB4), Scrub (WS1), Wet grassland (GS4)

(Mixed) broadleaved woodland (WD1)

Conifer plantation (WD4)

Conifer plantation (WD4), Scrub (WS1)

Oak-ash-hazel woodland (WN2)

Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Habitat Maps with Propose Project Layout

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-10d	1:20,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

682000

683000

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N

0 0.5 1 km

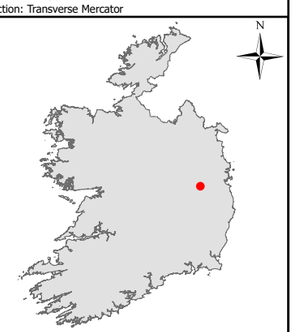
Map Legend

- Project Site
- Proposed Project Infrastructure Footprint

Habitat Type

- Buildings and artificial surfaces (BL3)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Wet grassland (GS4)
- Wet grassland (GS4), Scrub (WS1)

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



SITE LOCATION - NOT TO SCALE

Drawing Title
Habitat Maps with Proposed Project Layout

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-10e	1:8,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

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

645000

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Scale: 1:5,000

Scale: 1:5,000

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Scale: 1:5,000

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T32 T30 T31 T29 T27 T28 T46 T23 T45 T24 T42 T44 T26 T41 T43 T25 T22 T39 T40 T21 T37 T20 T10 T17 T35 T19 T33 T01 T16 T06 T15 T05 T03 T13 T12 T02 T14 T04

0 5 10 km

645000

660000

Map Legend

- Project Site

Proposed Turbine

- 220
- 200
- Proposed Project Infrastructure Footprint

Habitat Type

- Earth banks (BL2)
- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Other artificial lakes and ponds (FL8)
- Improved agricultural grassland (GA1)
- Amenity grassland (improved) (GA2)
- Dry meadows and grassy verges (GS2)
- Raised bog (PB1)
- Cutover bog (PB4)
- Cutover bog (PB4), Calluna-dominated vegetation
- Cutover bog (PB4), Calluna-dominated vegetation, Wet Grassland (GS4)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1)
- Cutover bog (PB4), Calluna-dominated vegetation, Scrub (WS1), Wet grassland (GS4)
- Cutover bog (PB4), Reed and large sedge swamps (FS1)
- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Dry calcareous and neutral grassland (GS1), Wet grassland (GS4)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Dry meadows and grassy verges (GS2), Scrub (WS1)
- Cutover bog (PB4), Wet grassland (GS4)
- Cutover bog (PB4), Dense bracken (HD1)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Calluna-dominated vegetation, Scrub (WS1)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Wet grassland (GS4)
- Cutover bog (PB4), Pioneer Poor fen/Poor fen and flush (PF2), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1)
- Cutover bog (PB4), Scrub (WS1), Dry calcareous and neutral grassland (GS1)
- Cutover bog (PB4), Scrub (WS1), Dry meadows and grassy verges (GS2)
- Cutover bog (PB4), Scrub (WS1), Wet grassland (GS4)
- (Mixed) broadleaved woodland (WD1)
- Conifer plantation (WD4)
- Conifer plantation (WD4), Scrub (WS1)
- Oak-ash-hazel woodland (WN2)
- Bog woodland (WN7)

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Maps with Proposed Project Layout

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-10f	1:102,000
Drawn By	Checked By	Date
TS	KB	27/10/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

6.3.2.2 Protected, Rare and Threatened Flora

Two species listed on Ireland's Red List of Vascular Plants (Wyse Jackson *et al.,* 2016) were identified within the Project Site.

Round-leaved wintergreen (*Pyrola rotundifolia* subsp. *rotundifolia*) was identified in a number of locations across Lullybeg, Glashabaun South, Glashabaun North and Killina Bogs (Plate 6-54). Large numbers of plants were identified approximately 50m to the south of the proposed access road to Proposed Turbine 37 as well as within Killina Bog. Smaller populations were also recorded within the hardstands of Proposed Turbines 29, 37 and 44 as well as within and adjacent to the Proposed Turbine 40 hardstand.

Additionally, scattered small populations were recorded approximately 4m and 18m to the south of the internal underground electrical cabling associated with Proposed Turbine 42, approximately 100m to the north of Proposed Turbine 37, and within and adjacent to the proposed roads and internal underground electrical cabling associated with Proposed Turbine 35. This species is listed as Near Threatened (NT) on the Red List of Vascular Plants.

Basil thyme (*Clinopodium acinos*) was identified within the hardstand area of Proposed Turbine 21 and in several other locations throughout the Project Site within Ballydermot North, Ballydermot South, Blackriver, Codd 1, Glashabaun North, Glashabaun South and Lodge Bogs. This species was recorded particularly along the limestone gravel trackways associated with the decommissioned BnM railways through the Project Site (Plate 6-55), many of which are proposed as new amenity tracks or as proposed roads associated with the Proposed Wind Farm. As such, basil thyme was recorded within and adjacent to the proposed construction footprint within and adjacent to the proposed access roads to the north of Proposed Turbine 22, west and southwest of Proposed Turbine 17, east of Proposed Turbine 11, east of Proposed Turbine 14, to the north of Proposed Turbine 9, to the east of Proposed Turbine 39, northwest of Proposed Turbine 42, and along proposed amenity tracks to the southwest of Proposed Turbine 9 and the south of Proposed Turbine 23. This species is also listed as NT on the Red List of Vascular Plants.

Additionally, alder buckthorn (*Frangula alnus*) and blue fleabane (*Erigeron acris*) were recorded within the Proposed Wind Farm site. These species are listed as Least Concern (LC) on Ireland's Red List of Vascular Plants (Wyse-Jackson *et al.,* 2016), however they were listed as Rare (R – alder buckthorn) and Vulnerable (V – blue fleabane), within the Irish Red Data Book 1: Vascular Plants (Curtis and McGough, 1988). Blue fleabane was recorded in four locations in Glashabaun North, Ballydermot South and Blackriver Bogs, primarily along the decommissioned railway tracks. Alder buckthorn was recorded within bog woodland and scrub habitats within Blackriver and Glashabaun South Bogs. These species are likely present in other locations within the Proposed Wind Farm site.

No species protected under the Flora (Protection) Order 2022 were identified within the Project Site during any of the surveys undertaken. The identified locations of round-leaved wintergreen and basil thyme within the Project Site are shown in Figure 6-11 below. These species are likely also present in additional areas within the Proposed Wind Farm site outside the survey areas as outlined in Section 6.2.3.1 above.



Plate 6-54 Round-leaved wintergreen (Pyrola rotundifolia subsp. rotundifolia) growing in pioneer fen habitat in Killina Bog.



Plate 6-55 Basil thyme (Clinopodium acinos) growing along a former railway track between Glashabaun North and Glashabaun South Bogs

660000
665000
670000
730000
725000
N
0
1.5
3 km

Map Legend

- Project Site
- Proposed Project Infrastructure Footprint
- Basil Thyme - Points
- Basil Thyme - Linear
- Round-leaved wintergreen locations

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



SITE LOCATION - NOT TO SCALE

Drawing Title
Red-Listed Flora within the Project Site

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-11	1:42,000
Drawn By	Checked By	Date
BOC	KB	18/09/2026

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6.3.2.3 Invasive Flora

One invasive plant 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 surveys of the Proposed Wind Farm site. Japanese knotweed (*Reynoutria japonica*) was identified growing on the margins of an unnamed watercourse located along the southwestern boundary of Ticknevin Bog (Plate 6-56). Two large, mature stands were identified in this location, which were flowering at the time of survey. Evidence of local spread was observed, with a number of immature individual saplings recorded up to 120m from the main stands. The Japanese knotweed stands in this location are all located over 380m from the nearest Proposed Project infrastructure, i.e. the Proposed Turbine 31.

Several medium to large stands of Japanese knotweed were also identified approximately 830m to the west of the Project Site, along an existing access track in the west of Ticknevin Bog. This access track is used for ongoing turbary activities in the area. Many of these stands were in flower at the time of survey.

The locations of recorded Japanese knotweed are shown in Figure 6-12 below.

During baseline aquatic surveys along the Proposed Grid Connection (see Aquatic Baseline Report, Appendix 6-3 for detail), the aquatic invasive plant species New Zealand pigmyweed (*Crassula helmsii*) was identified growing occasionally at survey site G2 on the Grand Canal, at Shee Bridge, Co. Kildare. This species is also 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). No in-stream works are required in this location.

In addition, the non-native invasive plant species cherry laurel (*Prunus laurocerasus*), butterfly bush (*Buddleja davidii*), montbretia (*Crocosmia* x *crocosmiiflora*) and wall cotoneaster (*Cotoneaster horizontalis*) were also each recorded once within the Project Site, in Killina, Glashabaun North, Barnaran and Lodge Bogs, respectively. These species are not listed under the Third or First Schedules and were not recorded within or adjacent to the Proposed Project infrastructure footprint. No invasive species were recorded within the Proposed Turbine Delivery Route accommodation areas.



Plate 6-56 Japanese knotweed (Reynoutria japonica) identified growing in the south of Ticknevin Bog



Plate 6-57 Japanese knotweed (Reynoutria japonica) located along an access track to the west of the Project Site.



Map Legend

- Project Site
- Proposed Project Infrastructure Footprint
- Japanese knotweed

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



SITE LOCATION - NOT TO SCALE

Drawing Title
Japanese Knotweed Locations

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-12	1:45,000
Drawn By	Checked By	Date
BOC	KB	18/09/2026

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

6.3.3 Fauna in the Existing Environment

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

Evidence of fauna recorded within the Project Site is depicted in Figures 6-13 to 6-19 below.

6.3.3.1 Non-Volant Mammals

6.3.3.1.1 *Badger*

Desk-based review identified that badger (*Meles meles*) are widespread in the wider area surrounding the Proposed Project. Habitats within the Project Site, including woodlands and scrub provide abundant suitable habitat for badger.

A number of badger (*Meles meles*) setts were identified within the Project Site during surveys undertaken between 2020 and 2026, each of which is described in detail below. The setts are labelled as Setts A-I and the locations of each are shown in Confidential Appendix 6-6[44].

An active badger sett, Sett A, was identified within the Project Site during surveys undertaken in 2022, in an area of bog woodland in Glashabaun North Bog (Plate 6-58). This sett consisted of three sett entrances which showed signs of recent activity, with entrances being well worn with signs of freshly dug earth, and two further sett entrances which were partially-used. Trail camera footage from 20th of June to 19th July 2022 showed extensive footage of badger activity at the sett. A minimum of two adult badgers were recorded and two cubs. Some evidence of aggressive behaviour was recorded, which indicates breeding behaviour and presence of cubs, particularly due to the time of year, as cubs are born towards the end of January (TII, 2005). Sett A was therefore classified as a well-used, main sett as per TII (2008a) and Smal (1995) and is likely used as a breeding sett. The proposed access road for Turbine 28 was initially proposed to pass through the area of Sett A before mitigation by design was applied to the finalised Proposed Wind Farm layout to avoid impacts on this breeding sett. The proposed access road has been relocated over 130m from the nearest identified sett entrance.

During surveys undertaken in 2020, two badger setts, Setts B and C, were identified within bog woodland in the south of Lodge Bog. However, during repeat surveys undertaken in 2026, these setts could not be re-located, and no new setts were identified within these areas of woodland. As such, it is likely that the badger clans which had used Setts B and C in 2020 are no longer resident in these locations, and the setts have become inactive and overgrown. These disused setts were located over 100m and over 950m from the nearest Proposed Project infrastructure, respectively. However Sett B and Sett C are located within 50m and 5m of the Proposed Enhancement Areas at Lodge Bog (see BMP, Appendix 6-5), respectively.

A fourth badger sett identified in 2020 in Barnaran Bog, Sett D, was re-surveyed in 2026 and was determined to remain active, with two D-shaped entrances present. The first entrance had clearly worn trails up to the hole and snuffle holes (foraging signs) in the vicinity, indicating that it is well-used per TII (2008a), while the second entrance was more overgrown at the time of survey, however there were identifiable trails to this hole as well as snuffles in the area, indicating that it is partially-used. This sett is located over 220m from the nearest Proposed Project infrastructure, i.e. the proposed access road to Proposed Turbine 3, therefore it was not subject to camera trapping.

[44] *Following standard best practice, the location of breeding or resting places of protected species should be provided as a confidential appendix for review by the competent authority and not made available to the public in order to avoid potential for persecution.*

A potential badger sett, Sett E, with a single entrance was identified in Lullybeg Bog in 2026, along a bank in an area of largely open bare peat. The entrance was the typical D-shape of badger and had a clear trail to the entrance. However, trail camera footage from the 18th of August to the 2nd of September 2026 did not show any use of this sett by badger. This sett was therefore classified as disused at the time of survey. Snuffle holes were also identified within 100m of this sett during surveys undertaken in 2024. Sett E is located approximately 70m from the nearest Proposed Project infrastructure i.e. the proposed access road to Proposed Turbine 35.

In Ballydermot South Bog, another potential badger sett with a single entrance was also identified in 2026 - Sett F. This sett was located at the margins of an area of bog woodland along an embankment. A well-worn trail was present down the embankment and snuffle holes were identified in a clearing immediately to the west. Trail camera footage from the 18th of August to the 2nd of September 2026showed the occasional presence of badger. This sett was therefore classified as a partially-used, subsidiary sett per TII (2008a) and Smal (1995). Sett F is located approximately 100m from the nearest Proposed Project infrastructure, i.e. the proposed access road between Proposed Turbines 11 and 15.

Sett G was identified in an area of largely bare peat with early recolonisation of scrub and dry vegetation in Blackriver Bog in 2026. This was an active badger sett comprising three entrances, all located along an embankment. Two entrances were well-used, with fresh spoil heaps, typical D-shape and trails to the entrances, while the third entrance was slightly overgrown with grass and was classified as partially used. An attempted dig at another burrow was also identified approximately 120m to the south of the sett, however this was not deep enough to have been used by badgers at the time of survey. Additionally, approximately 180m to the west, signs were identified of badger potentially using an old concrete pipe through the cutover bog, with a spoil heap at the exposed opening and snuffle holes in the vicinity. Large numbers of snuffle holes were recorded up to 450m from the sett, indicating active badger use throughout the area. Trail camera footage from the 18th of August to the 2nd of September 2026 confirmed the presence of badger. This sett was therefore classified as a main, well-used sett per TII (2008a) and Smal (1995). Sett G is located approximately 20m from the nearest Proposed Project infrastructure, i.e. the proposed access road to Proposed Turbine 4.

Two further disused setts were also identified during ecological surveys undertaken within the Proposed Wind Farm site, in Killina and Glashabaun South Bogs. These setts were overgrown with vegetation with no recent trails or signs of activity present which would indicative active use by badger or any other species at the time of survey. These are labelled as Sett H and Sett I in Confidential Appendix 6-6.

An incidental badger sighting also occurred within the Project Site during an ornithological survey in Lullymore Bog in April 2026. Badger was also seen outside the Project Site on four occasions during offsite ornithological surveys, between 150m and 1.5km from the Project Site. These sightings were of individuals feeding and travelling and indicate the species' presence in the wider area.

Evidence of badger activity (refer to Figure 6-13) was also recorded from a number of other locations within the Project Site, including snuffle holes, foraging signs and trails in several areas across the Project Site.

Snuffle holes and badger scat were also identified at the location of the Proposed Offsite Substation in Killybegs, Co. Kildare in August 2024, however no setts were identified and no further signs were identified during subsequent surveys in this location.

All signs of badger within and in the vicinity of the Project Site (excluding sett locations – see Appendix 6-6 and footnote 44 above) are shown in Figure 6-13 below.



Plate 6-58 Badger sett entrance in Glashabaun North Bog



Plate 6-59 Badger sett entrance with spoil heap evident, present in Blackriver Bog

6.3.3.1.2 Otter

Desk-based review identified that otter (*Lutra lutra*) are widespread within the Project Site and in the wider area surrounding the Proposed Project. Watercourses within the Proposed Wind Farm site and along the Proposed Grid Connection underground electrical cabling route provide suitable habitat for otter.

Potential otter slides were identified near the watercourse crossing located northeast of Proposed Turbine 9 in July 2024 (refer to Figure 6-14 below), however following a detailed search, no holts, spraints, couches or any other evidence of breeding otter were identified within this area.

An individual otter was observed as an incidental record during ornithological surveys on a single occasion in October 2024, to the southwest of the Proposed Onsite Substation, within a large drain through Lodge Bog. Detailed otter surveys were undertaken along the length of this drain, and it was found to have high suitability for otter, however no breeding or resting sites were identified along this drain during any of the surveys undertaken.

Otter prints were also identified along the margins of a drain in Glashabaun South Bog in March 2025, however no further signs, including breeding or resting sites were identified in this location during any of the surveys undertaken.

Additionally, a regular otter sprainting site was identified on a number of stones beneath Shee Bridge on the Grand Canal in August 2025, at the location of a proposed watercourse crossing WC-GCR-02 along the Proposed Grid Connection underground electrical cabling route. This spraint site is located approximately 200m from the proposed HDD location, and approximately 20m from the Proposed Grid Connection underground electrical cabling route within the R403 regional road. Otter spraint and feeding remains (fish scales and fins) were also identified at a second location approximately 350m to the west of the proposed HDD location.

During the aquatic baseline surveys in 2026, Triturus Environmental Ltd. also surveyed 42 no. aquatic survey locations within and downstream of the Project Site for otter, including each proposed watercourse crossing along the Proposed Grid Connection underground electrical cabling route. The following should be read in conjunction with Figure 2.1 (survey locations) in the Aquatic Baseline Report (Appendix 6-3) and Table 6-4 above. The following evidence of otter was recorded during the surveys undertaken by Triturus in 2021, 2024 and 2026:

- An inactive otter holt was identified at survey site A9, on the east bank of an unnamed stream at Lullybeg within the Proposed Wind Farm site. This is located over 170m from the proposed hardstand associated with Proposed Turbine 36, 135m from the proposed peat and spoil area associated with Proposed Turbine 36, and 100m from the proposed scrub mosaic creation area. As identified by Triturus Environmental Ltd., this holt was unused by otters at the time of survey.
- In 2021, an otter holt and spraint site were identified in a pipe culvert near the Codd River crossing of the local L1001 road. This is located approximately 550m from the nearest Proposed Project infrastructure i.e. Proposed Turbine 23. During a follow-up site visit in September 2026 the pipe culvert was no longer found to be in use by otter and no signs of otter in this area were observed.
- A fresh otter spraint site and slide were identified at survey site A12b (Lullybeg Stream) in 2026. This survey site is located within the Proposed Wind Farm site at the location of proposed watercourse crossing WC-WF-14 associated with a proposed internal site access track. No holts, couches or any other evidence of breeding otter were identified within 150m of this location.
- A regular otter spraint site was identified at survey site A14a (Cushaling Bridge, Figile River), under the bridge in 2021, 2024 and 2026, indicating continual use of this watercourse by otter. This survey site is located within the Project Site along the L3001 road. No works are proposed within 1.0km of the location of this spraint site.
- An otter spraint site was recorded at survey site A15a (Figile River, Kilcumber), on a boulder under the bridge in 2026. While this location was not surveyed in previous years, an otter spraint site and otter prints were recorded at Kilcumber Bridge approximately 0.8km downstream of this location in 2024 and 2021, respectively, indicating continual use of this watercourse by otter. Survey site A15a is located within the Proposed Wind Farm site along at the location of proposed watercourse crossing WC-WF-06 associated with a proposed internal site access track. No holts, couches or any other evidence of breeding otter were identified within 150m of this spraint location.
- A mixed aged otter spraint site was identified at survey site A18 (Figile River, Millgrove Bridge) in 2026. This survey site is located outside of and approximately 4.9km downstream of the Project Site.
- A regular otter spraint site was identified on a pipe culvert lip below the local road crossing of the L10032 in 2021. This site was not resurveyed in 2024 or 2026, however no otter signs were recorded at survey site A16 in 2024 or 2026, which is located approximately 760m downstream of the spraint site. This spraint site is located outside of and approximately 1.8km downstream of the Project Site.
- A regular otter spraint site was identified on a large boulder at the mouth of the Ballygarret River in 2021. This site was not resurveyed in 2024 or 2026, however no otter signs were recorded at survey sites A16 or A17 in 2024 or 2026, which are located approximately 0.9km and 1.4km upstream of the spraint site, respectively. This spraint site is located outside of and approximately 3.5km downstream of the Project Site.
- A latrine and prints were identified at survey site B2 (Kishawanny Bridge, River Boyne) in marginal mud underneath the bridge in both 2021 and 2024. This survey location is situated outside of and approximately 4.3km downstream of the Project Site. No otter signs were identified in this location during the surveys undertaken in 2026.

- A spraint site was identified in the vicinity of the bridge at survey site C2 (Agar Bridge, Slate River) in 2021 and 2024. This survey location is located outside of, and approximately 3.6km downstream of, the Project Site. No otter signs were identified in this location during the surveys undertaken in 2026.
- A regular otter spraint site was identified at survey site G1 (Allenwood South, Killinagh Upper Stream) in 2024, on a concrete plinth under the bridge structure, with three-spined stickleback and small mammal remains. Two recently-used otter spraint sites were also recorded on the bridge ledge in this location in 2021. This survey site is located at a watercourse crossing associated with the Proposed Grid Connection underground electrical cabling route. No otter signs were identified in this location during the surveys undertaken in 2026.
- A regular otter spraint site was identified at survey site G5 (Quigley's Bridge, Slate River), under the bridge in 2024. This survey site is located at watercourse crossing WC-GCR-05 associated with the Proposed Grid Connection underground electrical cabling route. No otter signs were identified in this location during the surveys undertaken in 2026.

All otter signs are shown in Figure 6-14 below, excluding the location of the inactive holt identified in 2026 and the holt identified in a pipe culvert in 2021 which was identified in 2026 as being no longer in use as a holt. These are shown in Confidential Appendix 6-6.

6.3.3.1.3 *Pine Marten*

Desk-based review identified that pine marten (*Martes martes*) are widespread both within the Project Site and in the wider area surrounding the Proposed Project. Habitats within the Project Site, including woodlands and scrub provide abundant suitable habitat for pine marten.

Sightings of pine marten were recorded on numerous occasions in several locations within and adjacent to the Project Site as incidental records during the extensive ornithological surveys undertaken, with records from each year between 2020 and 2026. Sightings of the species were widespread across the Project Site, occurring in Ballydermot North, Ballydermot South, Barnaran, Blackriver, Derrybrennan, Lullymore, Killina, Glashabaun South, Glashabaun North and Ticknevin Bogs, as shown in Figure 6-15.

A pine marten was also observed commuting past the trail camera set up at the active badger Sett A in Glashabaun North Bog in July 2022. Trail camera footage from the cameras deployed in 2026 also observed pine marten commuting past badger Setts E and F (Plate 6-60). These observations are not shown in Figure 6-13 due to the sensitivity of the sett locations. A trail camera set up at a small mammal burrow in Glashabaun North Bog also recorded a pine marten quickly entering and exiting the burrow in the same minute. The pine marten did not return to the burrow and due to the quick interaction this was interpreted as hunting behaviour. This burrow was therefore not characterised as a pine marten den.

Pine marten were observed at ornithology survey locations outside of the Project Site on a further five occasions, between 0.8km and 2.2km from the Project Site, indicating the species' presence in the wider area.

Signs of pine marten in the form of scat were also recorded within the Project Site in a number of locations within the Project Site, indicating their regular use of Project Site. The locations of these scats are also shown in Figure 6-15 below.

No breeding sites or dens for pine marten were recorded within the Proposed Project infrastructure footprint during any of the interdisciplinary surveys undertaken between 2020 and 2026.



Plate 6-60 Two pine marten observed on a trail camera in August 2026

6.3.3.1.4 Irish Stoat

Desk-based review identified that Irish stoat (*Mustela erminia* subsp. *hibernica*) have been recorded within a number of the hectads in which the Project Site is located and in the wider area surrounding the Proposed Project. Habitats within the Project Site, including woodlands and scrub provide abundant suitable habitat for Irish stoat.

Irish stoat was observed as incidental records during ornithological surveys on two occasions within the Project Site. An individual stoat was observed running to the southeast of Proposed Turbine 46 in February 2024, adjacent to the Project Site. In June 2022, a family group of five stoats were observed in Ballydermot North Bog, travelling and calling before being flushed in response to the surveyor.

An individual was also observed approximately 1.2km to the west of the Project Site during offsite ornithological surveys in September 2023, indicating the species' presence in the wider area. These sightings are shown in Figure 6-16 below.

6.3.3.1.5 Irish Hare

Desk-based review identified that Irish hare(*Lepus timidus* subsp. *hibernicus*) are widespread both within the Project Site and in the wider area surrounding the Proposed Project. Habitats within the Project Site, including peatlands and grasslands, provide abundant suitable habitat for Irish hare.

Irish hare were observed within the Project Site on numerous occasions during ecological and ornithological surveys undertaken between 2020 and 2026, across the entirety of the Project Site, as shown in Figure 6-17 below. These records were largely sightings of individuals foraging and running in the cutover bog habitats within the Proposed Wind Farm site, often flushed by surveyors. Scat was also recorded in a number of locations.

Irish hare were also observed at offsite survey locations during ornithological surveys on a further 27 occasions, particularly in the peatland habitats at Cloncumber, Drehid, Cloncreen and Cloncannon bogs, indicating this species' presence throughout the wider landscape.

On one occasion in April 2026, a group of eight hares were observed during an ornithological survey, in the south of Blackriver Bog, including two leverets.

6.3.3.1.6 Red Squirrel

Desk-based review identified that red squirrel (*Sciurus vulgaris*) have been recorded within all hectads in which the Project Site is located, and in the wider area surrounding the Proposed Project. Habitats within the Project Site, including woodlands and treelines, provide some suitable habitat for this species.

Red squirrel were observed within the Proposed Wind Farm site on three occasions between 2020 and 2026, within bog woodland in Ballydermot North Bog in May 2022, within a treeline in Blackriver Bog in August 2024 and in conifer plantation in Killina Bog in May 2026. A red squirrel was also observed within woodland at Lullymore Heritage Park, approximately 150m to the north of the Project Site in December 2025. No breeding locations for red squirrel were identified within the Project Site during any of the interdisciplinary surveys undertaken.

Red squirrel were most frequently recorded in Killinthomas Woods, located outside the Project Site. Individuals and pairs of individuals were observed in this location on seven occasions, with feeding signs also recorded within this woodland, indicating that this species is likely breeding in Killinthomas Woods. This woodland is located outside the Project Site, however amenity tracks are proposed to link up to the existing walkways through the woodland.

Red squirrels were also observed at offsite ornithological survey locations on three occasions, in the north of Cloncreen and within forestry and treelines along the Grand Canal to the south of the Project Site, indicating this species' presence in the wider landscape.

All records and signs of red squirrel are shown in Figure 6-18 below.

No grey squirrels (*Sciurus carolinensis*), a species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended), were recorded during any of the surveys undertaken.

6.3.3.1.7 Other Mammals

Signs of fox (*Vulpes vulpes*) were also regularly recorded within the Project Site through sightings and identification of scat, as shown in Figure 6-13 below. On one occasion, three individual fox cubs were observed playing adjacent to an area of bog woodland to the north of Proposed Turbine 34. A fox and cub were also regularly observed commuting past the trail camera at the Sett A in Glashabaun North Bog in 2022, and an individual was observed on trail cameras commuting past Sett E in Lullybeg Bog in 2026. These observations are not shown in Figure 6-19 due to the sensitivity of the sett locations.

A disused fox den was also identified in May 2026 along the existing track between Blackriver and Barnaran Bogs. This burrow was oval in shape and taller than wide, however it had a spider's web at the entrance and debris inside, indicating that it was unlikely to have been recently used.

A small mammal burrow was also identified along a bank in Glashabaun North Bog and was determined to be too small to belong to badger, however due to its proximity to the Proposed Project infrastructure (approximately 25m from a proposed amenity track), a trail camera was deployed in order to determine its usage status by other species. While a pine marten was observed hunting within the burrow (see Section 6.3.3.1.3 above for detail), no other mammals were recorded entering, exiting or interacting with the burrow therefore it was classified as disused at the time of survey.

Deer tracks were also identified at one location within the Proposed Wind Farm site in July 2024, in the south of Derrybrennan Bog, to the southwest of Proposed Turbine 46.

During ornithological surveys, an American mink (*Neogale vison*) was observed on one occasion within the Project Site, in a drain along the southern boundary of Codd 2 Bog. This is an 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). During baseline aquatic surveys, an American mink was also observed at survey site B2 at Kishawanny Bridge on the River Boyne, approximately 4.2km downstream of the Project Site (see Aquatic Baseline Report for detail, included as Appendix 6-3).

In addition to the above, mammal trails were frequently recorded throughout the Project Site and are also shown in Figure 6-19 below.

660000 665000 670000 675000

730000

725000

N

0 0.5 1 Km

0 1 2 km

Map Legend

- Project Site
- Proposed Project Infrastructure Footprint
- Attempted dig
- Print
- Scat
- Sighting
- Snuffle Holes
- Trail

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Badger Signs

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-13	1:50,000
Drawn By:	Checked By	Date
JG	CF	22/10/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

660000
665000
670000
675000
735000
730000
725000
720000

Map Legend

- Project Site
- Proposed Project Infrastructure Footprint
- Latrine and Prints
- Prints
- Sighting
- Slide
- Spraint
- Spraint and slide
- Spraint and Feeding remains
- Spraint and Prints
- WFD Watercourses

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

N

SITE LOCATION - NOT TO SCALE

0 3 6 km

Drawing Title
Otter Signs

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-14	1:70,000
Drawn By: JG	Checked By: CF	Date: 22/10/2026

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

660000
665000
670000
675000
730000
725000
720000
N
0
2
4 km

Map Legend

Project Site

Proposed Project Infrastructure Footprint

Pine Marten signs

Scat

Sighting

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

SITE LOCATION - NOT TO SCALE

Drawing Title
Pine Marten signs

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-15	1:50,000
Drawn By	Checked By	Date
BOC	KB	18/09/2026

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

660000
665000
670000
675000
730000
725000
720000
N
0
2
4 km

Map Legend

- Project Site
- Proposed Project Infrastructure Footprint

Irish Stoat signs

- Sighting

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

SITE LOCATION - NOT TO SCALE

Drawing Title

Irish stoat signs

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-16	1:50,000
Drawn By	Checked By	Date
BOC	KB	18/09/2026

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

660000
665000
670000
675000
730000
725000
720000
N
0
2
4 km

Map Legend

- Project Site
- Proposed Project Infrastructure Footprint

Irish hare signs

- Scat
- Sighting

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



SITE LOCATION - NOT TO SCALE

Drawing Title
Irish hare signs

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-17	1:60,000
Drawn By	Checked By	Date
BOC	KB	18/09/2026

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

660000
665000
670000
675000
730000
725000
720000
N
0
2
4 km

Map Legend

- Project Site
- Proposed Project Infrastructure Footprint

Red squirrels

- Foraging signs
- Sighting

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

SITE LOCATION - NOT TO SCALE

Drawing Title
Red Squirrel Signs

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	6-18	1:55,000
Drawn By	Checked By	Date
BOC	KB	18/09/2026

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

660000
665000
670000
675000
730000
725000
720000
N
Sighting
Scat
Disused burrow
Sighting
Prints
Sighting
Sighting
Sighting
Scat
Scat
Trail
Trail
Sighting
Sighting
Sighting
Scat
Trail
Print
Scat
Prints
Scat
Sighting
Scat
Sighting
Sighting
Sighting
Scat
Trail
Sighting
Sighting
Trail
Trail
Disused Den
Trail
Trail
Trail
Scat
Sighting
Trail
0
2.5
5 km
Map Legend
Project Site
Proposed Project Infrastructure Footprint
American Mink
Deer
Fox
Mammal sp.
Mustelid sp.
Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator
N
SITE LOCATION - NOT TO SCALE
Drawing Title
Other Mammal Signs
Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare
Project No. 250708
Drawing No. 6-19
Scale 1:55,000
Drawn By JG
Checked By CF
Date 22/10/2026
MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

6.3.3.2 Bats

Full details of results of bat surveys undertaken in Spring, Summer and Autumn 2024 and the additional surveys from 2026 are provided in the Bat Report (Appendix 6-2) and are summarised in this section. All survey and detector locations are shown in Figures 3-1 and 3-2 in the Bat Report.

6.3.3.2.1 *Bat Habitat Suitability Appraisal*

Results from the desktop review and walkover surveys were used to assess habitats for their suitability to support foraging and commuting bats, and roosting bats, according to Collins (2023). Suitability categories are divided into *High, Moderate, Low*, *Negligible* and *None,* and are fully described in Appendix 1 of the Bat Report.

Proposed Wind Farm

With regard to foraging and commuting bats, areas of cutover bog characterised by revegetating grassland and poor fen, raised bog habitats and buildings and artificial surfaces were considered *Low* suitability, i.e. habitat that could be used by small numbers of commuting bats (Collins, 2023). Areas of scrub, bog woodland, conifer plantation and drainage ditches provide connectivity via linear features to the surrounding landscape. As such, they were assessed as having *Moderate* suitability i.e. habitat that is connected to the wider landscape that could be used by bats for foraging (Collins, 2023). Due to their varying levels of maturity and connectivity, treelines and hedgerows were assessed as having *Moderate* to *High* suitability, while lowland depositing rivers were assessed as having *High* suitability, i.e. continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats (Collins, 2023). All other habitats were assessed as having *Negligible* suitability for commuting and foraging bats i.e. No obvious habitat features likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour (Collins, 2023).

Trees present on the Proposed Wind Farm comprise conifer plantation, treelines, scrub and bog woodland. With regard to roosting bats, no trees within 200m plus the rotor radius (i.e. 75m) of the Proposed Turbine locations were found to have roosting potential. These were all assessed as *Negligible* roosting potential as these trees lacked the size, age, or features required to provide suitable roosting opportunities for bats.

No structures assessed as having suitability for roosting bats were identified within the roost search buffer (285m). Three complexes containing several buildings were identified within the Proposed Wind Farm with a further two bridges assessed as containing roosting potential. All other habitats present within the Proposed Wind Farm were assigned a *Negligible* value for roosting bats.

Lodge Bog Enhancement Area

The Lodge Bog Enhancement Area currently comprises a mosaic of habitats including open water, bare cutover peat, scrub and bog woodland. The habitat present within this area is consistent with the Proposed Wind Farm site. It is dominated by Cutover bog (PB4) characterized by bare peat. Areas that have been out of commercial peat production for a significant period (>20 years) have largely revegetated, primarily by *Calluna*-dominated communities on cutover bog, birch dominated scrub and bog woodland, poor fen communities and small areas of grassland.

With regard to foraging and commuting bats exposed areas of cutover and raised bog habitats associated with revegetation outlined above were considered *Low* suitability, i.e. habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated (Collins, 2023). Areas of scrub, bog woodland and poor fen provide connectivity via linear features to the surrounding landscape. As such, they were assessed as having *Moderate* suitability i.e. habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland

or water (Collins, 2023). Due to their varying levels of maturity and connectivity, the *Calluna*-dominated communities on cutover bog, scrub and bog woodland were assessed as having *Moderate* to *High* suitability, i.e. continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. (Collins, 2023). All other habitats referenced above were assessed as having *Negligible* suitability for commuting and foraging bats i.e. No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour (Collins, 2023).

Trees present within the Lodge Bog Enhancement area comprise treelines, consisting of downy birch (*Betula pubescens*) and grey willow (*Salix cinerea*), scrub and bog woodland. With regard to roosting bats, no trees within this area were found to have roosting potential. These were all assessed as *Negligible*. These trees lacked the size, age, or features required to provide suitable roosting opportunities for bats.

Killina Bog Offsetting Area

The Killina Bog Offsetting Area is predominately conifer plantation, bare cutover peat and scrub with smaller areas of broadleaf woodland.

With regard to foraging and commuting bats, conifer plantation (WD4) and bare cutover peat are considered to have *Low* suitability, i.e. habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated (Collins, 2023). Areas of broad-leaved woodland and scrub provide connectivity via linear features to the surrounding landscape. As such, it was assessed as having *Moderate* suitability i.e. habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water (Collins, 2023).

With regard to roosting bats, no trees within this area were found to have roosting potential. These were all assessed as *Negligible* and are outlined in further detail in Section 4.3.2 of the Bat Report. These trees lacked the size, age, or features required to provide suitable roosting opportunities for bats.

Proposed Grid Connection

Habitats within the wider Proposed Grid Connection underground electrical cabling route corridor, including Cutover bog (PB4), Poor fen (PF2), Scrub (WS1), Buildings and artificial surfaces (BL3), Dry meadows and grassy verges (GS2), Wet grassland (GS4) and Improved agricultural grassland (GA1), were also assessed as offering *Negligible* to *Low* suitability for commuting and foraging bats due to their generally open nature and limited structural connectivity. Linear features along the Proposed Grid Connection underground electrical cabling route, including Conifer plantation (WD4) edges, Hedgerows (WL1), Treelines (WL2), Depositing/lowland river (FW2), Canal (FW3) were assessed as offering *Moderate* suitability for commuting and foraging bats, due to their connectivity with the wider landscape and the presence of linear vegetation providing navigational structure and shelter.

With regard to roosting bats, no habitat features along the Proposed Grid Connection underground electrical cabling route nor within the lands supporting the Proposed Onsite Substation and Proposed Offsite Substations including buildings, trees or other features capable of supporting bat roosts were identified, therefore these areas have been assessed as having a roosting potential of '*None*' per Collins (2023).Proposed Grid Connection Watercourse Crossings

The Proposed Grid Connection underground electrical cabling route will involve 11 no. crossings over watercourses (7 no. crossings over EPA mapped watercourses, 1 no. crossing under the Grand Canal and 3 no. crossings over unmapped watercourses). No in-stream works are required along the Proposed Grid Connection underground electrical cabling route. Watercourse crossing methodologies are detailed in Section 4.9.2.7 of Chapter 4 of this EIAR and listed in Table 6-21 above and in Table 4-4 of the Bat Report (Appendix 6-2).

The structures at the existing 7 no. EPA mapped watercourse crossings and the 3 no. unmapped watercourse crossing were inspected for signs of bat roosts and were assessed for bat roost potential on the 13th of August 2024, 20th July 2026, and 22nd of September 2026. No evidence of bat roosts was found at any of the structures during the inspections. The findings are summarised in Table 4-4 of the Bat Report (Appendix 6-2).

No other features within the Proposed Grid Connection infrastructure footprint were assessed as having potential for roosting bats, and no loss of PRFs is anticipated as part of the Proposed Grid Connection underground electrical cabling works. Further details on the Proposed Grid Connection can be found in Chapter 4, Section 4.4.2.

Proposed Turbine Delivery Route Accommodation Areas

As described in Chapter 4, Section 4.5.2.3 of this EIAR, turbine delivery route accommodation works are required at a number of locations along the Proposed Turbine Delivery Route to facilitate the delivery of turbine components during the construction phase. These works include temporary measures such as localised road widening, overruns of roundabout islands and relocation of signage and street furniture.

Vegetation removal or trimming is only required at a subset of these locations. The bat habitat suitability assessment below focuses on those locations where vegetation with potential ecological value for bats is present. The assessment of the vegetation along the Proposed Turbine Delivery Route accommodation areas was carried out on the 16th of September 2026.

R402/L2025 Junction in Ballinagar (ITM Grid Ref.: X 644098, Y 724134)

This accommodation area is located in the west of Ballinagar village along the R402 Regional Road and comprises a landscaped amenity area containing amenity grassland (GA2), scattered mature trees and parkland (WD5), and a boundary treeline (WL2)). This treeline will require removal as part of the Proposed Turbine Delivery Route accommodation areas. The tree cover includes silver birch, elder and non-native cypress and poplar trees. The amenity grassland provides limited opportunities for bats; however, the mature trees and boundary vegetation provide sheltered habitat that may be used by commuting and foraging bats. Overall, the area is considered to provide *Moderate* suitability for commuting and foraging bats.

No Potential Roost Features (PRFs) were identified in the trees assessed, which were therefore considered to have no (*None*) suitability for roosting bats.

R402/R420 Junction (ITM Grid Ref.: X 641917, Y 721602)

This accommodation area is located at the junction of the R402 and R420 Regional Roads. This area comprises a gravelled area classified as Recolonising bare ground (ED3). A Treeline (WL2) of ash, hazel, blackthorn, hawthorn and hornbeam is also present at this location on the north side of the R420. Areas of artificial hardstanding (BL3) are also present adjacent to the vegetation.

The mature treeline forms a sheltered linear feature that may be used by bats for commuting and foraging. The area is therefore considered to provide *Moderate* suitability for commuting and foraging bats. No Potential Roost Features (PRFs) were identified in the trees assessed, which were consequently considered to have no (*None*) suitability for roosting bats.

6.3.3.2.2 Roost Surveys

Daytime Roost Inspections

A detailed daytime bat roost inspection was undertaken within the Proposed Wind Farm site during the 2024 and 2026 bat activity seasons to identify structures and features with the potential to support roosting bats. No structures containing suitable bat roosting features were identified within 285m (200 m plus rotor radius) of any Proposed Turbine location. As identified in Section 6.3.3.2.1 above, there are no structures along the Proposed Grid Connection underground electrical cabling route that have suitability for roosting bats. Therefore, daytime roost surveys were not required at any Proposed Grid Connection underground electrical cabling route crossings. No existing structures are present at the Proposed Onsite Substation or Proposed Offsite Substation locations.

A total of 13 structures were identified within the Proposed Wind Farm site and assessed for bat roosting potential (see Table 4-5 of the Bat Report). Within the Proposed Wind Farm site, there are a total of 15 no. watercourse crossing locations over natural watercourses (rivers and streams). Of these 15 no. watercourse crossings, 12 no. had associated infrastructure that were assessed for roosting potential. These comprised solid concrete bridges, steel rail bridges, flatbed bridges and concrete pipe culverts.

All structures were assessed in accordance with the bat roost suitability classification system described by Collins (2023). Each structure was systematically inspected using a high-powered torch, thermal scope and/or endoscope to identify potential roosting features, including cracks, crevices, cavities and voids. All watercourse crossings were assessed as having *Negligible* bat roost suitability. These structures were predominantly constructed of solid concrete or smooth pipe culverts and lacked cracks, crevices, voids or other features capable of supporting roosting bats. Similarly, steel rail bridges had tightly sealed joints and offered no suitable roosting opportunities. No evidence of bat use, such as droppings, feeding remains, staining or bat carcasses, was recorded during any inspection.

No confirmed bat roosts or evidence of bat occupation were recorded within any inspected structure. Furthermore, no structures with bat roosting potential were identified within 285m of the Proposed Turbine locations. One building complex located within the Proposed Wind Farm site (Ballydermot Works; ITM X 665970, Y 721622) was assessed as having *Low* bat roost suitability due to the presence of a limited number of features that could potentially support individual roosting bats. This complex is located approximately 862 m from the nearest Proposed Turbine (i.e. Proposed Turbine 14). The buildings comprise a small group of low-rise structures located within an established developed area. The principal building consists of a single-storey, elongated structure with rendered walls, a shallow-pitched corrugated roof. A larger structure to the north comprises a metal-framed building with a curved, corrugated roof. The buildings are surrounded by hardstanding, boundary walls and areas of mature vegetation, including trees and hedgerows.

A visual inspection of the accessible external areas of the buildings was undertaken to assess their suitability for roosting bats. No evidence of bats or bat roosting activity, including droppings, staining, feeding remains or other signs indicative of a bat roost, was identified during the inspection. The structures are generally well-maintained and exposed, with no obvious accessible gaps, crevices or other features considered suitable for use by roosting bats identified during the survey. On this basis, the buildings were assessed as having *Low* bat roost potential.

Ground-level Tree Assessments

Ground-level inspections of trees and treelines within the Project Site were undertaken throughout the 2024 and 2026 surveys to assess their potential to support roosting bats. Surveys focused on areas where tree removal is required for Proposed Wind Farm infrastructure, including turbine bases and associated bat felling buffers, turbine hardstands, access roads, Proposed Enhancement Areas (i.e., the Lodge Bog Enhancement area and the Killina Bog Offsetting Area), the Proposed Grid Connection, and the Proposed Turbine Delivery Route accommodation areas. These trees were assessed for their potential

to support roosting bats according to Collins (2023) (see Appendix 1 therein for roost assessment criteria).

No confirmed bat roosts, evidence of bat occupation, or PRFs were identified within the Project Site during the 2024 or 2026 surveys.

6.3.3.2.3 *Manual Transects/Night-time Bat Walkovers*

Proposed Wind Farm - 2024 Surveys

A total of 406 bat passes were recorded during the manual transects undertaken in spring, summer and autumn 2024, with bat activity recorded in all seasons. In general, common pipistrelle (n=184). was recorded most frequently, followed by soprano pipistrelle (n=161) and Leisler's bat (n=59). *Myotis spp.* (n=1) and brown long-eared bat (n=1) were rare.

Species composition and activity levels varied between surveys. Transect survey results were calculated as bat passes per km surveyed (to account for differences in survey effort). Soprano pipistrelle showed the highest levels of activity overall, particularly during the spring (2.1 passes/km) and summer (3.8 passes/km), particularly at Proposed Turbines 1, 35 and 36, with reduced activity in autumn (0.6 passes/km). Common pipistrelle activity peaked notably in summer (6.3 passes/km), with much lower activity in spring (0.7 passes/km) and autumn (0.04 passes/km). Leisler's bat activity was most prominent in summer (1.7 passes/km) compared to lower levels recorded in spring (0.4 passes/km) and autumn (0.2 passes/km). *Myotis spp.* and brown long-eared bat activity across the Proposed Wind Farm was minimal for all survey periods.

Proposed Enhancement Areas - 2026 Surveys

Targeted manual transects were undertaken in spring, summer and autumn 2026. Bat activity was recorded in all seasons. A total of 230 bat passes were recorded. In general, common pipistrelle (n=134) was recorded most frequently, followed by soprano pipistrelle (n=73) and Leisler's bat (n=23).

To account for differences in survey effort, activity levels were standardised as bat passes per kilometre (passes/km) surveyed. Activity levels varied between survey periods. Soprano pipistrelle exhibited the highest activity levels overall, particularly during summer (8.94 passes/km) and autumn (7.54 passes/km). Common pipistrelle activity peaked during summer (11.47 passes/km), compared to considerably lower levels in spring (1.47 passes/km) and autumn (0.88 passes/km). Leisler's bat activity was highest in autumn (3.15 passes/km), with lower levels recorded during spring (1.05 passes/km) and summer (0.65 passes/km).

6.3.3.2.4 *Vantage Point Surveys*

Two vantage point (VP) surveys were undertaken during the 2026 survey season to observe bat flight activity within the proposed rotor swept area, with particular regard to high-flying species such as Leisler's bat. Bat activity, behaviour and flight paths were recorded during both surveys. Observations of flight direction, approximate flight height and behaviour were recorded where possible. Activity was generally concentrated to commuting from north to south along linear connectivity features. Bats were observed on 7 no. occasions during vantage point surveys. Observations were of individuals and all were of bats commuting or foraging (Table 4-6 of Bat Report). VP 1 was carried out on the 5th of August 2026 surveying the viewshed at the location of Proposed Turbine 2. VP 2 was carried out on the 31st of August 2026 surveying the viewshed analysis at the location of the Proposed Turbine 8.

6.3.3.2.5 Ground-Level Static Surveys

A total of 22 no. static detectors were deployed at or near the Proposed Turbine locations during 2024 and a further 4 no. detectors in 2026 within Proposed Enhancement Areas at Killina and Lodge Bogs, as outlined in Section 6.2.3.4.5 above, in accordance with NatureScot (2021) guidance.

Proposed Wind Farm – 2024 Surveys

The static surveys recorded a total of 84,138 bat passes across all deployments during the 2024 survey period. Activity was dominated by common pipistrelle (n=39,702), followed by soprano pipistrelle (n=22,118) and Leisler's bat (n=20,428). Instances of *Myotis spp.* (n=1,192), brown long-eared bat (n=355) and Nathusius' pipistrelle (n=343) were recorded less frequently during the 2024 survey period.

During spring, bat activity was dominated by common pipistrelle and soprano pipistrelle, with notable contributions from Leisler's bat. In summer, activity remained highest for common pipistrelle, though soprano pipistrelle activity declined slightly, and Leisler's bat activity increased. Autumn activity was predominantly led by common pipistrelle, followed by soprano pipistrelle and Leisler's bat. *Myotis spp.* exhibited modest increases across the seasons, while brown long-eared bat and Nathusius' pipistrelle were consistently recorded at low levels, representing only a small amount of the activity in each season.

The median bat activity recorded at each detector during each survey period indicate clear seasonal and spatial variation in median activity levels. In spring, summer and autumn, activity at detector D06 was notably higher than at all other locations, dominated by common pipistrelle and soprano pipistrelle passes; this detector was located in an area of cutover bog. The seasonal shifts in species composition were evident, with *Myotis spp.* and soprano pipistrelle contributing to the elevated summer activity at D06 (see Figure 3-4 of Bat Report for 2024 detector locations). Leisler's bat activity was prominent in spring, particularly at D06, while common pipistrelle dominated in autumn. Nathusius' pipistrelle and brown long-eared bat activity remained consistently low across all seasons. Species composition and activity patterns at other detectors showed considerable variation, influenced by their respective habitat contexts and seasonal dynamics.

The Median Nightly Pass Rate (i.e. total bat passes per hour, per night) was used to provide a robust measure of typical bat activity at the Proposed Wind Farm, reducing the influence of occasional high-activity nights on overall results. This approach is recommended in order to account for variability in nightly activity caused by weather conditions, seasonal changes, and other environmental factors (Lintott & Mathews, 2018). Zero data, when a species was not detected on a night, was also included.

Proposed Enhancement Areas – 2026 Surveys

In total, 13,331 bat passes were recorded across all deployments. In general, soprano pipistrelle (n=8,433) occurred most frequently, followed by common pipistrelle (n=2,850) and Leisler's bat (n=1,813). Instances of *Myotis* spp. (n=177), brown long-eared bat (n=43) and Nathusius' pipistrelle (n=15) were recorded less frequently during the 2026 survey period.

Bat activity was standardised as bat passes per hour (bpph) for each survey season to account for potential bias associated with varying night lengths. Activity was dominated by soprano pipistrelle across all survey periods, followed by common pipistrelle and Leisler's bat. Common pipistrelle activity peaked in spring and Leisler's bat activity peaked in autumn. *Myotis* spp. were recorded consistently across all three survey periods, with the highest level of activity recorded in summer. Brown long-eared bat and Nathusius's pipistrelle were recorded infrequently.

The median bat activity recorded at each detector during each survey period indicate clear seasonal and spatial variation in median activity levels. In spring, summer and autumn, activity at detector D04 was notably higher than at all other locations, dominated by soprano pipistrelle passes. During autumn,

overall bat activity decreased substantially and Leisler's bat activity increased across all detector locations. In autumn, soprano pipistrelles dominated and *Myotis* spp. was only recorded at detector D01 (see Figure 3-5 of Bat Report for 2026 detector locations). Activity remained generally low throughout the survey periods at detectors D01, D02 and D03.

The Median Nightly Pass Rate (i.e. total bat passes per hour, per night) was used to provide a robust measure of typical bat activity at the Lodge Bog Enhancement and Killina Bog Offsetting Area, reducing the influence of occasional high-activity nights on overall results (Plate 4-52). This approach is recommended in order to account for variability in nightly activity caused by weather conditions, seasonal changes, and other environmental factors (Lintott & Mathews, 2018). Zero data, when a species was not detected on a night, was also included. Three nights in particular, 25th of April, 1st of May, and 28th of June, stood out for their increased bat activity. On the 22nd of April, bat activity peaked at 100.6 bpph, largely driven by soprano pipistrelle. The highest single-night activity occurred on the 28th of June, at 108.9 bpph, dominated by soprano pipistrelle. Finally, on the 1st of May, another notable spike of 108.6 bpph was observed, again led by soprano pipistrelle as well as Leisler's bat.

6.3.3.3 Marsh Fritillary

Suitable marsh fritillary habitat within the Project 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 Project Site in 2024 and 2025.

Active larval webs were identified in nine key areas across the Proposed Wind Farm site during surveys undertaken in 2024 and 2025, in Ballydermot North, Ballydermot South, Barnaran, Blackriver, Glashabaun North, Glashabaun South, Lodge, Lullybeg, Lullymore and Ticknevin Bogs. Over 200 larval webs were identified in 2024 and over 180 in 2025. Several of those recorded in 2025 were noted as being wet and rotten, indicating their possible failure due to seasonal wet weather.

A core population was identified within Lullybeg Butterfly Reserve and surrounding suitable habitat to the south and east, as well as to the south of Lullymore West Nature Reserve, with the nearest larval web located over 90m from the nearest proposed infrastructure. Adult marsh fritillary butterflies on the wing were also recorded within Lullybeg Butterfly Reserve during multi-disciplinary ecological walkover surveys undertaken in this area in May 2026 (Plate 6-62). Populations were also identified to the north and west of Proposed Turbine 29, north of Proposed Turbine 32, to the south of the proposed access road to the Proposed Onsite Substation, south of the proposed road adjoining Proposed Turbines 1 and 6, and northeast of Proposed Turbine 9, with sparse individual records also recorded within small areas of suitable habitat to the northeast of Proposed Turbine 13, west of Proposed Turbine 17 and southeast of Proposed Turbine 41.

Additional areas of suitable habitat were identified to the north of Proposed Turbine 2, northwest of Proposed Turbine 26 and at the location of Proposed Turbine 15, however no larval webs were located in these areas.

Two larval webs were located within the infrastructure footprint of the Proposed Project, one at the location of the Proposed Onsite Substation access road, and a second to the west of Proposed Turbine 17. Three webs were located adjacent to (within 10m of) the Proposed Project infrastructure footprint, one to the west of Proposed Turbine 17 and two to the southeast of Proposed Turbine 41. A single web was also identified within the Proposed Enhancement Area at Lodge Bog, with seven webs located within suitable marsh fritillary located along the margins of bog woodland which borders the Proposed Enhancement Area to the south.

Habitat condition assessments for marsh fritillary were also undertaken within each area of identified suitable habitat for marsh fritillary within the Project Site. Of these, several of the areas within Lullybeg, Lullymore, Blackriver, Ticknevin and Glashabaun North Bogs 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. Larval

webs were abundant within these habitat areas. Several areas were also classified as *Suitable (Under-grazed),* particularly in Barnaran, Codd 2 and Lodge Bogs and in marginal habitat areas bordering scrub or *Calluna*-dominated habitats, as there was an abundance of devil's-bit scabious, however the vegetation structure was generally tall (>25cm) and unstructured. Larval webs were also recorded within these areas.

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



Plate 6-61 Marsh fritillary larval web identified adjacent to the Proposed Onsite Substation internal access road



Plate 6-62 Adult marsh fritillary butterfly recorded in Lullybeg Butterfly Reserve within the Project Site, May 2026

6.3.3.4 Pollinators

The 2026 survey programme comprised 15 daytime pollinator transects and 18 nocturnal moth-trap deployments across the Project Site. The results are presented by survey method below, with the full species records and survey locations provided in Appendix 6-4 Pollinator Survey Results. The surveys record the species observed between late June and late August 2026.

Daytime Pollinators

The 15 daytime transects recorded 1,277 individuals across 57 taxonomic entries, of which 51 were identified to species level. Butterflies were the most abundant group, with 766 individuals across 18 species. Bees, hoverflies and day-flying moths were also recorded. The records included species of conservation concern, notably forester moth (*Adscita statices*) listed as Endangered (EN) on the Ireland Red List No. 9: Macro-moths (Lepidoptera)[45] and large heath butterfly (*Coenonympha tullia*) listed as Vulnerable (VU) on the Ireland Red List No. 4: Butterflies[46]. Forester moth was recorded on one occasion (single individual) along walked transect D2 (shown on Figure 6-2 above). Large heath butterfly was also recorded on one occasion (single individual) during walked transect D10 (shown on Figure 6-2).

In addition to the above yellow shell moth (*Camptogramma bilineata*) and small purple-barred moth (*Phytometra viridaria*) both listed as Near Threatened (NT) on the Ireland Red List No. 9: Macro-moths

[45] *Allen et al. (2016) Ireland Red List No. 9: Macro-moths (Lepidoptera). National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.*

[46] *Regan et al. (2010) Ireland Red List No. 4 – Butterflies. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland.*

(Lepidoptera), small heath butterfly (*Coenonympha pamphilus*) listed as Near Threatened (NT) on the Ireland Red List No. 4: Butterflies, and red-tailed bumblebee (*Bombus lapidarius*) listed as Near Threatened (NT) on the Regional Red List of Irish Bees[47] were also recorded during the walked transects. The species recorded, including the survey location where they were recorded and their conservation status are provided in Appendix 6-4. Appendix 6-4 should be read alongside Figure 6-2 above which shows the locations of the walked transects and moth traps.

Nocturnal Moths

The 18 moth-trap deployments recorded 844 moths across 140 taxonomic entries, of which 133 were identified to species level. Five Suspected moths (*Parastichtis suspecta*) were recorded at M3 (four individuals) and M4 (one individual) (refer to Figure 6-2 above for moth trap locations). This species is classified as Regionally Extinct in the Irish macro-moth Red List. Two Near Threatened species were also recorded: heart and club (*Agrotis clavis*) at M1 and M4, and garden dart (*Euxoa nigricans*) at M9. The full species records by trap location and their conservation status are provided in Appendix 6-4.

Other Invertebrates

Additional invertebrate species recorded incidentally during ecological site surveys include the following: comma (*Polygonia c-album*), silver-washed fritillary (*Argynnis paphia*) and orange tip (*Anthocharis cardamines*) butterflies; emperor (*Anax imperator*), common hawker (*Aeshna juncea*), hairy hawker (*Brachytron pratense*), four-spotted chaser (*Libellula quadrimaculata*) and common darter (*Sympetrum striolatum*) dragonflies; large red (*Pyrrhosoma nymphula*), blue-tailed (*Ischnura elegans*), common blue (*Enallagma cyathigerum*), variable (*Coenagrion pulchellum*) and azure (*Coenagrion puella*) damselflies; green tiger beetle (*Cicindela campestris*) and common field grasshopper (*Chorthippus brunneus*).

6.3.3.5 Reptiles and Amphibians

As outlined in the desk study (Section 6.3.1 above), common frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*) are known to occur within hectads N42, N52, N62, N63, N72 and N82 in which the Proposed Project is located. Common lizard (*Zootoca vivipara*) has been recorded within hectads N42, N72 and N82.

Adult common frog (*Rana temporaria*) was recorded on a number of occasions throughout the Project Site and the drainage ditches, wetlands and waterlogged areas within the Project Site provide suitable habitat for this species.

Smooth newt was recorded on one occasion during ornithological surveys in the west of Blackriver Bog in September 2024 - this sighting was of an individual in bare peat habitat. This species is found in a range of wetland habitats including marshes, bogs, ponds and drains. As such, the Project Site provides abundant suitable habitat for this species and it is likely found throughout the Proposed Wind Farm site.

In relation to common lizard, although not recorded within the Project Site there is suitable habitat for this species. Common lizard hibernate throughout October to March, often in groups. The species can be found in a range of habitats including woodlands, marshes, heathlands, bogs and hedgerows[48]. They have a preference to hibernate in sheltered frost-free spots, under rubble or stones, or old tree roots and

[47] *Fitzpatrick et al. (2006), Regional Red List of Irish Bees. National Parks and Wildlife Service (Ireland) and Environment and Heritage Service (Northern Ireland).*

[48] *Irish Wildlife Trust Common lizard (viviparous lizard) [online] Available at: https://iwt.ie/wp-content/uploads/2017/09/WL42-Lizzards-eng.pdf [Accessed 18/08/2026]*

in hedge banks[49]. Suitable habitats were recorded within the Project Site in the form of scrub and *Calluna*-dominated habitats.

In addition to these native species, the non-native species slow worm (*Anguis fragilis*) was also recorded on two occasions within the Project Site, to the southeast of Proposed Turbine 38 along the existing track, and south of Proposed Turbine 34 being carried as prey by a buzzard. This reptile was first introduced to Ireland in the early 20th century[50] is not protected under Irish or EU law.

6.3.3.6 Fisheries and Aquatic Fauna

Full details of results of aquatic surveys undertaken in August 2026 are provided in the Aquatic Baseline Report (Appendix 6-3) and are summarised in this section. The results of aquatic surveys undertaken during 2021 and 2024 in relation to the Project Site were also considered in this report. All survey locations (n=42) are shown in Figure 2-1 of the Aquatic Baseline Report. The following summary has been extracted from the baseline report. In addition, as noted in Section 6.3.3.1.2 above, otter surveys were also conducted.

6.3.3.6.1 *Fish Species*

The following paragraphs summarise the fish species that were recorded during the aquatic baseline surveys. The below paragraphs should be read in conjunction with Figure 2.1 (survey locations) in the Aquatic Baseline Report (Appendix 6-3). Siltation and eutrophication pressures were significant throughout much of the survey area and contributed to a reduction in the quality of fisheries habitat, particularly for salmonids and lamprey:

- Salmonid populations were restricted in their distribution, with low densities of **brown trout** (*Salmo trutta*) being recorded from a total of five locations in 2026, at site A8 on the Figile River (Ticknevin), site B2 on the River Boyne (Kishawanny Bridge) and at sites C2 (Agar Bridge) and G5 (Quigley's Bridge) on the Slate River. In 2024, brown trout were also recorded at sites A8, B2 and C2, as well as at two additional sites on the Figile River (A14a and A18) and on the Lullymore East River (A11b). Brown trout were also recorded from survey sites on the River Boyne, Lullybeg Stream, Cloncant Stream and Slate River in 2021.
- Annex II **Atlantic salmon** (*Salmo salar*) was only recorded during electrofishing surveys at a single location in 2026, at site A18 on the Figile River (Millgrove Bridge) where salmon parr were identified. Atlantic salmon were also recorded via electrofishing in this location in 2024, and at site C2 on the Slate River (Agar Bridge) in both 2021 and 2024. Additionally, in 2026 Atlantic salmon were detected at site A15a on the Figile River, site B2 on the River Boyne and site C2 on the Slate River via eDNA sampling (Atlantic salmon were not tested for as part of eDNA sampling in 2024). All are watercourses known to support the species in low numbers.
- **Lamprey ammocoetes** (*Lampetra* sp.) were recorded via electrofishing in 2026 in two locations, at site G5 on the Slate River (Quigley's Bridge) and at site B2 on the River Boyne (Kishawanny Bridge) in medium and high densities, respectively. Lamprey were also recorded at survey site B2 on the River Boyne in both 2021 and 2024, where low densities were present. Additionally, in 2026 lamprey were detected at sites A15a and A18 on the Figile River and site C2 on the Slate River via eDNA sampling (lamprey were not tested for as part of eDNA sampling in 2024). The quality of lamprey habitat was generally poor across the survey area given widespread hydromorphological and siltation pressures.

[49] *ARG UK The viviparous or common lizard [online] Available at: https://www.arguk.org/info-advice/id-guides/529-dragons-in-the-hills-the-amphibian-and-reptiles-of-northern-ireland/file [Accessed 18/08/2026]*
[50] *NBDC Seeking out Ireland's fragile snakes [online] Available at: https://biodiversityireland.ie/seeking-out-irelands-fragile-snakes/ [Accessed 18/08/2026]*

- Red-listed **European eel** (*Anguilla anguilla*) were also restricted in their distribution, being recorded at five locations, at sites A8 (Ticknevin), A15a (Kilcumber) and A18 (Milgrove Bridge) on the Figile River, site A11b (Lullybeg) on the Lullymore East River and site C2 (Agar Bridge) on the Slate River. Previous surveys had a more restricted distribution, with European eel was identified from only two sites in 2024, at site A11b on the Lullymore East River as well as B2 on the River Boyne. This species was also only recorded from survey site B1 on the Clonkeen Stream (a Boyne tributary) in 2021, despite low to moderate suitability at most survey sites. This species is listed as Critically Endangered (CR) on both Irish and Global Red Lists (King *et al.,* 2011).
- Other species recorded during the 2026 electrofishing surveys were **stone loach** (*Barbatula barbatula*), **minnow** (*Phoxinus phoxinus*), **gudgeon** (*Gobio gobio*), **pike** (*Esox lucius*), **perch** (*Perca fluviatilis*), **ten-spined stickleback** (*Pungitius pungitius*) and **three-spined stickleback** (*Gasterosteus aculeatus*). Similar fish assemblages were recorded during the 2024 and 2021 surveys.

Invasive Fish Species

A number of invasive faunal species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) were also recorded during the baseline aquatic surveys.

The invasive fish species roach (*Rutilus rutilus*) was recorded during electrofishing surveys on the Figile River at aquatic survey site A18 at Millgrove Bridge. In 2024, this species was also recorded on the Figile River at survey sites A14a at Cushaling Bridge and 0.8km downstream of survey site A15 at Kilcumber Bridge. Roach were also recorded from survey sites along the Figile River and River Boyne in 2021.

Invasive dace (*Leuciscus leuciscus*) was recorded on the Figile River at survey sites A14a, A15a and A18 in 2026. In 2024, this species was also recorded at survey site A18 as well as 0.8km downstream of survey site A15 at Kilcumber Bridge, and site C2 on the Slate River at Agar Bridge. Dace was also recorded at survey sites along the Figile and Slate Rivers in 2021, indicating their continual presence within these watercourses. Although established in Ireland, both roach and dace are invasive cyprinid species listed on the Third and First Schedules.

6.3.3.6.2 White-clawed Crayfish and Crayfish Plague

Despite local habitat suitability and numerous available records within the area, including on the Figile and Slate rivers (1986-2020), no white-clawed crayfish were recorded via hand-searching or sweep netting of instream refugia at any of the aquatic survey sites in 2026, 2024 or 2021. As per the previous surveys in 2024, eDNA sampling of the Figile, Boyne and Slate rivers failed to detect the species in the survey area. Examination of otter spraint also did not reveal the presence of crayfish remains on the Figile River or Lullybeg Stream.

However, as outlined within the Aquatic Baseline Report (Appendix 6-3), eDNA sampling of the Figile River at Kilcumber Bridge in 2025 detected white-clawed crayfish (Triturus data) and sampling of the Figile near Bracknagh in 2020 as part of the National Crayfish Plague Surveillance Programme (NCPSP) also detected crayfish. Although most crayfish records within the wider survey area are from 2015 or before (NPWS, EPA & Triturus data), it would appear a small remnant crayfish population persists in the Figile sub-catchment.

6.3.3.6.3 *eDNA Analysis*

No white-clawed crayfish or freshwater pearl mussel eDNA was detected in 2026 or 2024 from composite water samples collected from sites A15a (in 2024 a survey location approximately 0.8km downstream of survey site A15a) and A18 on the Figile River, B2 on the River Boyne or site C2 on the Slate River. These results were considered as evidence of the species' absence at or upstream of the sampling locations in 2026 and 2024. Crayfish plague was also tested for in 2024 and no positive qPCR replicates were identified, indicating the absence of crayfish plague at or upstream of these survey locations.

As outlined in Section 6.3.3.6.1 above in relation to fish species, Atlantic salmon were detected at sites A15a, B2 and C2 and lamprey (*Lampetra* sp.) were recorded at survey sites A15a, A18 and C2 via eDNA sampling. Neither Atlantic salmon nor lamprey were tested for as part of eDNA sampling in 2024.

6.3.3.6.4 *Biological Water Quality and Macro-Invertebrates*

None of the survey sites achieved greater than Q3 (poor status) in 2026. With the exception of survey site A10a on the Lullymore East stream (which achieved **Q2 (bad status)** given the dominance of Group D *Asellus aquaticus*), all riverine sites supporting aquatic habitats (29 in total) achieved **Q2-3 or Q3 (poor status)** based on an absence of group A species, an absence or low numbers of group B species and a dominance of pollution-tolerant group C and D species such as the mayfly *Baetis rhodani*, freshwater shrimp (*Gammarus duebeni*) and freshwater hoglouse (*Asellus aquaticus*).

Thus all failed to meet the target good status (≥Q4) requirements of the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 and the Water Framework Directive (2000/60/EC). The biological water quality results were highly similar to the previous 2024 and 2021 surveys where all sites except one achieved ≤Q3.

However, the ratings for the majority of survey sites (20 in total) were tentative in 2026 due to poor flows and or an absence of suitable riffle areas for sampling (as per Toner *et al.,* 2005). A total of 10 no. sites on the Codd River (A3, A4), Ballykilleen Stream (A15b), Clonbullogue River (A16), Ballygarrett River (A17), Slate River (G6, G8), Blackwood Feeder (G7), Brockagh River (G9), an unmapped channel (G10) and an unnamed stream (G11) were dry at the time of survey and thus could not be sampled for aquatic macro-invertebrates

In general, the biological water quality of the survey area was of poor status (Q2-3 or Q3) with significant siltation, eutrophication and hydromorphological impacts evidently contributing to a reduction in aquatic habitat quality.

Species of Conservation Concern

Low densities of duck mussel (*Anodonta anatina*) were recorded during sweep netting at the Grand Canal (site G2). This species is listed as Vulnerable (VU) on Ireland's Red List No. 2 Non-Marine Molluscs (Byrne *et al.,* 2009). This species was not recorded during previous surveys at this location in 2024. The Grand Canal population (which is widespread, Triturus pers. obs.) can be considered of high conservation value.

6.3.4 Likely Future Receiving Environment

This section identifies the future receiving environment likely to exist at the Proposed Wind Farm site at the commencement of the construction phase. In accordance with the approach set out in Section 1.8.4 of Chapter 1, the likely future receiving environment has been established having regard to the existing ecological and hydrological baseline conditions presented in Section 6.3 and has been informed by desk study and range of field surveys undertaken between 2020 and 2026.

The likely future receiving environment has been established having regard to:

- The existing ecological baseline described throughout Section 6.3;
- The additional relevant findings of Chapter 9 (Water);
- Observed environmental change during interdisciplinary site-specific surveys covering the period April 2020 to September 2026, including natural revegetation;
- Available BnM site records and environmental data, including management and monitoring undertaken under IPC Licence Reg. No. P0503-01 included within the Annual Environment Reports (AERS) for the Allen Bog Group;
- BnM Draft Cutaway Bog Decommissioning and Rehabilitation Plans for the 14 no. Allen Bog Group bogs which form the Proposed Wind Farm site (included in Appendix 2-4);
- Published guidance and scientific reports pertaining to habitats and species as applicable.

The Project Site is located predominantly on former industrial peat extraction lands within the Allen Bog Group. Industrial peat extraction ceased in June 2020. Since then, environmental conditions across these lands have continued to develop through natural revegetation, alongside ongoing site management, decommissioning works, and environmental monitoring undertaken in accordance with IPC Licence P0503-01. At the commencement of the construction phase the likely future receiving environment will reflect the continued establishment and maturation of natural revegetation in suitable areas, in combination with the continuation of site management, decommissioning works, and environmental monitoring under IPC Licence P0503-01.

Natural revegetation is expected to be spatially variable and is not assumed to follow a uniform trajectory across the Proposed Wind Farm site. Following the trends observed within the Proposed Wind Farm site following cessation of industrial peat extraction to date, at the commencement of construction it is likely that birch and willow scrub will have begun to develop on areas of dry cutaway, shallow peat, and some areas currently identified as scrub are anticipated to have developed into birch and willow-dominated woodland in this timeframe. Birch-dominated woodlands have already established in many areas of the Proposed Wind Farm site that came out of peat production earlier than 2020, particularly in Glashabaun North, Glashabaun South, Ballydermot North and Barnaran Bogs. As such the overall cover of scrub and woodland habitats within the Proposed Wind Farm site is anticipated to have increased by the time construction commences.

Pioneer poor fen habitats, most frequently dominated by common cottongrass (*Eriophorum angustifolium*) and soft-rush (*Juncus effusus*), have commonly been observed revegetating on areas of bare peat within the Proposed Wind Farm site. In drier areas, *Calluna*-dominated secondary communities may also revegetate bare peat. Therefore, the extent of these pioneer habitats are anticipated to have increased by the commencement of the construction phase of the Proposed Project. However, as industrial peat extraction has ceased within the Proposed Wind Farm site for over 6 years at the time of writing, and significant areas of the Proposed Wind Farm site remain dominated by bare peat, it has been shown that these habitats are slow to develop in many areas.

This natural revegetation, primarily with pioneer fen, scrub and *Calluna*-dominated communities, will reduce the overall extent of exposed bare peat across the Proposed Wind Farm site by the commencement of the construction phase of the Proposed Project. In addition to augmenting the biodiversity value of these habitats, this will result in the creation of additional suitable habitat for a range of rare and protected flora and faunal species including badger, Irish hare, marsh fritillary, amphibians, reptiles and rare plant species such as round-leaved wintergreen.

Additionally, revegetation will influence site greenhouse gas dynamics and air pollutants and will likely stabilise peat surfaces. This will reduce the potential for wind-blown peat and dust emission. In relation to water, the wider hydrological regime of the Proposed Wind Farm site will continue to be influenced principally by the existing artificial drainage network and associated water management infrastructure. Accordingly, at the commencement of the construction phase, the surface water drainage patterns,

surface water quality, watercourse network and general surface water flow regime are anticipated to remain materially comparable to those described in the existing baseline in Section 6.3.1.10 above; having regard to the monitoring and site investigation data collected during the assessment period and the existing drainage arrangements. The ongoing operation and maintenance of the existing IPC-licensed drainage and settlement infrastructure will continue to manage sediment-laden runoff from the former peat extraction areas.

Similarly, the hydrogeological environment at the commencement of construction is anticipated to remain materially comparable to the existing baseline. The hydrogeological setting of the Proposed Wind Farm site is characterised by relatively low groundwater recharge and restricted groundwater flowpaths, with the existing drainage network exerting an influence on the hydrological regime. No material alteration in the groundwater environment is anticipated as a result of the continued natural revegetation and ongoing site management, decommissioning works, and environmental monitoring in accordance with the IPC Licence P0-503-01.

On this basis, the likely future receiving environment of the Proposed Wind Farm site at the commencement of the construction phase will be a former industrial peat-extraction landscape with a developing but spatially variable cover of natural revegetation, managed and monitored under IPC Licence Reg. No. P0503-01. Regarding the project temporal interval between the existing baseline survey data and the commencement of the construction phase, it is not anticipated that natural revegetation will have taken place to a degree that would materially alter the existing ecological baseline as established in Section 6.3. Therefore, the existing ecological hydrological baseline conditions presented in Section 6.3 remains representative of the likely future receiving environment for this Biodiversity Chapter against which the Proposed Project is assessed. However, it is acknowledged that there is potential for mammal species, such as badger, otter, pine marten, Irish stoat and red squirrel to establish new breeding and resting sites within existing areas of suitable habitat within the Project Site. Such potential is considered and fully assessed in Sections 6.3.5 and 6.4 below.

6.3.4.1 Future Environmental Trends

This section identifies the future ecological trends likely to exist at the Proposed Wind Farm site following implementation of targeted rehabilitation within the Draft Rehabilitation Plans throughout the operational phase.

Continued natural revegetation, ongoing site management, environmental monitoring, and decommissioning works and implementation of the Draft Rehabilitation Plans are anticipated to facilitate the progressive rehabilitation of peatland across the Proposed Wind Farm site. These rehabilitation works are mandatory and will proceed irrespective of whether the Proposed Project is permitted, in order to ensure compliance with the IPC Licence.

Rehabilitation measures have been designed to accelerate and work with natural revegetation and other natural processes. BnM's experience of rehabilitation and restoration has shown that re-wetting improves conditions for natural revegetation and that natural revegetation is accelerated where the environmental conditions are most suitable. Rehabilitation measures have been designed to modify the conditions of areas within sites where conditions are less suitable for natural colonisation (modifying hydrology, topography, nutrient status or availability of potential seed sources).

Targeted rehabilitation measures will include drain-blocking and other measures to raise water levels to the surface of the bog, thus encouraging the development of more naturally functioning cutaway peatland habitats. However, as outlined within the Draft Rehabilitation Plans, it is not anticipated that the majority of the Proposed Wind Farm site has the potential to develop Active raised bog analogous to the priority EU Habitats Directive Annex I habitat within the foreseeable future (c.50 years), as the majority of peat has been removed and the environmental conditions have been modified. Areas of the Proposed Wind Farm site with deeper residual peat (>2m depth) have the potential to develop embryonic *Sphagnum*-rich peat-forming communities if optimum hydrological conditions can be

developed in this timeframe. *Sphagnum* is a key species for restoring naturally functioning raised bog conditions.

On shallower peat, other natural habitats will also develop, including poor fen, wetlands with reedbeds and birch woodland. Birch and willow scrub is expected to develop on the drier areas and along peripheral headlands, which over time will develop into woodland habitats. Birch-dominated woodlands have already established in many areas of the Proposed Wind Farm site, particularly in Glashabaun North, Glashabaun South, Ballydermot North and Barnaran Bogs. These trends are expected continue in areas of dry cutaway peat during the implementation of the Draft Rehabilitation Plans. In some areas of the Proposed Wind Farm site, such as Derrybrennan and Codd Bogs, the majority of the original raised bog has now been removed, with much of the bog comprising shallow residual peat of less than 1 metre depth with some deeper pockets of peat interspersed. In these areas, the majority of the bog is expected to develop into birch woodland. Areas of *Calluna*-dominated habitats may also develop in areas of dry cutaway peat depending on the seed bank present.

Other areas of shallower residual peat in topographical depressions are expected to develop wetland mosaic habitats on shallow peat with open water, reed swamp and fen habitats. Regenerating wet deep peat vegetation and *Sphagnum* rich embryonic bog communities will likely be interspersed in the pockets of deeper peat.

The development of naturally functioning semi-natural habitats on cutaway peatland takes time. Pioneer vegetation can develop relatively quickly (3-10 years) and wetland habitats can develop relatively quickly. As such it is expected that most of the Proposed Wind Farm site will be developing pioneer habitats after 5-10 years. Birch woodland make take 20-30 years to develop. However, it may take 50 years for active raised bog vegetation to re-develop on ground that was previously cutaway and as such may not fully develop during the lifespan of the Proposed Project. Different environmental conditions will have a significant impact on the rate of natural revegetation, and as a result of the combination of different environmental conditions and the application of different rehabilitation measures, there will be a variety of habitat outcomes.

The development of a range of habitats at the Proposed Wind Farm site as a result of the implementation of the Draft Rehabilitation Plans will support biodiversity including plants, insects, birds and mammals. This includes some species that are rare and protected in the wider landscape. In relation to species such as marsh fritillary and round-leaved wintergreen which show a preference for open habitats, it is likely that the areas of suitable habitat for these species will be dynamic in nature. Additional areas of suitable habitat for marsh fritillary will likely develop, particularly in marginal areas where grasslands may revegetate, as well as along the former railway lines through the site which create calcareous ground conditions. These areas will also create additional habitat areas for a range of other pollinating insects, including butterflies, moths, bees and other invertebrates, as well as providing suitable conditions for the spread of the basil thyme. However, as outlined above in relation to the likely future receiving environment at the commencement of construction, it is also expected that areas of suitable habitat for species such as marsh fritillary and round-leaved wintergreen will become unsuitable over time as scrub develops in both wet and dry cutaway habitats.

As described in Section 6.3.4 above, scrub encroachment and woodland succession from open habitat to closed during the operational phase would result in the Project Site becoming more suitable for species with a preference towards scrub and woodland such as badger, pine marten and rare and scarce pollinators such as the Suspected moth. It will also create enhanced foraging habitats and additional habitat edges for commuting and foraging bat species. While the individual environmental factors influencing the ecological assemblage within the Proposed Wind Farm site may evolve over time, on balance, these changes are not expected to materially alter the overall ecological baseline for the majority of species.

In relation to water quality, which could impact local and downstream fisheries and aquatic fauna as well as downstream habitats, the likely future hydrological and hydrogeological baseline is expected to evolve over time with the implementation of the Draft Rehabilitation Plans as the bogs comprising the

Proposed Wind Farm site transition towards rehabilitating peatlands. The proposed drain blocking measures will re-wet the bogs, increasing water retention and attenuation times, and reducing surface water runoff rates. Over time, as vegetation becomes established across the rehabilitated areas, the bogs will begin to function more naturally in comparison to their existing baseline condition. The targeted rehabilitation measures within the Draft Rehabilitation Plans are also expected to result in improvements in surface water quality including reducing the mobilisation of suspended solids and nutrients. The reduction in exposed peat surface, the stabilisation of soils by vegetation and the blocking of drains, will all contribute to a reduction in suspended solids concentrations in the discharge from the Proposed Wind Farm site. The continuation of the environmental monitoring as per the IPC licence, combined with the monitoring, aftercare and maintenance programme will verify the effectiveness of the measures with the future management of existing silt ponds to be reviewed as rehabilitation progresses. Therefore, the future environmental trends assume a progressively rehabilitated peatland with enhanced attenuation of surface water, and improved water quality in comparison to the existing baseline conditions. This would result in improved hydrological conditions within and downstream of the Proposed Wind Farm site, which in turn will benefit aquatic species, including those associated with European Sites within the likely ZoI, including otter, lamprey and Atlantic salmon.

Within the Draft Rehabilitation Plan for Ticknevin Bog, one of the key criteria for successful rehabilitation to meet EPA IPC licence conditions (Section 7.1 of the Draft Rehabilitation Plan, Appendix 3), is the '*Removal of Japanese knotweed from the bog*'. Therefore, with the implementation of the Draft Rehabilitation Plan for Ticknevin Bog, this invasive species, which is listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended), will continue to be controlled and its spread managed.

Accordingly, the future environmental trends of the receiving environment for ecology, ornithology and hydrology will materially alter the baseline as established in Section 3.1 to Section 3.5 above and have been brought through the assessment contained in Sections 4 to 7 below.

The continuation of the aforementioned activities in the absence of the Proposed Project is considered in the Do-Nothing Scenario in Section 6.4.1 below and assessed cumulatively in Section 6.5 below.

6.3.5 Identification of Key Ecological Receptors

Table 6-22 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 6.4 below. Following the impact assessment, mitigation measures are incorporated into the Proposed Project where required, to avoid potential significant impacts on these KERs.

Table 6-22 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 European Sites are identified in the AA Screening as being within the Likely ZoI and are assessed fully in the NIS that accompanies this application: › The Long Derries, Edenderry SAC [000925] › Ballynafagh Lake SAC [001387] › Ballynafagh Bog SAC [000391] › River Barrow and River Nore SAC [002162]	**Yes**

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	› Poulaphouca Reservoir SPA [004063] These European Sites are assigned **International Importance** and included as a KER as potential pathways for effects on these European Sites was identified via water quality deterioration, dust deposition, disturbance effects and *ex-situ* effects on bird populations. **Note: SPAs within the Likely ZoI are considered in Chapter 7 Ornithology with respect to potential *ex-situ* effects on bird populations.**	
Nationally Designated Sites	The following Nationally Designated Sites were identified as being within the ZoI of the Proposed Project: › The Long Derries, Edenderry pNHA [000925] › The Grand Canal pNHA [002104] › Ballynafagh Bog pNHA [000391] › Ballynafagh Lake pNHA [001387] › Curragh (Kildare) pNHA [000392] › Poulaphouca Reservoir pNHA [000731] These sites are assigned **National Importance** and included as a KER as potential pathways for effects on these pNHAs was identified due to deterioration of water quality and *ex-situ* effects on bird populations. **Note: pNHAs within the Likely ZoI are considered in Chapter 7 Ornithology with respect to potential *ex-situ* effects on bird populations.**	**Yes**
Terrestrial Habitats		
Uncut Raised Bog	**Raised bog (PB1)** The areas of remnant uncut raised bog within the Project Site are largely fragmented, primarily occurring at the peripheries of the Proposed Wind Farm site, with one larger area, i.e. Cloonroosk Bog, occurring in the south-west of Ballydermot South Bog. The central areas of Cloonroosk were found to be correspond to the Annex I habitat 'Active raised bog'. Eco-hydrological modelling has also shown other, drier areas within the Proposed Wind Farm site to conform to the Annex I habitat 'Degraded raised bogs still capable of natural regeneration'. These areas of uncut bog are assigned **County Importance**. Other areas of remnant uncut raised bog within the Project Site which neither conform to Annex I ARB nor DRB, are considered *'Supporting Raised bog habitat'* in line with Article 17 reporting (NPWS, 2025). These areas are considered to be of **Local Importance (Higher Value)**. While the Proposed Project has been designed to avoid nearly all areas of remnant uncut raised bog habitat, with only an amenity boardwalk located in this habitat, there is nonetheless potential for loss of and/or degradation of this habitat as a result of the Proposed Project. Therefore, raised bog is included as a KER.	**Yes**

Ecological Feature or Species	Reason for Inclusion as a KER	KER
Cutover Bog and Associated Revegetating Secondary Habitats	**Bare peat (PB4)** Areas of bare peat within the Project Site are of low ecological importance in their current, highly modified state and have therefore been assigned **Local Importance (Lower Value)**. They are not included as a KER.	No
	Secondary *Calluna*-dominated Communities Secondary *Calluna*-dominated communities which have developed on the cutover bog have been assigned **Local Importance (Higher Value)**. This is on the basis that they comprise of semi-natural habitat with high biodiversity in the local context but do not correspond to any habitats that are listed on Annex I of the EU Habitats Directive. The footprint of the Proposed Project overlaps with areas of this habitat and therefore the Proposed Project will result in both direct and potential indirect effects on the habitat. This secondary habitat of cutover bog is therefore included as a KER.	**Yes**
	Poor fen and flush (PB4/PF2) Areas of poor fen habitat (including pioneer poor fen as well as areas of more established poor fen) within the cutover bog have been assigned **Local Importance (Higher Value)**. This is on the basis that they comprise of semi-natural habitat with high biodiversity in the local context but do not correspond to any habitats that are listed on Annex I of the EU Habitats Directive. The footprint of the Proposed Project overlaps with areas of this habitat and therefore the Proposed Project will result in both direct and potential indirect effects on the habitat. This secondary habitat of cutover bog is therefore included as a KER.	**Yes**
	Reed and large sedge swamps (PB4/FS1) This habitat is assigned **Local Importance (Higher Value)**. This is on the basis that it consists of semi-natural (although they have arisen due to past human activities and drainage of the bog) 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. The footprint of the Proposed Project overlaps with areas of this habitat and therefore the Proposed Project will result in both direct and potential indirect effects on the habitat. This secondary habitat of cutover bog is therefore included as a KER.	**Yes**
Grassland Habitats	**Dry calcareous and neutral grassland (PB4/GS1), Dry meadows and grassy verges (GS2, PB4/GS2) and Wet grassland (GS4, PB4/GS4)** These habitats are largely associated with existing artificial site access tracks and decommissioned railway lines. These areas of grassland have been assessed as of **Local Importance (Higher Value)** due to their role in supporting local biodiversity, contributing to habitat diversity within the Project Site and maintaining habitat connectivity across the Project Site. They are relatively common and widespread in Project Site and the wider area and the loss of these habitats as a result of the Proposed Project is not considered to be significant, therefore they are not included as a KER.	No

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	Improved agricultural grassland (GA1) and Amenity grassland (GA2) These habitats, which were recorded at the location of the Proposed Offsite Substation and at the Proposed Turbine Delivery Route accommodation areas, are highly modified habitats with relatively low species richness. They have been classified as **Local Importance (Lower Value)** and are not included as a KER.	No
Linear Habitats	**Hedgerows (WL1)** Hedgerows have 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. However, there will be no loss of this habitat as a result of the Proposed Project, therefore it is not included as a KER.	No
	Treelines (WL2) Treelines have been assessed as being of **Local Importance (Higher Value)** as they 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 there will be some loss of treeline habitat within the Project Site and along the Proposed Turbine Delivery Route accommodation areas. For this reason, this habitat has been identified for further assessment as a KER.	**Yes**
Woodland and Scrub Habitats	**Bog woodland (WN7) and Scrub (PB4/WS1)** These habitats are assigned **Local Importance (Higher Value)**. This is on the basis that they consist of semi-natural habitats with a high biodiversity value in a local context but do not correspond to any habitats that are listed on Annex I of the EU Habitats Directive. The footprint of the Proposed Project will result in direct loss of areas of these habitats and therefore they included as a KER. **Note**: The bog woodland does not correspond to the Annex I Habitat Bog Woodland [91D0].	**Yes**
	Oak-ash-hazel woodland (WN2) and Mixed broadleaved woodland (WD1) These woodland habitats were recorded in small areas of the Project Site, within Lullybeg Bog and along the Crabtree River. These woodlands are assigned **Local Importance (Higher Value)** due to their role in supporting local biodiversity, contributing to habitat diversity within the Project Site and maintaining habitat connectivity across the Project Site. There will be no loss of these habitats as a result of the Proposed Project, therefore they are not included as KERs. Areas of woodlands outside the Project Site have also been considered, including Killinthomas Woods to the south of the Proposed Wind Farm site and the area of Annex I Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] at Lullymore Heritage and Discovery Park located to the east of the Proposed Wind Farm site, as identified during the desk study (Section 6.3.1 above). Due to the terrestrial nature of these habitats and their location outside of the Project Site and	No

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	therefore outside of the Proposed Project infrastructure footprint, no further assessment is required.	
	Conifer plantation (WD4) This habitat is highly modified and of relatively low biodiversity value. It is assessed as being of **Local Importance (Lower Value).** While there will be some loss of this habitat to facilitate the construction of the Proposed Project and associated enhancement areas, given its relatively low biodiversity value and the fact that it is widespread in the wider landscape, conifer plantation is not included as a KER.	No
	Dense bracken (PB4/HD1) This habitat is assigned **Local Importance (Lower Value).** It is common and widespread across the Proposed Wind Farm site and the wider area, occurring in small pockets along road and track edges and in rides between areas of bog woodland. It is of low biodiversity value and is unlikely to be significantly impacted. Dense bracken is not included as a KER.	No
Artificial Habitats	**Buildings and artificial surfaces (BL3), Earth banks (BL2) and 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 are of low biodiversity value. For this reason, they have not been identified for further assessment and are not included as KERs.	No
Aquatic Habitats and Related Species		
Aquatic Habitats	**Depositing/lowland rivers (FW2)** The lands in which the Proposed Wind Farm and Proposed Onsite Substation are located drain via a network of watercourses including the Figile River, Slate River, Abbeylough Stream, Lullymore East Stream, Lullybeg Stream, Clonbrown Stream and associated tributaries. Furthermore, the Proposed Grid Connection underground electrical cabling route also crosses a number of rivers and streams. These rivers and streams have been assigned **Local Importance (Higher Value)** in that whilst many are highly modified, they provide connectivity to downstream waterbodies with a high biodiversity value in the local area. The Figile and Slate Rivers and their tributaries which flow through the Project Site and which are crossed by the Proposed Grid Connection underground electrical cabling route are also hydrologically connected to the River Barrow and River Nore SAC approximately 17km downstream. As such, the River Barrow downstream of the Project Site is assigned **International Importance**. An area of Annex I Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] was identified at the Ballygarrett River confluence, approximately 3.5km downstream of the Project Site during aquatic baseline surveys undertaken in 2021. This habitat is not associated with any European	**Yes**

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	Sites, but is of **County Importance** given that it was found to be Annex I in nature. As there is potential for indirect effects on the above watercourses as a result of water quality deterioration arising from the Proposed Project, these have been included as KERs.	
	Canals (FW3) The Proposed Grid Connection underground electrical cabling route crosses the Grand Canal within the Grand Canal pNHA. It also crosses the Blackwood feeder canal which links the Grand Canal and Ballynafagh Lake and forms part of Ballynafagh Lake SAC. These canals are assigned **National Importance** and **International Importance** respectively given their National and European Designations. A potential pathway for likely significant effects on Ballynafagh Lake SAC and its associated habitats and species was identified and assessed in the AASR and NIS submitted as part of this planning application. A potential pathway for significant effects on Grand Canal pNHA as a result of potential water quality deterioration was also identified in Section 6.3.1.1 above. As there is potential for indirect effects on canals as a result of water quality deterioration arising from the Proposed Project, these habitats have been included as KERs.	**Yes**
	Drainage ditches (FW4) The Project Site is characterised by multiple drainage ditches. These are manmade channels which were inserted during peat harvesting operations. This habitat has been assessed as being of **Local Importance (Lower Value)** and is not included as a KER.	No
	Open water and Other artificial lakes and ponds (FL8) No large oligotrophic lakes were recorded within the Project Site. Areas of open water within the Proposed Wind Farm site are generally small in extent and transient in nature, associated with lower-lying areas of cutover bog. Silt ponds present are artificial features installed as part of peat extraction infrastructure, however these are highly modified and unlikely to support significant biodiversity. Given the absence of significant or permanent areas of open water habitat, and the artificial nature of the silt ponds, these habitats are assigned **Local Importance (Lower Value)** and are not included as a KER.	No
Aquatic and Fisheries Species	**Aquatic and Fisheries Species** The Figile and Slate Rivers and their tributaries which flow through the Project Site and which are crossed by the Proposed Grid Connection underground electrical cabling route are hydrologically connected to the River Barrow and River Nore SAC approximately 17km downstream. As aquatic and fisheries species (e.g. white-clawed crayfish, lamprey spp., Atlantic salmon) are listed as QIs of the SAC, the populations of these faunal species associated with the SAC are assigned **International Importance**. The aquatic species that are associated with the rivers and streams located within and downstream of the Project Site which are not associated with the River Barrow and River Nore SAC (e.g. Red Listed European eel,	**Yes**

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	coarse fish, aquatic invertebrates and other aquatic species) are assigned **Local Importance (Higher Value)** in that they have a high biodiversity value in the local context. There is potential for indirect effect on these receptors in the form of water quality deterioration and disturbance during in-stream works associated with the installation of watercourse crossings within the Proposed Wind Farm. As such, aquatic and fisheries species are considered as a KER for further assessment.	
	Duck mussel (*Anodonta anatina*) A population of duck mussel was identified at survey site G2 on the Grand Canal during baseline aquatic surveys. Due to the Red-listed status of this species and its limited distribution, this species is considered to be of **County Importance.** The Proposed Grid Connection underground electrical cabling route crosses the Grand Canal to the west of Shee Bridge, Co. Kildare using HDD methodologies. A potential pathway for indirect effects on duck mussel has therefore been identified as a result of potential water quality deterioration, and this species is included as a KER.	**Yes**
Flora		
Protected, Rare and Threatened Flora	**Basil thyme (*Clinopodium acinos*) and Round-leaved wintergreen (*Pyrola rotundifolia* ssp. *rotundifolia*)** Two species listed as NT on Ireland's Red List of Vascular Plants, basil thyme and round-leaved wintergreen, were identified within the Project Site. Considering the number of plants of each species recorded within the Project Site and the national distribution of the species, the populations of both basil thyme and round-leaved wintergreen within the Project Site have each been assessed as being of **National Importance.** As such, these species are considered further as KERs. Alder buckthorn (*Frangula alnus*) and blue fleabane (*Erigeron acris*) are both currently listed as Least Concern on Ireland's Red List of Vascular Plants, therefore these species are not considered further in this assessment.	**Yes**
Invasive species	**Japanese knotweed (*Reynoutria japonica*)** While Japanese knotweed was recorded within the Project Site, it was recorded >350m from the nearest infrastructure associated with the Proposed Project and will not be disturbed by the works associated with the Proposed Project. As such, there is no potential for the spread of this species as a result of the Proposed Project, and it is not considered further as a KER.	No
	New Zealand pigmyweed (*Crassula helmsii*) The invasive macrophyte New Zealand pigmyweed was recorded within the Grand Canal at the location of the Proposed Grid Connection underground electrical cabling route during the baseline aquatic surveys (see Aquatic Baseline Report, Appendix 6-3). However, due to the nature of the HDD works in this location, there will be no in-stream works and therefore no disturbance of this species within the canal. As such, there is	No

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	no potential for the spread of this species as a result of the Proposed Project, and it is not considered further as a KER.	
Fauna		
Non-Volant Mammals	**Badger (*Meles meles*)** Badger as an ecological receptor has been assigned **Local Importance (Higher Value)** on the basis that the habitats within the Project Site are utilised by a locally occurring badger population of Local Importance. A number of badger setts were identified within the Project Site. Therefore, badger is included as a KER and the potential for direct and indirect effects on badger are considered further in this assessment.	**Yes**
	Otter (*Lutra lutra*) Evidence of otter was identified at a number of locations throughout the Project Site. Otters can utilise extensive territories, (approximately 7.5 ± 1.5km for females and 13.2 ± 5.3km for males (Ó'Neill, 2008)). On a precautionary basis, it is considered that otters using watercourses within or downstream of the Project Site have potential to be associated with River Barrow and River Nore SAC population (hydrological distance of approximately 17km to the SAC). They are therefore assessed as being of **International Importance.** Additionally, at the location of the HDD crossing of the Grand Canal associated with the Proposed Grid Connection underground electrical cabling route, these works are located within the Grand Canal pNHA, with which otter in this location are associated, and are therefore assessed as **National Importance**. Furthermore, it is likely that there are local otter populations utilising watercourses within the Project Site and along the Proposed Grid Connection underground electrical cabling route which are not associated with any European or Nationally Designated Sites. These local populations of this Annex II and IV species are assessed as **Local Importance (Higher Value)**. As there is potential for direct and indirect effects on otter populations as a result of the Proposed Project, otter are included as a KER for further assessment.	**Yes**
	Pine marten (*Martes martes*), Irish stoat (*Mustela erminea* ssp. *hibernica*) and Red squirrel (*Sciurus vulgaris*) The Project Site provides suitable habitat for pine marten, Irish stoat and red squirrel and evidence and sightings of these species were recorded throughout the Proposed Wind Farm site. These species have been assigned **Local Importance (Higher Value)** as they are considered to represent resident or regularly occurring populations (assessed to be important at the local level). No breeding sites for any of these species were identified within the footprint of the Proposed Project during the surveys undertaken, however as outlined in Section 6.3.4 above, due to the time which can lapse between baseline ecological surveys and the commencement of construction, there is potential for these species to establish breeding sites within areas of suitable habitat within the likely ZoI of the Proposed Project prior to the commencement of construction. As such, on a precautionary basis there is potential for disturbance of	**Yes**

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	these species and loss of suitable habitat in the form of bog woodland, scrub and conifer plantation. Therefore, they are included as KERs for further assessment.	
	Irish hare (*Lepus timidus* ssp. *hibernicus*) Irish hare were recorded within the Proposed Wind Farm site and surrounding areas on numerous 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 Project Site. Additionally, while there are significant areas of suitable habitat for this species within the Proposed Wind Farm site, including bogs and grasslands, the footprint of the Proposed Project is relatively small in the context of the Project Site and the wider landscape and, as a result of an iterative design process, is predominantly restricted to species-poor cutover bog and small areas of bog woodland and scrub. The areas of these habitats to be lost are very small in comparison to their overall cover within the Project 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
	Other Mammals (e.g. fox, deer spp.) The recorded evidence suggests that the Project Site is not utilised by populations of higher than **Local Importance (Lower Value)** and no potential for significant effects have been identified at the population level. Due to the small permanent footprint of the Proposed Project infrastructure relative to the size of the Project Site (i.e. approximately 3% of the Project Site), they are unlikely to be significantly affected by the Proposed Project. For this reason, other faunal species are not considered as KERs and as such are not considered further in this assessment.	No
Bats	**Bat Species** Bat species have been assessed as being of **Local Importance (Higher Value)** as they represent resident or regularly occurring populations assessed to be important at the local level and are listed in Annex IV of the EU Habitats Directive. The bat assemblage is dominated by common pipistrelle, soprano pipistrelle and Leisler's bat, with lower levels of activity recorded for *Myotis* spp., brown long-eared bat and Nathusius' pipistrelle. Bats were recorded commuting and foraging across the Project Site, however no bat roosts were identified within the Project Site during the surveys undertaken. The Proposed Project has the potential to result in direct and indirect effects on bat species including disturbance, loss or alteration of commuting and foraging habitat, and potential collision risk associated with Proposed Turbine operation. Therefore, bats are considered a KER for further assessment.	**Yes**
Reptiles and Amphibians	**Common frog (*Rana temporaria*), Smooth newt (*Lissotriton vulgaris*) and Common lizard (*Zootoca vivipara*)** The Proposed Wind Farm site provides good habitat for common frog, smooth newt and common lizard, with both common frog and smooth	No

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	newt being recorded within the Project Site. These species have been assigned **Local Importance (Higher Value)** as they are considered to represent resident or regularly occurring populations (assessed to be important at the local level). However, the Proposed Project will not result in a significant loss of suitable habitat for these species, with the overall footprint of the Proposed Project relatively small in comparison to the size of the Project Site and the area of suitable habitat available within the Project Site. As such, no pathway for significant effects on these species was identified and they are not included as KERs.	
Invertebrates	**Marsh fritillary (*Euphydryas aurinia*)** Marsh fritillary larval webs were recorded within the Proposed Wind Farm site during surveys undertaken in 2024 and 2025. These populations were scattered in a number of areas of suitable habitat across the Proposed Wind Farm site, as outlined in detail in Section 6.3.3.3 above. Given the spread of these populations and number of larval webs recorded, the Project Site as a whole is considered to be of **County Importance** for this species. The core population of marsh fritillary resides within the area of Lullybeg Butterfly Reserve within the Proposed Wind Farm site, Lullymore West Nature Reserve located adjacent to the Proposed Wind Farm site, and the habitat corridors which connect these reserves. The population of marsh fritillary within these particular areas is considered to be of **National Importance** given the concentration of larval webs in these locales. While the Proposed Project has been purposely designed to avoid the most suitable areas of marsh fritillary habitat, including Lullybeg Butterfly Reserve, and areas where larval webs were recorded, there is overlap between small areas of the Proposed Project infrastructure and areas of marsh fritillary suitable habitat where larval webs were recorded. Therefore this species is included as a KER for further assessment.	**Yes**
	Other Pollinators (including bees, butterflies, moths and hoverflies) A number of bees, butterflies, moths and hoverfly species were recorded throughout the Proposed Wind Farm site during the nocturnal moth trapping and daytime pollinator surveys. These insect groups are important pollinating species and, overall, the Project Site is considered to support a population of pollinating insects considered to be of **Local Importance (Higher Value)**. Amongst the species recorded were the large heath butterfly (*Coenonympha tullia*) which is listed as Vulnerable (VU) in the Ireland Red List No. 4 – Butterflies[51] and the forester moth (*Adscita statices*), listed as Endangered (EN) on the Ireland Red List No. 9 - Macromoths[52]. The rare Suspected moth (*Parastichtis suspecta*) was also recorded during night-time moth surveys and records for this species are available from the hectads within which the Project Site is located. Until recently, this species	**Yes**

[51] *Regan et al. (2010) Ireland Red List No. 4 – Butterflies. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland.*
[52] *Allen et al. (2016) Ireland Red List No. 9: Macro-moths (Lepidoptera). National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.*

Ecological Feature or Species	Reason for Inclusion as a KER	KER
	was considered to be Regionally Extinct (RE)[53]. Given the number of recent records recorded from the wider area, the population of this species is considered to be of **National Importance.** Additionally, Lullybeg Butterfly Reserve, which is managed by Butterfly Conservation Ireland, is located within the Proposed Wind Farm site and it considered to be a site of **National Importance** due to the recorded presence of a large number of butterfly and moth species (including rare moths, see Section 6.3.1.11.1 above). The Proposed Project has been designed to avoid the most suitable areas of supporting habitat for pollinating insects, including the Lullybeg Butterfly Reserve. The overall loss of pollinator supporting habitats is considered to be relatively small compared to their overall cover within the Project Site. Nonetheless, given the diversity of pollinating insects recorded using the Project Site, pollinator communities, including the rare Suspected moth, have been included as a KER.	

[53] *This species is listed as Regionally Extinct (RE) in Ireland's Red List No. 9: Macro-Moths (Lepidoptera) (Allen et al., 2016). However, based on records obtained from MothsIreland, this species has been recorded over 60 times within the vicinity of the Project Site since the publication of this document, with scattered records also from the wider area.*

6.4 Ecological Impact Assessment

6.4.1 Do-Nothing Scenario

If the Proposed Project were not to proceed, the Proposed Wind Farm site would continue to be managed under the requirements of the IPC Licence (P0503-01) and therefore the ongoing decommissioning activities, site management and environmental monitoring would continue.

Therefore, under a 'Do-Nothing' scenario, the Proposed Wind Farm site would continue to be managed as per the requirements of the IPC licence as detailed in Chapter 4, Section 4.6.7. Irrespective of the consenting or construction of the Proposed Project, BnM's statutory duties to discharge the conditions of its IPC Licence will remain ongoing.

In the absence of the Proposed Project, natural revegetation processes would continue across the Proposed Wind Farm site. Areas of bare peat would progressively revegetate and transition through successional stages, potentially developing into poor fen, *Calluna*-dominated communities, scrub or bog woodland over time, depending on local hydrological conditions. Therefore, the existing baseline of the landscape will transition from a predominantly industrial cutover peatland landscape, with open exposed peat surfaces and drainage features, to a more natural mosaic landscape of cutaway peatland, wetland and regenerating bog habitats. Scrub encroachment and woodland succession would also continue in the drier areas of the Proposed Wind Farm site.

In addition, enhanced rehabilitation works under the PCAS have been completed within Lodge Bog which is located within the Project Site. The PCAS activities within the Project Site include drain blocking and reprofiling, re-wetting of peat soils and wetland management, seeding of targeted vegetation and the promotion of natural vegetation colonisation.

However, ecological and ornithological enhancement measures, compromising the Proposed Enhancement Areas, (see Appendix 6-5 for full detail), including woodland enhancement, felling of conifers and replanting with native species, management of marsh fritillary habitat areas, linear connectivity enhancement for pollinators, and peatland rewetting and enhancement, and the enhancement of Lodge Bog for breeding waders and wintering golden plover, whooper swan and hen harrier would not be implemented under the Do-Nothing Scenario. Therefore, the opportunity to enhance the Project Site for biodiversity as part of the Proposed Project, separate to the requirements of the IPC Licence, at a local scale, would be lost.

The majority of the lands associated with the Proposed Grid Connection and Proposed Turbine Delivery Route accommodation areas are outside the Proposed Wind Farm site and would continue to be managed as they are now either as improved agricultural grassland and associated grazing at the location of the Proposed Offsite Substation or as existing road along the Proposed Grid Connection underground electrical cabling route.

If the Proposed Project were not to proceed, the opportunity to capture a significant part of County Offaly's and County Kildare's valuable renewable energy resource 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 and to diversify the local economy would also be lost. Furthermore, the opportunity to open up the Proposed Wind Farm to the public and provide amenity and recreational facilities will be lost. The health benefits nationally associated with replacing fossil fuels with renewable wind energy from the Proposed Project will be lost.

6.4.2 Likely Significant Impacts During Construction Phase

6.4.2.1 Effects on Habitats During Construction

Potential impacts on habitats include direct loss of habitat within the Proposed Project construction footprint, indirect habitat degradation due to drainage effects, degradation of aquatic habitats due to deterioration of water quality and degradation of habitats as a result of dust deposition.

The Proposed Project will result predominantly in the loss of areas of cutover bog habitat. The vast majority of cutover bog that will be lost to facilitate the Proposed Project is characterised by bare peat that was in active peat production until June 2020. This habitat is of relatively low biodiversity value, considered to be of Local Importance (Lower Value) and was not identified as a KER.

Smaller areas of cutover bog which will be lost to facilitate the Proposed Project are characterised by revegetating communities considered to be of Local Importance (Higher Value) and which were identified as KERs in Table 6-22 above. These include bog woodland and pioneering scrub, poor fen and secondary *Calluna*-dominated communities. Furthermore, small sections of treelines will be lost in order to facilitate the Proposed Turbine Delivery Route accommodation areas and at the location of the Proposed Offsite Substation. This habitat is also considered to be of Local Importance (Higher Value) and is included as a KER, as outlined in Table 6-22 above.

The likely future receiving environment at the commencement of the construction phase has been considered in detail in Section 6.3.4 above. As described, the likely future receiving environment of the Proposed Wind Farm site at the commencement of the construction phase will be a former industrial peat-extraction landscape with a developing but spatially variable cover of natural revegetation, managed and monitored under IPC Licence Reg. No. P0503-01. Regarding the project temporal interval between the existing baseline survey data and the commencement of the construction phase, it is not anticipated that natural revegetation will have taken place to a degree that would materially alter the existing ecological baseline as established in Section 6.3. Therefore, the existing ecological hydrological baseline conditions presented in Section 6.3 remains representative of the likely future receiving environment for this Biodiversity Chapter against which the Proposed Project is assessed.

Table 6-23 below provides details of the area of the habitats that will be lost to facilitate the Proposed Project. Aquatic habitats are excluded as there will no be loss of these habitats as a result of the Proposed Project. In addition to the area which will be permanently lost to the construction footprint, a buffer of 5m was also applied to the construction footprint for the Proposed Project 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 6-23 below include habitats within this buffer on a precautionary basis. Woodland, scrub, treeline and hedgerow habitats, where they occur outside of the Proposed Project construction footprint but within a 5m buffer of the same footprint, are excluded from the habitat loss calculations below as these habitats, where they occur within the 5m buffer, will be fenced off and no felling or tracking of machinery through these areas (outside of the construction footprint as drawn) will be permitted.

In addition, the habitat loss figures in Table 6-23 below allow for loss of habitat within the identified bat buffers which will be established around the Proposed Turbines to discourage use of this area by bat species during the operational phase of the Proposed Project.

Table 6-23 Habitats occurring within the construction footprint of the Proposed Project

Habitat	Area within Proposed Project infrastructure footprint (hectares/metres)	KER (Yes/No)
Cutover bog (PB4) dominated by bare peat	150.2 ha	No
Scrub (PB4/WS1) and Scrub mosaic habitats	131.7 ha*	**Yes**
Conifer plantation (WD4, WD4/WS1)	60.7 ha	No
Bog woodland (WN7)	44.3 ha	**Yes**
Poor fen and flush (PB4/PF2) revegetating Cutover bog	23.7 ha	**Yes**
Buildings and artificial surfaces (BL3)	19.9 ha	No
Recolonising bare ground (ED3)	8.1 ha	No
Dry meadows and grassy verges (GS2, PB4/GS2)	4.4 ha	No
Wet grassland (GS4, PB4/GS4)	4.0 ha	No
***Calluna*-dominated communities on Cutover bog**	3.7 ha	**Yes**
Improved agricultural grassland (GA1)	2.1 ha	No
Reed and large sedge swamps (PB4/FS1)	2.0 ha	**Yes**
Raised bog (PB1)	1.1 ha	**Yes**
Dry calcareous and neutral grassland (PB4/GS1)	0.5 ha	No
Amenity grassland (GA2)	0.07 ha	No
Earth banks (BL2)	0.04 ha	No
Dense bracken (PB4/HD1)	0.01 ha	No
Treelines (WL2)	180 m	**Yes**
Hedgerows (WL1)	0 m	No

** Where Calluna-dominated communities, poor fen or reed and large sedge swamp habitats occur in a mosaic with scrub, these mosaics are considered as scrub mosaics and assessed as scrub loss, as natural succession will likely result in willow and birch becoming more established in these areas over a relatively short period of time, as outlined within Section 6.3.4 above.*

The effects on habitats that are identified as KERs are described in the below Table 6-24 to Table 6-28. These include:

- Raised bog (PB1)
- Cutover bog with associated secondary habitats i.e. *Calluna*-dominated communities, Poor fen and flush (PF2), Reed and large sedge swamps (FS1)
- Bog woodland (WN7) and Scrub (WS1)
- Treelines (WL2)

› Surface and groundwater (with associated fisheries and aquatic fauna)

6.4.2.1.1 Assessment of Potential Effects on Raised Bog (PB1)

Table 6-24 Assessment of potential for effects on Raised bog (PB1) during construction

Description of Effect	**Direct Habitat Loss** The Proposed Project has been specifically designed to avoid areas of remnant uncut raised bog, wherever possible, with the vast majority of infrastructure located over 100m from these remnant areas. As outlined within Table 6-23 above, approximately 1.1ha of raised bog habitat is located within the Proposed Project footprint. Approximately 844m of amenity boardwalk will be installed within an area of raised bog in the southernmost section of Ballydermot South Bog above the raised bog. This area was not found to conform to either Annex I ARB or DRB during the vegetation or eco-hydrological modelling studies undertaken to inform this assessment. Due to the nature of the boardwalk, the construction of the amenity track will not require any loss of uncut raised bog habitat, however taking a precautionary approach, in the absence of mitigation there is potential for accidental loss of or ground disturbance in this location. There is no potential for direct loss of raised bog in any other location within the Project Site. **Habitat Degradation** There is potential for degradation of uncut raised bog habitat where it occurs in close proximity to infrastructure associated with the Proposed Project as a result of drainage effects and dust deposition. Excavations associated with the Proposed Project have potential to result in modifications to the hydrological regime in the Project Site which has potential to result in drainage/drying out of nearby raised bog habitats. There is also potential for the construction works at the Proposed Wind Farm, given the scale of the Proposed Project and nature of the works, to generate large amounts of dust during the construction phase which in turn could lead to dust deposition in raised bog habitats where they occur in close proximity to the Proposed Project infrastructure. Dust deposition has potential to coat the surface of plant species in this habitat, reducing plant's ability to photosynthesise. This has potential to result in degradation of raised bog habitat where it occurs within 50m of the Proposed Project (in line with the Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*'[54]).
Assessment of Significance Prior to Mitigation	**Direct Habitat Loss** In relation to the amenity boardwalk located within an area of raised bog in the southernmost section of Ballydermot South Bog, while the construction of the boardwalk itself will not require any loss of raised bog habitat, there is potential, in the absence of mitigation, for accidental loss or disturbance in this location. However, this potential impact is unlikely to be significant due to the nature of the proposed boardwalk, which will float above the raised bog supported on timber piles. In the absence of mitigation, the construction of a boardwalk in this location is considered to be a **long-term, slight negative effect which is not significant at any geographic scale**. **Habitat Degradation – Drainage Effects** As outlined in Section 9.5.2.23 of Chapter 9 Water of this EIAR, in the absence of mitigation, the potential drainage effects on areas of remnant raised bog within the

[54] https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

	Proposed Wind Farm site represents a **short-term, imperceptible negative 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 at any geographic scale as the hydrological regime is already highly modified at the Proposed Wind Farm 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)[55], 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. All Proposed Turbines are located over 100m from any areas of remnant uncut raised bog with the only infrastructure located in closer proximity including proposed access roads, peat and spoil areas, and proposed internal cabling. No significant drainage effects on raised bog will occur due to the following: › The potential for effects is limited given the separation distance between the Proposed Turbines and the areas of raised bog (all Proposed Turbines are in excess of 100m from these areas including Proposed Turbines 13 and 14 which exist to the east of a large area of raised bog). › The only infrastructure proposed within the 100m buffer zone (with the exception of the amenity track in the south of Ballydermot South Bog) comprises of underground cabling and access tracks. These works will not have the potential to significantly alter the local peat water table as the works are transient, shallow and minor in nature. The excavation of a shallow trench which will remain open for a very short-time period before it is reinstated and has very limited potential to result in any significant effects on the peat water table. › The drainage in the cutover bog, surrounding the raised bog habitats, is already heavily modified. › Large drains and face banks exist at the boundaries of the raised bog areas and water levels at the margins of the raised bog have already experienced drawdown. › These drains also act as hydraulic barriers between the works area and the raised bog areas and are 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 for the Proposed Wind Farm. **Habitat Degradation – Dust Deposition** As per Chapter 10 Air Quality of the EIAR, per the IAQM guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'*, the areas of raised bog habitat within the Project Site are considered a 'High' sensitivity receptor. Some areas of raised bog habitats are located within the 20m IAQM dust deposition band at their closest point (i.e. a proposed access road in the south of Ballydermot South Bog), with the vast majority of infrastructure located over 100m from raised bog. 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, moderate negative effect which is not considered to be significant at any geographic scale**. However, mitigation is provided below to prevent any such effects.
Mitigation and Offsetting	**Direct Habitat Loss Mitigation by Avoidance** The Proposed Project has been deliberately designed to minimise the loss of uncut raised bog within the Project Site, with only the proposed amenity boardwalk in the southernmost area of Ballydermot South Bog located within this habitat. While no significant effects are anticipated as a result of this boardwalk, it will be installed using sensitive methodologies in order to ensure that no accidental loss of or excessive

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

disturbance to this habitat will occur. The boardwalk will be installed above the raised bog which will be supported on timber piles driven into position by hand or using lightweight/low pressure mechanical means to reduce ground disturbance. The methodology for installation of the boardwalk is outlined fully in Section 4.9.1.6 of this EIAR. Additionally, the installation of the boardwalk will by fully supervised by an Ecological Clerk of Works (ECoW).

Habitat Degradation –Mitigation by Reduction

As outlined above, no significant effects on raised bog habitats are anticipated as a result of the Proposed Project. However, a range of construction phase mitigation measures to prevent dust related impacts on the Project Site in general have been set out in Chapter 10: Air Quality to prevent any such effects. These include the following:

- Prior to the commencement of works, a qualified ecologist will be appointed as the Ecological Clerk of Works (ECoW) for the Proposed Project
- A wheel wash facility will be installed at all proposed construction site entrances and will be used by vehicles before leaving the Project Site.
- 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 will be necessary along haul roads, site roads, grid route, road widening sections, substation, and construction compounds to ensure dust does not cause a nuisance.
    - If necessary, such as during periods of dry weather, de-silted water will be taken from stilling ponds via the existing drainage system within the Allen Bog Group, which encompasses part of the Proposed Project, and will be pumped into a bowser or water spreader to dampen down internal access roads, turbine bases and site compounds to prevent the generation of dust where required. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff as outlined in the Construction and Environmental Management Plan (CEMP) forming Appendix 4-5 to the EIAR.
- Turbines components, construction materials and Proposed Grid Connection infrastructure will be transported to the Project Site via Proposed Construction Haul Routes, as agreed with the local authority.
- The Proposed Construction Haul Routes adjacent to the Project Site will be regularly inspected for cleanliness and cleaned as deemed necessary by the construction Site Supervisor/Site Manager.
- All HGVs transporting construction materials to and from the Project Site will be covered with suitably secured tarpaulin sheeting to prevent dust emission during transit along Proposed Construction Haul Routes.
- Vehicle speeds limits will be implemented within the Project Site in order to control vehicle speeds when passing over access tracks and hardstanding areas, particularly during extended dry periods
- If necessary, excavated material will be dampened prior to transport to the spoil management areas.
- The ECoW will perform daily visual site inspections of dust occurrence within the Project 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 Project Site. Where dust levels are measured to be above this, mitigation measures will be reviewed as part of a dust minimisation plan.

	Peatland Enhancement While there will be no significant effects on uncut raised bog habitats, the Proposed Project provides for the ecological enhancement of areas of cutover bog through a range of rehabilitation methods to promote the development of wetland vegetation. A Biodiversity Management Plan (BMP) has been prepared for the Proposed Project which provides for the ecological enhancement of an area of approximately 263.8ha of cutover bog through drain blocking and rewetting measures. This will help to raise the water table and promote the development of wetland vegetation. The areas proposed for enhancement measures are located in four blocks (labelled A-D, see Figure 6-5-2 of BMP, Appendix 6-5) located in Ballydermot North, Codd 1, Codd 2 and Ticknevin Bogs. The areas proposed for peatland enhancement have been heavily drained through the insertion of parallel drains and extensively cutover during industrial peat extraction of the Allen Bog Group. The proposed measures for enhancement are fully described in the BMP that is provided as Appendix 6-5 to this EIAR and will serve to provide a significant enhancement of the peatland habitats in Ballydermot North, Codd 1, Codd 2 and Ticknevin Bogs.
Residual Effect Following Mitigation	With the above mitigation in place, there is no potential for residual significant effect on raised bog habitat.

6.4.2.1.2 Assessment of Potential Effects on Cutover Bog and Associated Secondary Habitats (excluding bog woodland and scrub)

Table 6-25 Assessment of potential for effects on Cutover bog and associated secondary habitats during construction

Description of Effect	This section provides an assessment of the potential for significant effects on secondary habitats occurring on cutover bog within the Project Site. These include areas beginning to revegetate with pioneering poor fen communities and areas which have been out of peat production for longer periods and are at various stages of vegetation succession with poor fen, *Calluna*-dominated communities, and reed and large sedge swamps. While large areas of cutover bog are also characterised by revegetated willow and birch dominated scrub and bog woodland, these cutover habitats are considered separately in Section 6.4.2.1.3 below. Additionally, where *Calluna*-dominated communities, poor fen or reed and large sedge swamp habitats occur in a mosaic with scrub, these mosaics are considered within the impact assessment in Section 6.4.2.1.3 below, as natural succession will likely result in willow and birch becoming more established in these areas over a relatively short period of time, as outlined within Section 6.3.4 above. **Direct Habitat Loss** The Proposed Project has been designed so that the majority of the infrastructure is sited within areas of bare peat or cutover bog at the early stages of vegetation colonisation. However, the construction of the Proposed Project will result in the direct loss of approximately 29.4ha of cutover bog habitat which is developing as a mosaic of *Calluna*-dominated vegetation, poor fen communities, and reed and large sedge swamp habitats. The loss of these habitats collectively will occur as a result of the construction of Proposed Turbine hardstands, proposed new access roads, the Proposed Onsite Substation (located within Lodge Bog) and other associated Proposed Project infrastructure located within the Proposed Wind Farm site. However, the Proposed Onsite Substation is not located within any areas which have been subject to PCAS rehabilitation measures and as such there will be no direct loss of any rehabilitated peatland habitats within the Project Site. Note: The 29.4ha outlined above comprises the permanent and temporary elements of the Proposed Project, including a 5m buffer on the construction footprint to allow for tracking of construction vehicles outside the footprint as drawn.

	Habitat Degradation The cutover bog habitats within the Project Site have already been subject to extensive drainage and modifications through peat cutting activities, with the hydrological regime in the cutover bog being highly modified from its natural state. Nonetheless, where wetter areas of cutover bog habitat exist, there is potential for excavations associated with the Proposed Project to alter the hydrological regime in these areas of cutover bog which has potential to result in drainage/drying out of these habitats. There is also potential for the construction works at the Proposed Wind Farm, given the scale of the Proposed Project and nature of the works, to generate large amounts of dust during the construction phase which in turn could lead to dust deposition in cutover bog habitats. Dust deposition has potential to coat the surface of plant species in this habitat, reducing plants' ability to photosynthesise. This has potential to result in degradation of secondary cutover bog habitats where they occur within 150m of the Proposed Project.
Assessment of Significance Prior to Mitigation	**Direct Habitat Loss** The Proposed Project will result in the direct loss of approximately 29.4ha of revegetating cutover bog habitat within the Project Site (i.e. 5.8%). The secondary cutover bog habitats are highly modified from their original state, i.e., uncut raised bog, and have come about through natural recolonisation of cutaway bog. None of the areas of cutover bog to be lost due to the Proposed Project construction footprint were found to conform to any Annex I habitats. Nonetheless, collectively the mosaic of cutover bog habitats within the Project Site has a relatively high biodiversity at the local scale, supporting peatland flora and a range of invertebrates, birds and other fauna. Therefore, the loss of 29.4a of revegetating cutover bog is assessed as a **permanent significant negative effect at the local geographic scale** in the absence of mitigation. **Habitat Degradation – Drainage Effects** The cutover bog habitats within the Project Site have already been extensively drained and the hydrological regime within the cutover bog is highly altered from its original state. Furthermore the Proposed Project will not alter existing drainage regimes affecting the cutover bog. As outlined in Chapter 9 Water of this EIAR, existing drainage patterns at the Proposed Wind Farm site will be maintained. The effect on cutover bog prior to mitigation is considered a **short-term, slight negative effect which is not significant at any geographic scale**. **Habitat Degradation – Dust Deposition** As per Chapter 10 Air Quality of this EIAR, per the IAQM guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'*, cutover bog habitats are considered a 'High' sensitivity receptor. Taking a precautionary approach, the potential for indirect effects on secondary cutover bog habitats due to habitat degradation arising from dust deposition as a result of adjacent construction works has the potential to be a **short-term, moderate negative effect which is not considered significant at any geographic scale**. However, mitigation is outlined below to prevent any such effects.
Mitigation and Offsetting	**Offsetting Habitat Loss through Peatland Enhancement** As outlined in Section 6.4.2.1.1 above, a BMP has been prepared for the Proposed Project which provides for the ecological enhancement of an area of approximately 263.8ha of cutover bog through drain blocking and rewetting measures. This will help to raise the water table and promote the development of wetland vegetation. The areas proposed for enhancement measures are located in four blocks (labelled A-D, see Figure 6-5-2 of the BMP, Appendix 6-5) located in Ballydermot North, Codd 1, Codd 2 and Ticknevin Bogs, sensitively designed around the peripheries of the Project Site in order to prevent ornithological conflicts with the Proposed Wind Farm during operation. The areas proposed for peatland enhancement have been heavily drained through the insertion of

	parallel drains and extensively cutover during the peat extraction phase of the Allen Bog Group, and are currently largely dominated by bare peat. Additionally, the BMP prescribes the management and enhancement of approximately 339ha of Lodge Bog. This will involve a range of measures, including scrub removal and management, the creation of permanent waterbodies as well as the creation of permanent reed beds. These measures are primarily proposed to serve breeding and wintering bird populations within the Project Site, as described in Chapter 7 Ornithology of this EIAR, however these measures will also result in the creation of additional areas of reed and large sedge swamp and poor fen communities where water levels and vegetation are to be managed. Furthermore, an area of approximately 58ha of conifer plantation within Killina Bog will be cleared in order to create open habitat suitable for golden plover. This will involve the permanent removal of the existing forestry, and the area will be allowed to revert to peatland habitat, which will be aided by the blocking of forestry drainage channels where appropriate. The above proposed measures for enhancement are fully described in the BMP which is provided as Appendix 6-5 to this EIAR. The enhancement of 263.8ha of cutover bog dominated by bare peat, together with the management of approximately 339ha of Lodge Bog and the reversion of approximately 58ha of conifer plantation to peatland habitats will serve to offset the loss of secondary cutover bog habitats as a result of the construction phase of the Proposed Project. These measures will also provide a significant enhancement of the peatland habitats in Ballydermot North, Codd 1, Codd 2, Ticknevin, Lodge and Killina Bogs. The proposed management and enhancement of Lodge Bog, where PCAS measures have been completed, will also ensure the continued success of this area. **Habitat Degradation Mitigation by Reduction** As outlined in Section 6.4.2.1.1 above in relation to potential dust impacts on raised bog habitats, a range of mitigation measures to minimise dust generation during the construction phase of the Proposed Project have been prescribed in order to protect the habitats and species within the Project Site from significant dust-related effects. While no significant impacts on cutover bog are anticipated as a result of the Proposed Project, all mitigation measures outlined in Section 6.4.2.1.2 above will apply and will also serve to protect all cutover bog habitats within the Project Site. Further detail is provided in Chapter 10 Air Quality of this EIAR.
Residual Effect Following Mitigation	Following the implementation of the mitigation prescribed above there will be no significant negative residual effect on cutover bog habitats.

6.4.2.1.3 *Assessment of Potential Effects on Bog woodland (WN7) and Scrub (WS1)*

Table 6-26 Assessment of potential for effects on Bog woodland (WN7) and Scrub (WS1) during construction

Description of Effect	**Direct Habitat Loss** The Proposed Project will result in the loss of approximately 131.7ha of Scrub (WS1) and scrub mosaic habitats, and 44.3ha of Bog woodland (WN7). The loss of these habitats collectively will occur as a result of the construction of Proposed Turbine hardstands, proposed access roads, proposed peat and spoil areas and other associated Proposed Project infrastructure, as well as a small area of scrub at the location of the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare, which occurs in a mosaic with wet grassland. In addition to the Proposed Project infrastructure footprint, there will also be loss of areas of scrub and bog woodland to facilitate proposed bat buffer zones around the Proposed

	Turbines in accordance with NatureScot (2021) guidance. This is included in the figures provided in the preceding paragraph. As part of the proposed enhancement measures outlined within the BMP (see Appendix 6-5), all areas of scrub will also be removed and managed within Lodge Bog as part of habitat enhancement measures proposed for breeding and wintering birds. This will result in the additional loss of scrub habitats in these areas. This is included in the habitat figures provided in the paragraph above.
Assessment of Significance Prior to Mitigation	**Direct Habitat Loss** The Proposed Project will result in the direct loss of 131.7ha of scrub and 44.3ha woodland habitats, which represents a small percentage (i.e. 11.2%) of the collective total area of these habitats within the Project Site. As outlined in Section 6.3.4 above, it is anticipated that some additional areas of scrub will colonise the Proposed Wind Farm site by the commencement of construction, and existing areas of scrub will mature into bog woodland habitats. These transitions will occur both within and outside of the Proposed Project infrastructure footprint, therefore it is considered that the proportion of these habitats to be lost within the Project Site will remain largely the same. None of the areas of woodland to be lost conform to Annex I Bog woodland or any other woodland habitats protected under the EU Habitats Directive. Scrub and bog woodland habitats within the Project 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 scrub and woodland habitats within the Project Site as a result of the Proposed Project infrastructure, bat felling buffers and proposed scrub management measures which will be undertaken to provide suitable habitat for breeding and wintering birds, is considered to be a **permanent, significant negative effect at the local geographic scale**.
Mitigation and Offsetting	**Mitigation by Avoidance** As outlined in Section 6.4.2.1 above, woodland and scrub habitats, where they occur outside of the Proposed Project construction footprint but within a 5m buffer of the same, will be fenced off and no felling or tracking of machinery through these areas (outside of the construction footprint as drawn) will be permitted. **Offsetting through Native Tree Planting and Scrub Creation** A BMP has been prepared for the Proposed Project and is included as Appendix 6-5. As part of the BMP, it is proposed to plant a total of 45.3ha of native trees which over time will develop into native scrub and woodland habitat. The proposed replanting areas are located in five blocks (labelled A-E, see Figure 6-5-2 of BMP, Appendix 6-5) located in Ballydermot North Bog. In Woodland Block B, the existing conifer plantation will be felled and replaced with native species. Woodland planting is proposed in areas classified as dry and wet cutaway within the BnM Draft Rehabilitation Plans and are not characterised by deep peat. The planting scheme in all areas will comprise native tree species of various age structures and of local provenance, including downy birch (*Betula pubescens*), rowan (*Sorbus aucuparia*), scots pine (*Pinus sylvestris*), pedunculate oak (*Quercus robur*), holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*), alder (*Alnus glutinosa*), grey willow (*Salix cinerea*) and alder buckthorn (*Frangula alnus*). In addition, it is proposed to create scrub mosaic habitats within approximately 246ha of the Proposed Wind Farm site, around 30 of the Proposed Turbines. As outlined within the BMP, this will involve a range of measures specific to the local conditions, including the encouragement of scrub growth where seed banks exist, additional native scrub planting, as well as drain blocking. These measures are primarily proposed in order to deter golden plover from the areas of existing bare peat in proximity to the Proposed Turbines and mitigate potential collision risk (see Chapter 7 Ornithology of this EIAR for full details),

	however these measures will also result in the creation of significant additional areas of scrub mosaic habitats. This will result in a net gain of scrub and woodland habitat within the Project Site. As outlined within the BMP, scrub and woodland planting proposals will be implemented within a 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.
Residual Effect Following Mitigation	Post-implementation of mitigation, there will be a short to medium term significant residual effect on bog woodland and scrub as the newly-planted areas take time to mature. However, as these newly-planted habitats become established over time (approximately 1-10 years for scrub, 10-20 years for young woodland), this effect will be reduced. Once established, there will be no significant negative residual effect on scrub and woodland habitats.

6.4.2.1.4 *Assessment of Potential Effects on Treelines (WL2)*

Table 6-27 Assessment of potential for effects on Treelines (WL2) during construction

Description of Effect	**Direct Habitat Loss** The Proposed Project will result in the loss of approximately 125m of treeline habitat as a result of the construction of Site Entrance 7M and the Proposed Temporary Construction Compound 10 at the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare, the facilitation of the Proposed Turbine Delivery Route accommodation areas as Ballinagar, Co. Offaly and at the junction of the R420 and R402 east of Tullamore, Co. Offaly. The treelines in these locations were generally semi-mature, comprising species including silver birch (*Betula pendula*), hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), ash (*Fraxinus excelsior*), hazel (*Corylus avellana*) and blackthorn (*Prunus spinosa*), as well as non-native hornbeam (*Carpinus betulus*), cypress (*Cupressus* spp.) and poplar (*Populus* spp.) trees recorded at the Proposed Turbine Delivery Route accommodation areas. As described in Section 6.3.2.1.3 above, within the Proposed Wind Farm site, treeline habitats make up a very small proportion of the habitats within the Proposed Wind Farm site, with the vast majority of woody vegetation occurring as woodland, scrub and linear stretches of these habitats and are therefore considered within Table 6-26 above. However, in addition to the areas of woodland and scrub to be lost within the Proposed Wind Farm site, there will be a loss of approximately 55m of treeline at the location of Proposed Temporary Construction Compound 2 in Ballydermot North Bog, within the Proposed Wind Farm site. The treeline comprises immature birch, willow and a small cluster of pine.
Assessment of Significance Prior to Mitigation	**Direct Habitat Loss** The permanent loss of approximately 180m of treeline habitats is not considered to be a significant effect at any greater than the local geographical scale. The 180m of treeline to be lost involves the loss of sections of treeline at five separate locations along the Proposed Turbine Delivery Route accommodation areas, at the Proposed Offsite Substation and the Proposed Temporary Construction Compound 2. As treelines are widespread and common within the local farmlands surrounding the Project Site, the loss of approximately 180m of treeline, in the absence of mitigation, is considered a **short-term, significant negative effect at the local geographic scale only**.
Mitigation and Offsetting	**Offsetting by Replanting** In order to offset the loss of linear vegetation along the Proposed Turbine Delivery Route, the treelines which will be removed at the accommodation areas in Ballinagar, Co. Offaly and at the junction of the R420 and R402 east of Tullamore, Co. Offaly, will be replanted following completion of Proposed Turbine Delivery Route accommodation works. Species planted in these locations will be native and of local provenance.

	Additionally, as outlined in Section 6.4.2.1.3, as part of the BMP, it is proposed to plant a total of 45.3ha of native trees which over time will develop into native scrub and woodland habitat. The planting scheme in all areas will comprise native tree species of various age structures and of local provenance.
Residual Effect Following Mitigation	Following the implementation of the offsetting measures prescribed above there will be no significant negative residual effect on treeline habitats at any geographic scale.

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

Table 6-28 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 in relation specifically to aquatic ecological receptors. **Note: Whilst this impact assessment is in the habitats section, it also assesses the impact on the Proposed Project on aquatic species including salmonids, lamprey, coarse fish, white-clawed crayfish, European eel, duck mussel, aquatic invertebrates and other aquatic species. A separate impact assessment for otter is presented in Section 6.4.2.3.2 below.** The layout of the Proposed Project has been designed to avoid watercourses wherever possible, including a minimum 50m buffer between the main Proposed Wind Farm infrastructure and any natural watercourses. However, the Proposed Wind Farm infrastructure will cross watercourses at 15 no. locations, as outlined in Section 6.3.2.1.6 above. Existing crossing infrastructure will be used where possible. However, of the 15 no. crossings, a total of 5 no. new crossings and 10 no. crossing upgrades/replacements will be required. Existing bridges will be demolished and reconstructed in two locations along the Figile River within the Proposed Wind Farm i.e. between Codd 1 and Codd 2 Bogs (WC-WF-04), and between Glashabaun North and Glashabaun South Bogs (WC-WF-07) which will require in-stream works. As outlined in Section 4.9.1.7 of this EIAR, temporary flow management systems will be implemented in order to isolate the works areas from the flow and allow demolition and construction, which will involve temporary damming of the areas and the over-pumping of water flow through the channel. Depending on the detailed design at the construction phase, there may be additional in-stream works at 6 no. additional crossings within the Proposed Wind Farm site, therefore on a precautionary basis it is assumed that in-stream works will occur at up to 8 no watercourse crossings associated with the Proposed Wind Farm. The Proposed Grid Connection underground electrical cabling route also crosses a total of 11. no watercourses. As detailed in Section 6.3.2.1.7 above, 7 no. crossings will be over EPA mapped watercourses and 3 no. crossing will be over unmapped watercourses, including the Blackwood Feeder Canal, which is designated as part of the Ballynafagh Lake SAC. At these locations, the cables will be laid within existing bridge infrastructure using Flatbed Formation Under– Type B or Flatbed Formation Over– Type C (refer to Section 4.9.1.7 of Chapter 4) methodologies with no requirement for in-stream works. Additionally, the Grand Canal will be crossed approximately 150m west of Shee Bridge, Co. Kildare via HDD methodologies, with no requirement for in-stream works. There will also be a requirement for the Proposed Turbine access roads to cross artificial drains throughout the Proposed Wind Farm site, necessitating the installation of culverts. While these artificial drainage ditches are not themselves ecologically sensitive and provide poor fisheries and aquatic faunal habitat, they do provide connectivity to the larger watercourses that surround the Project Site. The text below assesses the potential for likely significant effects on aquatic receptors, including groundwater, surface watercourses, aquatic habitats including Annex I Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-*

Batrachion vegetation [3260] identified downstream of the Project Site, and associated aquatic faunal species, including, lamprey, white-clawed crayfish, European eel, salmonids, coarse fish, duck mussel and other aquatic species identified during the desk study and dedicated aquatic surveys as likely to occur within or downstream of the Project Site, with the exception of otter which is assessed separately in Section 6.4.2.3.2 below.

Direct Habitat Loss

The watercourse crossing methodologies are described in full in Section 4.9.1.7 of Chapter 4 of this EIAR. As outlined above, a total of 5 no. new crossings and 10 no. crossing upgrades/ replacements will be required, and on a precautionary basis it is considered that in-stream works will be required at up to 8 no. of these crossings. As such, in the absence of mitigation and best practice during construction, there is potential for habitat loss as a result of disturbance to the stream bed in these locations.

Furthermore, consideration has been given to the installation of pipe or box culverts at up to 4 no. of the watercourse crossings within the Proposed Wind Farm site. On a precautionary basis, in the absence of appropriate design and installation, these culverts have the potential to result in the loss of small areas of in-stream spawning habitat and to create barriers to the movement of aquatic species.

As no in-stream works are required along the Proposed Grid Connection underground electrical cabling route, there is no potential for direct loss of fisheries habitat and no barriers to the movement of aquatic species created.

Direct Disturbance and Mortality

A number of the larger watercourses within the Project Site, including the Figile River, were found to provide suitable habitat for a number of fisheries species, including salmonids, European eel and coarse fish, with these species recorded during electrofishing surveys (see Aquatic Baseline Report for detail, Appendix 6-3). These watercourses are hydrologically connected downstream to the River Barrow and River Nore SAC, for which species including Atlantic salmon, lamprey species and white-clawed crayfish are listed as QIs. Therefore, the populations of these species occurring within and downstream of the Project Site are considered to comprise part of the SAC populations.

As outlined above, in-stream works will occur at up to 8 no watercourse crossings associated with the Proposed Wind Farm. Due to the nature of these in-stream works and the fisheries suitability of the watercourses within the Proposed Wind Farm site, in the absence of mitigation, there is potential for direct disturbance and mortality of these sensitive aquatic species which may reside within the Figile River and its smaller tributaries. While white-clawed crayfish were not recorded during any of the surveys undertaken, due to the identified desk study records for these species within the Project Site (see Section 6.3.1.2 above) and the presence of suitable habitat, these species are also included on a precautionary basis.

While the Proposed Grid Connection underground electrical cabling route also crosses a total of 11. no watercourses, due to the nature of the construction methodologies (Flatbed Formation Under– Type B or Flatbed Formation Over– Type C methodologies (refer to Section 4.9.2.7 of Chapter 4) within the existing road and bridge infrastructure, and HDD at the Grand Canal), there will be no in-stream works required. As such, there is no potential for direct disturbance and mortality of aquatic species as a result of the construction of the Proposed Grid Connection.

While a number of manmade peat drains within the Proposed Wind Farm site will be crossed by the Proposed Project infrastructure and require culverting, these are highly modified in nature, subject to heavy siltation, and support poor-quality aquatic habitat. As outlined in the Aquatic Baseline Report, included as Appendix 6-3 of this Biodiversity Chapter, many of the small tributary streams to the Figile River within the Project Site provide poor fisheries potential and either no fish or only three spined sticklebacks were recorded during electrofishing. All new culverts at drain crossings will be appropriately

	sized for peak flows and oversized to maintain mammal passage. Culverts will be regularly inspected to ensure they are free of debris and maintain conveyance capacity. Given the modified nature of these drains and the design of the culverts, no significant direct effects on aquatic habitats or aquatic fauna are anticipated. **Habitat Degradation – Water Quality Deterioration** The construction phase of the Proposed Project will require activities including ground excavations, piling, cement usage, tree felling, excavation dewatering, construction of new or replacement of existing watercourse crossing infrastructure, HDD under an existing watercourse 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 (drains and watercourses) or percolation of pollutants to groundwater. These represent potential indirect effects on aquatic habitats and sensitive aquatic species downstream of the Project Site in the form of water quality deterioration and subsequent habitat degradation.
Assessment of Significance Prior to Mitigation	**Direct Habitat Loss** In the absence of mitigation, due to the in-stream works associated with up to 8 no. watercourse crossings within the Proposed Wind Farm, there is potential for the Proposed Project to result in **temporary, significant negative effects** as a result of disturbance to the stream bed during the construction phase. Furthermore, in the absence of appropriate design, the installation of box and pipe culverts at up to 4 no. of the watercourse crossings within the Proposed Wind Farm site has the potential to result in **permanent, significant negative effects** as a result of habitat loss and the creation of barriers to the movement of aquatic species which are of Local Importance (Higher Value) and International Importance (i.e. species associated with the River Barrow and River Nore SAC). The installation of culverts at the crossings of artificial drains relate to waterbodies that provide poor-quality habitat for fisheries and aquatic fauna and as such no significant effects are anticipated in this regard. **Direct Disturbance and Mortality** In the absence of mitigation, due to the in-stream works associated with up to 8 no. watercourse crossings within the Proposed Wind Farm, there is potential for the Proposed Project to result in a **temporary, significant negative effect** on populations of sensitive aquatic species of Local Importance (Higher Value) and International Importance (i.e. species associated with the River Barrow and River Nore SAC). The installation of culverts at the crossings of artificial drains relate to waterbodies that provide poor-quality habitat for fisheries and aquatic fauna and as such no significant effects are anticipated in this regard. **Habitat Degradation – Water Quality Deterioration** In the absence of mitigation there is potential for works associated with the Proposed Project to result in deterioration of water quality. This is considered to be a **short term, negative, significant effect** which could affect watercourses of Local Importance (Higher Value), National Importance (i.e. Grand Canal pNHA) and International Importance (i.e. where watercourses are designated as SACs, i.e. River Barrow and River Nore SAC, Ballynafagh Lake SAC) where they are located within or downstream of the Proposed Project. Deterioration of water quality and resulting habitat degradation also has potential to affect aquatic species ranging from Local Importance (Higher Value) to International Importance (where they are QIs of an SAC).

Mitigation and Offsetting	**Direct Habitat Loss Mitigation by Avoidance** The Proposed Project has been deliberately designed to avoid habitat loss where possible. The following considerations have been taken into account as part of the Proposed Project design: › The number of watercourse crossings within the Proposed Wind Farm site has been minimised where possible; › Clear span structures preferred; › Proposed culverts will be oversized and embedded with the base of each culvert buried below the invert of its given channel, at a minimum. This will maintain bed continuity, maintain suitable spawning habitat within the culverts, and ensure that no barriers to migrating fish are created. Furthermore, the Proposed Project has also been designed in order to maintain potential to restore the watercourses within the Proposed Wind Farm site into the future: › The size and position of crossings will have consideration for likely future restored channel, rather than solely the existing modified drain/channel. › The road/culvert levels will be set to avoid fixing an artificial longitudinal profile or preventing future channel adjustment. The Proposed Project drainage will not rely on the river (existing or restored) as an online treatment feature. **Direct Habitat Loss/Direct Disturbance and Mortality Mitigation by Reduction** The following mitigation measures are included within Section 9.5.2.8 of Chapter 9 Water of this EIAR and will be strictly adhered to during the works within the Proposed Wind Farm site: › Clear-span bridge crossings will be designed to span the watercourse without disturbance to the watercourse bed and with abutments located outside the channel where practicable; › Where bottomless culverts are proposed, the natural watercourse bed will be retained through the crossing where practicable. Construction will be undertaken from outside the channel; › Where box culverts or pipes are proposed, the crossing will be suitably sized for the expected peak flows and designed to maintain hydraulic conveyance. Any works required within or immediately adjacent to the watercourse will be undertaken in accordance with the relevant OPW and IFI requirements; › Existing crossings requiring upgrading or replacement will be constructed in a manner that minimises disturbance to the existing watercourse and its banks. Where existing structures are to be removed, works will be undertaken in accordance with the approved construction methodology; › All guidance / mitigation measures required by the OPW and/or the IFI is incorporated into the design of the proposed crossings; › All drainage measures will be installed in advance of the works; › Plant and equipment will not be permitted to track across the watercourse; › Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge; › As a further precaution, near stream construction work, will only be carried out during the period permitted by IFI for in-stream works according to the IFI (2016) guidance document '*Guidelines on protection of fisheries during construction works in and adjacent to waters*[56]', i.e., July to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface

[56] *IFI (2016) Guidelines on the Protection of Fisheries During Construction Works and Adjacent to Waters. Inland Fisheries Ireland.*

water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI);

In addition, the following measures will also be adhered to:

- All in-stream works will be undertaken in line with IFI (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* and OPW (2019) *Environmental Guidance: Drainage Maintenance and Construction*[57].
- All in-stream works will be supervised by an ECoW, who will have the power to halt works if non-compliance is observed.
- All operatives will be trained in how to address the environmental risks and best practice measures.
- In accordance with OPW (2019), in order to accommodate lamprey spawning and berried white-clawed crayfish (i.e. carrying eggs), no works may be carried out from end March to mid-July.
- 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 at an extremely slow pace, 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 Mitigation by Reduction

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 CEMP in 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 9.5.2. These mitigations relate to earthworks, groundwater levels during excavations, surface water quality during dewatering, potential release of hydrocarbons during construction and storage, release of cement-based products, contamination from wastewater disposal, effects associated with piled foundations, morphological changes to surface watercourses at the Proposed Wind Farm and along the Proposed Grid Connection, the use of siltbusters and tree felling. Potential effects on Designated Sites and potential effects arising from biodiversity

57 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.

	management and enhancement measures are also outlined in detail. Section 9.5.2.10 also specifically addresses and mitigates any potential water quality effects which may arise during the HDD works along the Proposed Grid Connection underground electrical cabling route at the Grand Canal, and Section 9.5.2.21 addresses and mitigates any potential water quality effects which may arise as a result of the Proposed Turbine Delivery Route accommodation areas. All works in proximity to watercourses will adhere to IFI *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* (2016).
Residual Effect Following Mitigation	Following the implementation of the mitigation prescribed above, there will be no significant residual effect on aquatic habitats or species as a result of the Proposed Project.

6.4.2.2 Effects on Rare and Threatened Flora During Construction

Two species listed as NT on Ireland's Red List of Vascular Plants (Wyse Jackson *et al.,* 2016) were recorded within the Proposed Wind Farm site. Populations were identified within the construction footprint of the Proposed Project and as such are included as KERs. These species were:

- Basil thyme (*Clinopodium acinos*)
- Round-leaved wintergreen (*Pyrola rotundifolia* ssp. *rotundifolia*)

Table 6-29 Assessment of potential for effects on rare and threatened flora during construction

Description of Effect	**Direct Loss** During the surveys undertaken, basil thyme and round-leaved wintergreen were recorded at a number of locations throughout the Proposed Wind Farm site, both within and outside the Proposed Project construction footprint as shown in Figure 6-12 above. These species are likely present within other areas of the Proposed Wind Farm site outside of the targeted survey areas as delineated in Section 6.2.3.1 above given the abundance of suitable habitat within the Project Site. Furthermore, in line with the likely future receiving environment described in Section 6.3.4, these species may also have colonised additional areas prior to the commencement of construction. In the absence of mitigation there will be loss of these species where they occur within the Proposed Project construction footprint to facilitate the construction of the Proposed Project infrastructure, proposed bat buffer zones around the Proposed Turbines, and within Killina Bog Offsetting Area, as outlined within the BMP (see Appendix 6-5). **Habitat Degradation – Dust Deposition** There is also potential for the construction works at the Proposed Wind Farm, given the scale of the Proposed Project and nature of the works, to generate large amounts of dust during the construction phase which in turn could lead to dust deposition upon these Red-listed species. Dust deposition has potential to coat the surface of individual plants where they occur within 50m of the Proposed Project construction footprint, reducing their ability to photosynthesise.
Assessment of Significance Prior to Mitigation	**Direct Loss** In the absence of mitigation, the loss of these species where they occur within the construction footprint is considered to be a **permanent, significant negative effect at the local geographic scale.** Significant numbers of these species were also recorded outside of the construction footprint and will therefore not be lost to facilitate construction of the Proposed Project. Furthermore, given the abundance of suitable habitat within the Project Site, these species are likely to be present at other areas within the Project Site, outside of the construction footprint which were not subject to targeted survey. **Habitat Degradation – Dust Deposition**

	As per Chapter 10 Air Quality of this EIAR, per the IAQM guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'*, Red-listed plant species are considered a 'High' sensitivity receptor. Taking a precautionary approach, in the absence of mitigation the potential for indirect effects on these species due to dust deposition as a result of adjacent construction works has the potential to be a **short-term, moderate negative effect which is not considered to be significant at any geographic scale**.
Mitigation and Offsetting	**Direct Loss Mitigation by Reduction** The following mitigations will be applied during the construction phase of the Proposed Project in order to ensure that there are no significant effects on populations of these species: › Pre-commencement surveys for basil thyme and round-leaved wintergreen will be undertaken at the optimal time of year (i.e. July to August for basil thyme and June to July for round-leaved wintergreen) by a suitably qualified ecologist in advance of construction and any felling measures. The surveys will focus on the footprint of the Proposed Project (inclusive of the Proposed Enhancement Areas in Killina Bog) within the Proposed Wind Farm site where the species have previously been recorded. Due to the time that may elapse between surveys undertaken to inform this assessment and the commencement of construction works, as well as the annual life cycle of basil thyme, other areas of suitable habitat within the Proposed Project construction footprint, in proximity to previously-mapped populations, will also be surveyed for newly-colonised plants. › If these species are found within the construction footprint, plants will be mapped. › Where the species are identified within the Proposed Project infrastructure footprint, the ecologist will also identify suitable translocation areas for each species outside of the construction footprint and beyond the ZoI of the Proposed Project. <u>Basil thyme:</u> › Existing plants identified within the Proposed Project infrastructure footprint will be carefully excavated by hand by the ECoW with a shovel ensuring that the root system and surrounding rooting substrate remain intact. These plants will be moved to a prepared area outside the construction footprint with suitable substrate and habitat conditions for the calcicole species, as identified by the ECoW during the pre-commencement survey. › As this is an annual species, subsoil with the seedbank will also be translocated out of the Proposed Project footprint. Following the removal of the plants, the gravel/subsoil from these areas within the Proposed Project infrastructure footprint will be stripped and reinstated at proposed new suitable locations. The locations of the reinstatement areas will be identified by a suitably qualified ecologist in advance of reinstatement works. During reinstatement a thin layer of the stripped gravel/subsoil, containing the residual floral seed bank, shall then be spread evenly over gravel substrate. These works will be supervised by the ECoW. › These areas shall then be temporarily fenced off and allowed to regenerate naturally. <u>Round-leaved wintergreen</u> As round-leaved wintergreen is a perennial species, large turves containing the plants identified and mapped during the pre-commencement surveys which overlap the construction footprint will be translocated as follows: › Translocation will be planned during a metabolically less active time of year for round-leaved wintergreen (winter months). › These turves will be relocated to other suitable habitat nearby with appropriate levels of shading, an appropriate hydrological regime and appropriate substrate for the species. › The receptor site will be appropriately prepared for receiving the turves by removing no more than 10cm of top soil from the receptor areas.

	The reinstated areas of each species and the translocated individuals and turves shall be subject to a management and monitoring regime as follows: › No fertiliser or herbicide shall be applied. › Potential scrub encroachment will be monitored and appropriate measures adopted if required to manage any potential encroachment › A monitoring programme shall be put in place and an annual assessment of each species populations shall be conducted by a suitably qualified ecologist to monitor the recovery and conservation status of this species. › The annual assessment will be carried out for a period of three years. If the management measures are sub-optimal during this period, additional interventions may be necessary, and may be prescribed by a suitably qualified ecologist, extending the monitoring programme beyond three years if necessary. › Following on from this the populations will be routinely assessed as part of the program of habitat surveys carried out by the BnM Ecology team. **Habitat Degradation Mitigation by Reduction** As outlined in Section 6.4.2.1.1 above in relation to potential dust impacts on raised bog habitats, a range of mitigation measures to manage dust generation during the construction phase have been prescribed in order to protect the habitats and species within the Project Site from significant dust-related effects. While no significant effects on rare and threatened flora are anticipated, all mitigation measures outlined in Section 6.4.2.1.2 above will apply, and will also serve to protect rare and threatened flora within the Project Site from any potential impacts resulting from dust deposition. Further detail is provided in Chapter 10 Air Quality of this EIAR.
Residual Effect Following Mitigation	Following the incorporation of the mitigation measures described above, no significant negative effects on rare and threatened flora are anticipated at any geographic scale.

6.4.2.3 Effects on Fauna During Construction

The Proposed Project has the potential to result in loss and/or degradation of supporting habitat for faunal species identified as KERs in Table 6-22 above. There is also potential for disturbance impacts on these species. The potential for significant effects on the following species as a result of the Proposed Project is discussed in the sections below:

› Badger
› Otter
› Other non-volant mammals, i.e. pine marten, Irish stoat, red squirrel
› Bats
› Marsh fritillary
› Other pollinators (including bees, butterflies, moths, hoverflies)

The potential for significant effects on aquatic species (excluding otter) relating to disturbance and mortality as a result of proposed in-stream works, as well as deterioration of water quality as a result of the Proposed Project, are assessed in Section 6.4.2.1.5 above and are not repeated below.

6.4.2.3.1 *Assessment of Potential Effects on Badger*

Table 6-30 Assessment of potential for effects on badger during construction

Description of Effect	**Disturbance and Mortality** A total of nine badger setts (active and disused) were identified within the Project Site during the surveys undertaken between 2021 and 2026, as well as numerous signs of

	badger activity. During the design phase of the Proposed Project, the Proposed Wind Farm layout was amended to avoid badger setts that were identified within the likely ZoI. As such, six of the badger setts are located over 50m from the nearest proposed access roads and over 150m from the nearest Proposed Turbines, where piling will occur during construction, in line with TII (2006) *Guidelines for the Treatment of Badger Prior to the Construction of National Roads Schemes*. Badger sett G (see Section 6.3.3.1.1 above and Confidential Appendix 6-6 to this Biodiversity Chapter) is located in Blackriver Bog and comprises three entrances which are located approximately 20m from the nearest Proposed Project infrastructure, a proposed new access road. This sett was identified during surveys undertaken in May 2026. Badger tunnel systems can extend some distance from sett entrances (over 20m in some cases [TII, 2006]) and therefore any excavation by heavy machinery in close proximity to sett entrances risks causing damage to setts and/or direct harm to badgers in the absence of mitigation. As such, in the absence of mitigation, there is potential for disturbance to this sett during the construction phase of the Proposed Project. Badger setts B and C are located in close proximity (<50m and <5m, respectively) to the Proposed Enhancement Area at Lodge Bog (see BMP, Appendix 6-5), however these setts were identified as being inactive during surveys undertaken in 2026. On a precautionary basis, however, should these setts become re-occupied prior to the commencement of enhancement measures, there is potential for disturbance to these setts during scrub removal activities in proximity to these setts. Additionally, given the abundance of badger signs identified within the Project Site (see Figure 6-27 above), this species is likely present throughout the Project Site. As such, due to the time that may elapse between surveys undertaken to inform this assessment and the commencement of construction works, there is potential for new badger setts to be created during the interim. Therefore a potential for impact via disturbance/mortality of badger exists should new setts be created in close proximity to the Proposed Project construction footprint. **Habitat Loss/Fragmentation** The Proposed Project will result in the loss of suitable badger foraging habitat within the Proposed Project infrastructure footprint including cutover bog, woodland and scrub habitats. However, the area of these habitats to be lost is relatively small compared to their overall cover and extent within the Project Site. Additional areas of suitable habitat for badger will also be lost within Killina and Lodge bogs in order to facilitate the proposed biodiversity enhancement measures outlined within the BMP (see Appendix 6-5) in relation to areas proposed to offset potential effects on golden plover as a result of the Proposed Project, as well as enhancement of Lodge Bog for a range of breeding and wintering bird species. These proposed measures include scrub removal, conifer felling and the creation of predator exclusion zones for breeding waders through the erection of predator-proof fencing, which will prevent access for badgers to approximately 25ha of Lodge Bog. Areas of conifer plantation will also be removed within Ballydermot North Bog as part of the BMP, however these areas will be re-planted with native tree species and as such will not result in a permanent loss of habitat for badger. Additionally, no badger setts were identified within any of these areas during the surveys undertaken to inform this assessment.
Assessment of Significance Prior to Mitigation	**Disturbance and Mortality** In the absence of mitigation, there is potential for disturbance, injury or mortality of individual badgers as a result of construction works in proximity to badger sett G as outlined above. On a precautionary basis, badger setts B and C are also considered for potential disturbance effects arising during scrub removal works in Lodge Bog associated with Proposed Enhancement Areas. Any potential for loss of, physical damage to or significant disturbance of occupied setts (including any additional setts established between planning consent and commencement of construction), potentially resulting in significant

	disturbance or mortality would be considered a **permanent, significant negative effect at the local geographic scale** in the absence of mitigation. Increased human presence and noise or vibration during construction also has the potential to displace badgers from foraging and commuting habitat. However, given the availability of suitable habitat in the surrounding area, and the fact that most disturbance will occur during daylight hours when badgers are typically inactive, significant displacement from foraging areas is unlikely to impact the local badger population. This represents a **slight negative effect which is not considered significant at any geographic scale** in the absence of mitigation. **Habitat Loss/Fragmentation** The loss of suitable foraging habitat will be small relative to the overall area of similar habitat within the Project Site. While suitable habitat for badger may be lost in order to facilitate the enhancement measures proposed within Killina and Lodge Bogs as outlined in the section above, these areas are small in relation to the total area of Killina (>230ha) and Lodge Bogs (>375ha) within the Project Site, and no badger setts were identified within these areas during any of the surveys undertaken. As such, while this represents a **permanent slight negative effect**, due to the abundance of suitable habitat within the Project Site, the overall loss or fragmentation of badger foraging habitat is **not considered significant at any geographic scale**.
Mitigation and Offsetting	**Disturbance/Mortality Mitigation by Reduction** › 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. › Due to the time that may elapse between the surveys undertaken to inform this assessment and the commencement of construction works, a pre-construction badger survey of the Proposed Project infrastructure footprint and adjacent areas will be carried out by a qualified ecologist to determine whether any new setts have been established in the intervening period. This will include a 50m buffer of all infrastructure, a 150m buffer of any areas where piling works are proposed, such as Proposed Turbine bases, as well as areas where felling is proposed (i.e. within the Proposed Enhancement Areas). › All setts identified within this Biodiversity Chapter will also be re-surveyed in order to establish their status prior to the commencement of construction works, and to identify any additional sett entrances which may have been excavated in the intervening period. › All badger setts will be afforded protection in line with the requirements set out in TII (2006) *Guidelines for the Treatment of Badger Prior to the Construction of National Roads Schemes*. An exclusion zone around all identified setts will be maintained for the duration of the construction works. No works will be undertaken within 30m of any badger setts at any time, and 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 below) prior to construction in line with TII (2006) to ensure that the sett is evacuated. Should a badger sett require exclusion, the following steps will be undertaken to ensure that no badgers are present within the sett during construction works, in line with TII (2006): › Early consultation with the NPWS will be undertaken in advance of any works. › The closure and subsequent destruction of a sett may only be carried out following successful evacuation and must be undertaken under the supervision of suitably qualified and experienced personnel.

	› Exclusion from an active sett will only be undertaken during the period July to November (inclusive), in order to avoid the badger breeding season. › Standard exclusion methodology involves the installation of one-way gates at all active entrances, followed by a minimum monitoring period of 21 days (commencing after an initial settling period of approximately three days), to confirm that no badgers remain within the sett. An ecologist will monitor the gates every 3 to 5 days during the 21-day period to ensure badgers do not succeed in re-entering the sett. › Immediately following this and subject to successful exclusion, the sett may then be closed under supervision. › If badgers succeed in re-entering during the 21-day period, the exclusion process and 21-day period must start again. › A post-works report detailing the exclusion methodology, monitoring results, sett excavation and closure, and any other relevant observations will be submitted to the NPWS. All of the above will be undertaken or supervised by an appropriately qualified ecologist. In relation to the establishment of the predator-proof areas for breeding waders within Lodge Bog, should any badger setts be identified within these areas during the pre-commencement surveys, the exclusion methodologies outlined above will also apply. The erection of the fencing will take place immediately following completion of the pre-commencement mammal surveys and/or exclusion of setts as applicable in order to ensure there are no mammals present within the area. As outlined within the BMP (Appendix 6-5) on a precautionary basis, monitoring will also be undertaken following construction of the fencing to ensure no mammals remain.
Residual Effect Following Mitigation	Following the implementation of the mitigation measures described above, no significant residual effects on badger are anticipated at any geographic scale.

6.4.2.3.2 *Assessment of Potential Effects on Otter*

Table 6-31 Assessment of potential for effects on otter during construction

Description of Effect	**Habitat Loss/Fragmentation** As described above in Section 6.4.2.1.5 in relation to aquatic habitats and species, the Proposed Project has been deliberately designed so that all Proposed Project infrastructure avoids watercourses wherever possible. While a number of watercourse crossings are required both within the Proposed Wind Farm and along the Proposed Grid Connection route, and in-stream works will be required to facilitate up to 8 no. crossings within the Proposed Wind Farm, these works will be temporary in nature and will not result in any permanent habitat loss for otter. Additionally, all new bridge/culvert crossings will be designed in accordance with IFI (2010). Furthermore, no otter resting or breeding sites (including holts and couches) were recorded within 150m of the Proposed Project infrastructure during dedicated otter surveys, in line with TII (2008b) *Guidelines for the Treatment of Otter Prior to the Construction of National Roads Schemes*. An otter holt was recorded during surveys undertaken in 2021 within a pipe culvert near the Codd River crossing of the local L1001 road, however during follow-up surveys in September 2026 it was found to be no longer in use by otter, and no otter signs were recorded in the vicinity. An inactive holt was also identified within the Proposed Wind Farm site during baseline aquatic surveys undertaken in 2026, to the north of Proposed Turbine 36. However, the location of the inactive holt identified in 2026 and the pipe culvert in which a holt was present in 2021 are located approximately 170m and 550m from the Proposed Project permanent infrastructure footprint. As such, there will be no loss of or fragmentation of habitat for otter as a result of the Proposed Project. **Disturbance and Mortality**

	An otter holt was recorded during surveys undertaken in 2021 within a pipe culvert near the Codd River crossing of the local L1001 road, however during follow-up surveys in September 2026 it was found to be no longer in use by otter and no otter signs were recorded in the vicinity. While there is potential for this pipe culvert to become reoccupied in the intervening time prior to construction, it is located approximately 550m from the nearest Proposed Project infrastructure and as such there is no potential for disturbance to this holt as a result of the Proposed Project. In relation to the inactive otter holt located to the north of Proposed Turbine 36, this is located over 170m from the proposed hardstand associated with Proposed Turbine 36, 135m from the proposed peat and spoil area associated with Proposed Turbine 36, and 100m from the proposed scrub mosaic creation area. As identified by Triturus Environmental Ltd., the holt was unused by otters at the time of survey with no evidence of recent activity being recorded, and the adjoining Lullymore East River tributary provides poor quality foraging habitats. Nonetheless, there is some potential for this holt to become reoccupied prior to construction and as such it is considered on a precautionary basis for potential disturbance impacts. No other breeding or resting sites for otter were identified in any other locations during the surveys undertaken. However, evidence of otter activity was recorded both within and downstream of the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route. As such, due to the time that may elapse between surveys undertaken to inform this assessment and the commencement of construction works, there is potential for new otter holts to be created during the interim. Therefore a potential for impact via disturbance/mortality of otter exists should new holts or resting sites be created in close proximity to the Proposed Project construction footprint. Additionally, on a precautionary basis there is potential for disturbance of otter foraging and commuting in the watercourses within the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route during construction. **Habitat Degradation - Impacts on Water Quality** In the absence of mitigation, there is potential for construction works to result in run-off of silt and other pollutants such as hydrocarbons and cementitious material into watercourses within and downstream of the Proposed Wind Farm and Proposed Grid Connection. This represents a potential indirect effect on otter in the form of habitat degradation/loss of prey resource through water pollution.
Assessment of Significance Prior to Mitigation	**Habitat Loss/Fragmentation** There will be no permanent loss or fragmentation of habitat for otter as a result of the Proposed Project. **No significant effects** as a result of habitat loss or fragmentation are anticipated. **Disturbance and Mortality** There is no potential for the construction phase of the Proposed Project to result in significant disturbance of otter. While two otter holts were identified within the Project Site, they were both identified as inactive in 2026 and are both located over 150m from the nearest Proposed Project infrastructure. Any works located within 150m of the inactive holt to the north of Proposed Turbine 26 are minor in nature (i.e. proposed scrub planting and a proposed peat and spoil area) and will not involve any significant groundworks. These works therefore do not have the potential to result in significant disturbance to the holt, should it be active at the commencement of construction. Increased human presence and noise or vibration during construction also has the potential to displace otters from foraging and commuting habitat. However, given that otter are predominantly crepuscular in nature, and the availability of suitable habitat in the surrounding area, significant displacement from foraging areas is unlikely to impact the

	local otter population. This represents a **short-term, slight negative effect which is not significant at any geographic scale**. **Habitat Degradation - Impacts on Water Quality** In the absence of mitigation there is potential for works associated with the Proposed Project to result in deterioration of water quality. This is considered to be a **short term, significant negative effect** which could affect otter populations ranging from Local Importance (Higher Value) to International Importance where they occur within or downstream of the Proposed Project.
Mitigation and Offsetting	**Disturbance and Mortality Mitigation by Reduction** As outlined above, no active or inactive otter holts were recorded within 150m of any Proposed Project permanent infrastructure, or any works which could result in significant disturbance, during any of the surveys undertaken. However, this is a mobile species and otter could potentially migrate within the Project Site. As such, prior to the commencement of construction, a pre-commencement otter survey will be undertaken along all watercourses within 150m of the Proposed Project construction footprint to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (TII, 2008b). This will be undertaken by a suitably qualified ecologist in accordance with standard best practice guidance. While there are no EPA mapped watercourses within the Proposed Enhancement Areas at Lodge Bog, an otter was recorded on one occasion within a large drain in Lodge Bog. Due to the nature of the works, which will involve the removal of scrub along all drains, as well as the erection of predator-proof fencing (including the damming of drains to exclude otter and mink), on a precautionary basis, pre-commencement otter surveys will also be undertaken along the large drains within Lodge Bog prior to the commencement of enhancement and management works. In the unlikely event that an otter holt is identified within the ZoI of the Proposed Project infrastructure, or within Lodge Bog, consultation will be undertaken with the NPWS and a derogation licence applied for, in line with TII (2008b) *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes*. › All conditions of a derogation licence will be implemented in full. › No works will be undertaken within 150m of any holts at which breeding females or cubs are present. › No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance will not take place within 15m of such holts, except under licence › All of the above works will be undertaken or supervised by an appropriately qualified ecologist. Additionally, in order to reduce disturbance to otter where they may be foraging or commuting within watercourses in proximity to the Proposed Project, the best practice guidance for noise control during construction as outlined in Section 12.7.1 of Chapter 12 Noise and Vibration of this EIAR will be followed, and the detailed measures contained within the CEMP will also be followed to minimise noise and vibration during construction. Where lighting is required, no lighting of natural watercourses will be permitted. **Habitat Degradation – Impacts on Water Quality Mitigation by Reduction** Detailed mitigation measures in relation to the protection of surface water during construction is detailed in Chapter 9 'Water' of this EIAR. In summary, the key mitigation measure during the construction phase is the avoidance of sensitive hydrological features where possible, by application of suitable buffer zones. A self-imposed buffer zone of 50m has been put in place for streams and rivers on the Project Site. All of the key infrastructure areas are located significantly away from the delineated 50m watercourse

	buffer zones with the exception of the upgrading of the existing watercourse crossing, new watercourse crossing and upgrades to existing site access tracks. Detailed control measures in relation to the protection of surface waters during construction are detailed in Section 9.5.2 of Chapter 9 of this EIAR and summarised in Section 6.4.2.1.5 above in relation to aquatic habitats and associated aquatic species.
Residual Effect Following Mitigation	Following the implementation of the mitigation measures described above, no significant negative effects on otter are anticipated at any geographic scale.

6.4.2.3.3 Assessment of Potential Effects on Other Non-volant Mammals

Table 6-32 Assessment of potential for effects on other non-volant mammals during construction

Description of Effect	**Habitat Loss/Fragmentation** Irish stoat, pine marten and red squirrel were all observed on a number of occasions within the Project Site. The Project Site provides both suitable foraging and breeding habitat for these species, particularly in the form of woodland, scrub and vegetated cutover bog. No breeding sites for these species were recorded within the footprint of the Proposed Project during the extensive ecological surveys undertaken at the Project Site. The construction of the Proposed Project will result in the loss of approximately 176ha of bog woodland and scrub as well as approximately 60.7ha of conifer forestry plantation within the Project Site, associated with the Proposed Project infrastructure footprint, bat felling buffers, as well as proposed enhancement areas. While no breeding sites for these species were recorded within or adjacent to the Proposed Project footprint, the loss of woodland and scrub habitats has the potential to result in loss and fragmentation of supporting habitat for these species. **Disturbance and Mortality** As outlined above, no breeding sites for these species were recorded within the construction footprint of the Proposed Project. Nonetheless there is potential for disturbance of these species utilising the habitats within the Project Site during construction and tree felling works. It is also acknowledged, as outlined in Section 6.3.4, that as these are mobile species there is potential for breeding sites to be established in proximity to works areas prior to commencement of construction works. In the event that new breeding sites were established within or near the Proposed Project infrastructure or clear-felling footprints, there is potential for disturbance/mortality to Irish stoat, pine marten and red squirrel through disturbance, mortality and destruction of breeding sites during construction.
Assessment of Significance Prior to Mitigation	**Habitat Loss/Fragmentation** While there will be loss of suitable supporting habitat, i.e. woodland, scrub, revegetated cutover bog, conifer plantation, for these species, the total area of these habitats to be lost to the Proposed Project is small relative to their overall cover within the Project Site. Furthermore, it is anticipated that over time large areas of the cutover bog within the Project Site, outside of the construction footprint, will develop into bog woodland and scrub through natural vegetation succession. As such, while this represents a **permanent slight negative effect**, due to the abundance of suitable habitat within the Project Site, the overall loss or fragmentation of habitat for these species is **not considered significant at any geographic scale**. **Disturbance and Mortality**

	Whilst no breeding sites for these species were recorded within the construction footprint of the Proposed Project, these species were observed within the Project Site. It is acknowledged that these are mobile species and therefore there is potential for breeding sites to be established in proximity to or within works areas prior to commencement of construction works. Any loss of or disturbance to breeding sites for these species has potential to result in direct mortality of individuals and this would be considered a **permanent, significant negative effect at the local geographic scale** in the absence of mitigation.
Mitigation	**Disturbance and Mortality Mitigation by Reduction** Due to the time that can elapse between the original surveys, any future planning consent and construction, a pre-commencement survey for non-volant mammals will be carried out in areas of suitable habitat within the Proposed Project infrastructure footprint, and all suitable habitat within 50m of the construction footprint and within woodland and forestry felling areas associated with bat felling buffers and proposed enhancement areas. Surveys will be undertaken by suitably qualified ecologists and in line with NatureScot[58] and TII (2008a) guidelines. Should active breeding sites (e.g. dreys, dens) be identified within areas of woodland or forestry to be felled, or areas of vegetation to be removed, the following mitigations and best practice procedures will be followed: › Buffer zones of 50 meters will be established around the breeding sites during the breeding seasons for these species (i.e. February to September inclusive) when vulnerable young are most likely to be found within breeding sites. No felling will be allowed to occur within these buffer zones during this period. › These exclusion zones will be clearly marked out and monitored by the ECoW for compliance. The ECoW will have the power to halt works if non-compliance is observed. › Activities in the vicinity of the protection zones such as noisy plant and machinery will cease at least two hours before sunset. › Where the breeding site requires exclusion, this will be undertaken outside the breeding season. A licence for exclusion will be applied for in consultation with the NPWS and the conditions of the licence will be implemented in full. › Felling works to be undertaken in October–January inclusive, outside the breeding season. Should any breeding sites be identified within the 50m buffer (i.e. outside the areas for direct impacts due to felling or vegetation removal), the following mitigations will be followed in order to ensure that these breeding sites are not disturbed: › Any breeding sites identified within the 50m buffer should be clearly marked out with an exclusion zone, and works/access through these areas avoided as much as possible. › Any works required within the 50m exclusion zone will be supervised by an ECoW. › Activities in the vicinity of the protection zones such as noisy plant and machinery will cease at least two hours before sunset. . The following general mitigation measures will also be implemented during the construction phase for the protection of all mammals: › Prior to any excavation or vegetation clearing works a Toolbox talk is to be given on the identification of protected mammal breeding and resting areas (inclusive of setts, holts, den, dreys etc). › Vigilance will be maintained during any vegetation clearance for signs of additional breeding sites not identified during pre-commencement survey.

[58] *NatureScot [online] Protected Species Advice for Developers – Red Squirrel. Available at: https://www.nature.scot/sites/default/files/2018-09/Species%20Planning%20Advice%20-%20red%20squirrel.pdf [Accessed 06/08/2026]*

	› An ECoW will be on site daily for all works in areas of suitable protected mammal habitat and/or in areas where abundant protected mammal signs were recorded during pre-commencement surveys. › Trees will be felled away from forested area to reduce collateral damage of the habitat. › During clearance of scrub or any vegetation, works will be halted immediately should protected mammal breeding locations be identified. The ECoW will be consulted and the above mitigations measures relating to breeding sites implemented as necessary. › Trenches must be covered at the end of each working day, or include a means of escape for any animal falling in. › Any temporarily exposed open pipe system should be capped in such a way as to prevent species such as pine marten gaining access, as may happen when contractors are off-site. **Enhancement Measures** As part of the biodiversity enhancements for the Project Site and as outlined in the BMP (see Appendix 6-5) 5 no. pine marten nest boxes will be installed in Glashabaun North, Glashabaun South, Ballydermot South and Barnaran Bogs, and 5 no. red squirrel boxes will be installed in Killina Bog, in areas in which signs and sightings of these species were recorded during baseline ecological surveys. These will be erected immediately post construction (to avoid disturbance to these species during construction). They will be erected along existing mature trees within these areas and in suitable locations where future tree felling (associated with forestry) will not occur. Further detail on the installation and monitoring of these nest boxes is outlined within the BMP, Appendix 6-5.
Residual Effect Following Mitigation	Following the incorporation of the mitigation and enhancement measures described above, no significant negative effects to non-volant mammals is anticipated at any geographic scale.

6.4.2.3.4 *Assessment of Potential Effects on Bats*

The impact assessment in relation to bats has been undertaken in accordance with NatureScot Guidance[59]. As per the NatureScot Guidance, wind farms present four potential risks to bats:

› Operational collision mortality, barotrauma and other injuries (refer to Section 6.4.3.2.1)
› Loss or damage to commuting and foraging habitat
› Loss of, or damage to, roosts
› Disturbance and displacement of individuals or populations

For each of these four risks, the detailed knowledge of bat distribution and activity within the Project Site has been utilised to predict the potential effects of the Proposed Project on bats. Potential risk of collision, barotrauma and other injuries relate to the operational phase and are presented in Section 6.4.3.2.1.

Table 6-33 Assessment of potential for effects on bats during construction

Description of Effect	**Loss of, or Damage to, Roosts** There were no confirmed roosts identified within the Project Site. Wind farm developments could have the potential to result in the loss of, or disturbance to, bat roosts through direct impacts to structures or trees supporting roosting bats, or through indirect effects such as noise, vibration and artificial lighting during construction and

[59] *NatureScot published Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: August 2021 (NatureScot, 2021).*

operation. No confirmed bat roosts or evidence of bat occupation were recorded within any inspected structure. Furthermore, no structures with bat roosting potential were identified within 285m of the Proposed Turbine locations within the Proposed Wind Farm infrastructure footprint.

A total of 13 no. structures were identified within the Proposed Wind Farm site and assessed for bat roosting potential. One building complex was assessed as having *Low* bat roost suitability due to the presence of a limited number of features that could potentially support individual roosting bats. However, this complex is located approximately 862 m from the nearest Proposed Turbine (i.e. Proposed Turbine 14) and there are no proposed plans to alter these buildings as part of the Proposed Project. All other structures were assessed as having no (*None*) roosting potential.

No roosts or evidence of roosting bats were identified at any of existing watercourse crossing structures within the Proposed Wind Farm site. The removal of the watercourse crossing structures will not result in the loss of roosting structures as they offer no potential roosting suitability. As such, watercourse crossing demolition and construction works are unlikely to result in significant disturbance to bats, and a derogation licence is not required.

Trees within the Proposed Wind Farm site comprise predominantly bog woodland and conifer forestry, which typically does not support suitable roosting features due to its uniform structure and management regime. Targeted inspections of non-conifer trees within works areas did not identify any potential roost features, and all trees affected by the Proposed Wind Farm were assessed as having no (*None*) roosting suitability and no roosts were identified. Additionally, no trees within the Proposed Enhancement Areas were found to have roosting potential, with all trees assessed as *Negligible.* Although a small amount of treeline removal is required to facilitate the Proposed Grid Connection at the Proposed Offsite Substation, no potential roost features or evidence of bat roosts were identified within these areas. Furthermore, no trees with PRFs or structures with roosting potential were identified along the Proposed Turbine Delivery Route accommodation areas or within areas of proposed treeline removal. As such, no impacts to tree roosts are anticipated within the Project Site.

The Proposed Grid Connection underground electrical cabling route will be installed predominantly within existing road infrastructure and will not directly affect any structures. Of the watercourse crossings assessed, 6 no. of the bridges/culverts had no (*None*) roosting potential, 3 no. had *Negligible* roosting potential, and 2 no. had *Low* roosting potential. No bats were identified roosting within the existing watercourse crossing structures, and no evidence of roosting was found during the surveys. All works along the Proposed Grid Connection watercourse crossings will be confined to the existing road structure or completed using temporary construction methods such as flatbed formation within the existing road or HDD offset from the crossing structures, with no requirement to remove or alter structures that could support bats. Additionally, temporary excavations associated with launch and receiver pits for HDD works will be set back from these structures. As such, no loss or damage to potential roosting structures is anticipated as a result of the Proposed Grid Connection underground electrical cabling route works. Any potential noise and vibration impacts would be short-term in nature and not likely to be out of character with that associated with existing traffic conditions to which any roosting bats would be accustomed. Therefore, the work is unlikely to result in significant disturbance to bats and a derogation licence is not required.

Loss or Damage to Commuting and Foraging Habitat

Wind farm developments have the potential to result in the loss or modification of habitats used by bats for commuting and foraging, primarily during the construction phase. These impacts may arise through vegetation removal, habitat fragmentation and localised disturbance associated with turbine bases, crane hardstands, access tracks, internal cabling, grid connection underground cabling and Proposed Turbine Delivery Route accommodation works. As a result of the construction of the Proposed Project, there will be a loss of approximately 131.7ha of Scrub (WS1) and scrub mosaic habitats, 44.3ha of

	Bog woodland (WN7) and 60.7ha of Conifer plantation (WD4), as well as 180m of treeline habitats. Direct habitat loss associated with the Proposed Project will primarily affect areas of peatland habitats of *Negligible* to *Low* suitability. These habitats do not represent key commuting or foraging features for bats and are widely available within the surrounding landscape. As such, the loss of these habitats is not expected to result in a significant reduction in foraging resources or connectivity for the local bat population. The removal scrub and bog woodland is not anticipated to result in the loss of high-value bat commuting or foraging habitat. Any localised loss of plantation edge habitat will be limited in extent and will not result in fragmentation at the site scale. Opening up previously closed canopy forestry also has the potential to increase the extent of forestry edge habitat which is known to support both foraging and commuting. Habitats and linear features associated with the Proposed Grid Connection infrastructure footprint including Treelines (WL2) and Scrub (WS1), were assessed as offering *Moderate* suitability for commuting and foraging bats, due to their connectivity with the wider landscape and the presence of linear vegetation providing navigational structure and shelter. The loss of a short section of treeline will be required as a result of the construction of Site Entrance 7M and Proposed Temporary Construction Compound 10 at the location of the Proposed Offsite Substation during construction. Additional short sections of treeline will require removal within the Proposed Turbine Delivery Route accommodation areas and at Proposed Temporary Construction Compound 2 within the Proposed Wind Farm site. As such, there will be a loss of 180m of treelines as a result of the Proposed Project, which constitutes a small loss of suitable commuting and foraging habitat.
	Disturbance and Displacement of Individuals or Populations Displacement may occur where bats avoid areas due to disturbance associated with construction activities, operational turbine presence, noise, vibration, artificial lighting, or the loss and alteration of commuting and foraging habitat. This can reduce the use of otherwise suitable habitat within the Project Site by individual bats and, where extensive, has the potential to affect local bat populations. Potential sources of displacement during construction include noise and vibration associated with turbine and infrastructure construction, vegetation clearance, and temporary disturbance associated with construction activities. Construction activities associated with the Proposed Project will not occur in proximity to any structures or trees with any known roosts. Given the lack of roosting suitability and potential roosting features present in structures and trees disturbance effects on roosting bats are not anticipated. Temporary disturbance may also arise from construction of the Proposed Grid Connection underground electrical cabling route including HDD and flatbed formations over and under at watercourse crossings. These activities will be localised and temporary in nature and will not result in fragmentation of habitat or a substantial reduction in habitat availability. No bat roosts were identified at, or in the immediate vicinity of, the Proposed Grid Connection underground electrical cabling route water crossing locations. Any short-term noise and vibration associated with these works are unlikely to differ significantly from existing background conditions such as road traffic to which bats in the area are already accustomed. Consequently, any construction-related displacement of individual bats is expected to be temporary in duration and highly localised.
Assessment of Significance Prior to Mitigation	**Loss of, or Damage to, Roosts** **No potential for significant effect** at any geographic scale with regard to the loss of, or damage to, roosting habitat as a result of the Proposed Project is anticipated.
	Loss or Damage to Commuting and Foraging Habitat

	The removal of areas of bog woodland, conifer plantation, scrub and treeline habitats to facilitate the Proposed Project has potential to have a **permanent, significant negative effect at significant effect** on bat populations at **the local geographic scale** due to loss and fragmentation of commuting and foraging habitat, and a reduction in landscape connectivity.
	Disturbance and 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 Project Site is predominantly characterised by habitats of *Low* to *Moderate* suitability for bats. Given the temporary and localised nature of these effects, and the availability of alternative habitat within the Project Site and surrounding landscape, the potential for displacement of individuals or populations is considered to be a **short-term, slight negative effect which is not significant at any geographic scale**.
Mitigation and Offsetting	**Offsetting Loss or Damage to Commuting and Foraging Habitat through Native Tree Planting** A BMP has been prepared for the Proposed Project and is included as Appendix 6-5. As part of the BMP, it is proposed to plant a total of 45.3ha of native trees which over time will develop into native scrub and woodland habitat. The proposed replanting areas are located in five blocks (labelled A-E, see Figure 6-5-2 of BMP, Appendix 6-5) located in Ballydermot North Bog. In Woodland Block B, the existing conifer plantation will be felled and replaced with native species. Woodland planting is proposed in areas classified as dry and wet cutaway within the Draft Rehabilitation Plans and are not characterised by deep peat. The planting scheme in all areas will comprise native tree species of various age structures and of local provenance, including downy birch (*Betula pubescens*), rowan (*Sorbus aucuparia*), scots pine (*Pinus sylvestris*), pedunculate oak (*Quercus robur*), holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*), alder (*Alnus glutinosa*), grey willow (*Salix cinerea*) and alder buckthorn (*Frangula alnus*). This will result in a net gain of scrub and woodland habitat within the Project Site, and therefore commuting and foraging habitat for bats. The BMP 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.
	Displacement of Individuals or Populations Mitigation by Reduction In relation to 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 machinery will be turned off when not in use and all plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001, as amended). Methodology and mitigation outlined in Chapter 12 Noise and Vibration of this EIAR will be followed to minimise noise and vibration during construction. › During the construction phase, lighting requirements will be temporary and limited to areas where required for health, safety and security purposes, including temporary compounds and works associated with the Proposed Onsite Substation and Proposed Offsite Substation. Where works are required during hours of darkness, lighting will be directed away from retained woodland, treelines, hedgerows, and bat commuting or foraging habitats. Directional accessories, including baffles, hoods, cowls and louvres, will be used where appropriate to reduce light spill and focus illumination only where required. The same restrictions will apply during decommissioning.

	› In addition to the above, the Proposed Project design has sought to minimise the potential for displacement through the siting of Proposed Turbines within predominantly open habitats and the retention of key linear features where practicable.
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.

6.4.2.3.5 Assessment of Potential Effects on Marsh Fritillary

Table 6-34 Assessment of potential for effects on marsh fritillary during construction

Description of Effect	**Disturbance and Mortality** The Proposed Project has been designed, through an iterative design process, to avoid the key area of the core breeding population of marsh fritillary within the Project Site, located in Lullybeg Butterfly Reserve And the habitat corridor to the west, linking to Lullymore West Nature Reserve which is outside the Proposed Wind Farm site. Lullybeg Butterfly Reserve is located over 200m from the nearest Proposed Turbine hardstand (i.e. Proposed Turbine 37) and 150m from the nearest proposed infrastructure, the underground electrical cable associated with Proposed Turbine 37, and as such there is no potential for significant direct impacts on this core breeding population. However, two larval webs were recorded within the infrastructure footprint of the Proposed Project during the surveys undertaken across 2024 and 2025, one at the location of the Proposed Onsite Substation access road, and a second to the west of Proposed Turbine 17. Three webs were located adjacent to (within 10m of) the Proposed Project infrastructure footprint, one to the west of Proposed Turbine 17 and two to the southeast of Proposed Turbine 41. A single web was also identified within the Proposed Enhancement Area at Lodge Bog, with seven webs located within suitable marsh fritillary located along the margins of bog woodland which borders the Proposed Enhancement Area to the south. Due to the abundance of marsh fritillary within the Proposed Wind Farm site and the wide spread of identified larval webs (i.e. within Ballydermot North, Ballydermot South, Barnaran, Blackriver, Glashabaun North, Glashabaun South, Lodge, Lullybeg, Lullymore and Ticknevin Bogs), all areas of suitable habitat for marsh fritillary are considered to be potential breeding habitat for the species. As such, in the absence of mitigation, there is potential for direct loss of marsh fritillary larval webs where they occur within or adjacent to the construction footprint of the Proposed Project. **Direct Habitat Loss** In addition to the above, significant areas of suitable habitat were recorded throughout the Project Site where no marsh fritillary larval webs were recorded. The Proposed Project will result in the loss of approximately 0.67ha of habitat which was considered to be suitable for marsh fritillary (i.e. 0.26ha of habitat classified as *Good Condition* and 0.41ha of habitat classified as *Suitable (Under-grazed)*. This could result in loss of and or fragmentation of suitable habitat for the species within the Project Site. **Habitat Degradation – Dust Deposition** In the absence of mitigation, construction work adjacent to existing breeding areas has the potential to indirectly impact marsh fritillary. Due to the large scale of the Proposed Project and the nature of the works within the Proposed Wind Farm with the potential to generate dust, 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 and Mortality**

	Taking a precautionary approach, in the absence of mitigation, the potential for direct loss of marsh fritillary larval webs would constitute a **permanent, slight negative effect** on a population of County Importance. As outlined above, there will be no direct impacts on the population of National Importance located within Lullybeg Butterfly Reserve. **Direct Habitat Loss** Given that the highest quality existing breeding habitat for marsh fritillary has been avoided, i.e., Lullybeg Butterfly Reserve, and the Proposed Project infrastructure footprint contains only small areas of fragmented habitat which are used opportunistically, it is considered that there is no potential for significant loss of marsh fritillary habitat at the National or County scales. It is also acknowledged that, as identified within the desk study (see Section 6.3.1.11.1), additional areas of marsh fritillary habitat are present within the Proposed Wind Farm site, outside the areas surveyed. However, given the requirements of marsh fritillary populations on a small landscape scale due their narrow range where they occur, the permanent loss of 0.67ha of fragmented potential marsh fritillary habitat is considered, on a precautionary basis, to have the potential to be a **permanent significant negative effect at the local scale**. **Habitat Degradation – Dust Deposition** As per Chapter 10 Air Quality of this EIAR, per the IAQM guidance document '*Guidance on the Assessment of Dust from Demolition and Construction',* marsh fritillary and their breeding habitats are considered a 'High' sensitivity receptor. Taking a precautionary approach, in the absence of mitigation the potential for indirect effects on this species due to dust deposition as a result of adjacent construction works has the potential to be a **short-term, slight negative effect which has the potential to be significant at the local scale**.
Mitigation and Offsetting	**Mitigation by Avoidance** The Proposed Project has been designed, through an iterative design process, to avoid suitable marsh fritillary habitat where possible, based on surveys carried out in 2024 and 2025. The Proposed Project layout was thereby altered where possible to avoid loss of high-quality habitats and key breeding habitat for marsh fritillary, refer to Section 3.5.2.3 in Chapter 3 for details on Proposed Project design evolution. Consequently, all aspects of the Proposed Project are located over 150m from Lullybeg Nature Reserve and over 60m from the nearest key supporting habitat outside the reserve. **Disturbance and Mortality Mitigation by Reduction** Construction and felling/scrub clearance works will occur in areas overlapping as well as in proximity to identified marsh fritillary-populations on the Project Site. The following mitigations will be applied during the construction phase: › A pre-commencement survey for marsh fritillary suitable habitat will be undertaken within a 50m buffer of the Proposed Project infrastructure footprint, and within the Proposed Enhancement Areas, and all areas of suitable habitat present at that time will be mapped. This survey will be undertaken during the optimal vegetation growing season (i.e. May to September) in order to accurately map areas containing devil's-bit scabious. › A pre-commencement larval web survey will then be undertaken within these mapped areas of suitable habitat at the optimal time of year in advance of construction (in line with 2008a). › 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 and the ZoI of the Proposed Project. 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 6-6.

- ECoW supervision will be required for construction of components near existing breeding areas.
- 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 Project infrastructure to where the suitable habitat occurs.
- Where suitable habitat occurs within the Proposed Enhancement Areas such as Lodge Bog, any initial scrub removal required within the areas of suitable marsh fritillary habitat will be undertaken by hand and under supervision of a suitably qualified ecologist in order to prevent significant disturbance to larval webs.

Direct Habitat Loss Mitigation by Reduction

In addition to the areas within the Proposed Project infrastructure footprint, as outlined in the preceding section, some areas of suitable marsh fritillary habitat are located within 5m of the construction footprint, and are therefore at risk of being lost or damaged due to realistic tracking of vehicles outside the footprint as drawn. Therefore, on a precautionary basis, following the pre-commencement survey during which marsh fritillary suitable habitat will be mapped, all areas where marsh fritillary suitable habitat occurs outside of the construction footprint but within a 5m buffer of the footprint at the commencement of construction will be fenced off and no felling or tracking of machinery through these areas (outside of the construction footprint as drawn) will be permitted. These fences will be regularly inspected by the ECoW to ensure compliance.

Offsetting through Marsh Fritillary Habitat Enhancement

The BMP (Appendix 6-5) provides for the enhancement of 11.6ha of habitat, which currently contains pockets of suitable marsh fritillary breeding habitat. 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 Project Site. Measures proposed include scrub management, plug planting of devil's-bit scabious plants and ongoing monitoring of marsh fritillary populations and habitat condition in these areas (full details are included in the BMP, Appendix 6-5).

Additionally, as outlined in the BMP, it is proposed to create and enhance approximately 15.6ha of pollinator foraging habitat through the Proposed Wind Farm site, alongside proposed access roads, amenity tracks as well as along the decommissioned railways outside of the Proposed Project infrastructure footprint. Following construction of the internal roads at these locations, subsoil and peat material comprising calcareous mixed gravels and till that are excavated from within the Proposed Project footprint, and elsewhere where the calcareous substrate of the decommissioned railways will be removed, this material will be used to reinstate ten meters either side of the infrastructure corridor. Such material will facilitate the establishment of calcareous plant species which have been recorded elsewhere along old railway tracks and spoil heaps within the Proposed Wind Farm site. The establishment of such flower-rich vegetation will benefit pollinators by providing enhanced foraging opportunities and providing continuous habitat connectivity to other areas of flower rich grassland, e.g. The Long Derries. The establishment of floral communities along these proposed corridors will benefit pollinator species generally as well as providing a food source for adult marsh fritillary. In combination with the surrounding peat substrate, these areas can also create a suitable substrate for the natural colonisation of devils-bit scabious in certain conditions and thus marsh fritillary breeding habitat. The locations of these corridors have also been designed with the aim of providing connectivity between the existing metapopulations of marsh fritillary within the Project Site, with the aim of aiding dispersal of the species across existing suitable habitat patches, as well as new areas which may develop in the future through natural succession.

The proposed habitat enhancement measures outlined above and within the BMP (Appendix 6-5) will not only offset any potential loss of habitat but will also, over time,

	result in an increase in the area of suitable habitat for marsh fritillary within the Project Site and improve the connectivity between suitable habitat. **Habitat Degradation Mitigation by Reduction** As outlined in Section 6.4.2.1.1 above in relation to potential dust impacts on raised bog habitats, a range of mitigation measures to manage dust generation during the construction phase have been prescribed in order to protect the habitats and species within the Project Site from significant dust-related effects. All mitigation measures outlined in Section 6.4.2.1.2 above will apply, which will also serve to protect marsh fritillary within the Project Site from potential impacts resulting from dust deposition. Further detail is provided in Chapter 10 Air Quality of this EIAR.
Residual Effect Following Mitigation	Following the implementation of the mitigation measures described above, no significant negative effects on marsh fritillary are anticipated at any geographic scale.

6.4.2.3.6 Assessment of Potential Effects on Other Pollinators

Table 6-35 Assessment of potential for effects on other pollinators during construction

Description of Effect	The habitats within the Project Site, particularly those within the Proposed Wind Farm site, including the revegetating cutover bog habitats, uncut raised bog, areas of grassland, scrub and woodland provide feeding, sheltering and breeding habitat for a range of pollinating insects including bees, butterflies, hoverflies and daytime and nighttime flying moths. A variety of pollinating insect species, including a number of rare moth and butterfly species, i.e. forester moth (*Adscita statices,* listed as Endangered), large heath butterfly (*Coenonympha tullia* listed as vulnerable) and the Suspected moth (*Parastichtis suspecta*), which up until recently was considered regionally extinct, were recorded with the Proposed Wind Farm site during the dedicated surveys undertaken. In addition, Lullybeg Butterfly Reserve, a known area of importance for butterflies and moths managed by Butterfly Conservation Ireland, is also present within the Proposed Project Site. **Direct Habitat Loss and Alteration** The Proposed Project will result in the loss of areas of the habitats mentioned above, including *Calluna* dominated communities, poor fen and flush, wet and dry grassland, scrub and woodland, within the Proposed Wind Farm site. There is therefore potential for loss of and/or fragmentation of supporting habitat and floral resources for pollinator species during construction phase activities including vegetation clearance, groundworks and vehicle movements.
Assessment of Significance Prior to Mitigation	**Direct Habitat Loss and Alteration** The overall footprint of the Proposed Project (and the areas of cutover and associated habitats to be lost to facilitate the construction of the Proposed Project) represents approximately 2.9% of the overall land area within the Project Site. While there will be loss of suitable supporting habitat for pollinating insects (i.e. loss of small areas of grassland and loss of revegetating cutover bog, scrub and woodland), the areas of these habitats to be lost represents a relatively small fraction of their overall cover within the Project site (refer to Table 6-23 above) and extensive areas of these habitats, including cutover bog habitats and grassland, woodland and scrub will remain within the Project Site post construction as they lie outside of the footprint of the Proposed Project and will not be lost to facilitate its construction. Furthermore, there will be no works within or adjacent to and no loss of habitat within the Lullybeg Butterfly Reserve, with the closest infrastructure to this area being approximately 200m away. In relation to the rarer species, large heath butterfly is known to be associated with wet bogs, with the larval stage being largely dependent on hare's tail cottongrass and the adults

	foraging on cross-leaved heath. There will be no loss of uncut raised bog to facilitate he Proposed Project, with the only works in this habitat being the installation of a floating amenity boardwalk. While there will be loss of cutover bog habitats, areas of which provide suitable habitat for this species, as outlined above and in Table 6-25 above, the overall area of revegetating cutover bog to be lost is a relatively small proportion (i.e. 5.8%) of its overall cover within the Project Site and extensive areas of this habitat will remain within the Project Site following construction of the Proposed Project. Similarly, for the Suspected moth, the larval stage of which is dependent on birch and willow woodland, while there will be loss of suitable habitat for the species, the overall area of woodland to be lost represents a relatively small proportion (i.e. 7.0%) of the overall cover of this habitat within the Project Site, with extensive areas of the habitat present outside of the construction footprint. Forester moth, while listed as endangered is also a generalist species and is found in a range of habitats including uncultivated damp grassland, fens and coastal wetland margins. The larvae feed on common sorrel and sheep's sorrel, with adults known to feed on the nectar of a number of species including red clover, buttercups, marsh thistle, cuckoo flower, meadow thistle white clover, devil's bit scabious amongst others. Given the extensive areas of suitable habitat for this species that will remain in the Project Site following construction of the Proposed Project, and given the generalist nature of this species, no significant loss of suitable habitat for this species in anticipated. Given the limited spatial extent of the Proposed Project infrastructure footprint relative to the overall area of available suitable habitat for pollinating insects in the Project Site, it is not anticipated that the Proposed Project will result in significant loss of supporting habitat for pollinating insect communities. Prior to mitigation, the potential impact on pollinator communities is assessed as a **permanent slight negative effect, which is not significant at any geographic scale**.
Mitigation and Offsetting	**Offsetting by Creation of Pollinator-friendly Habitats** While no significant effects on pollinator communities are anticipated, the BMP (Appendix 6-5) contains measures for the creation and enhancement of areas of suitable habitat for pollinating insects. › As outlined in the BMP it is proposed to encourage the establishment of two linear areas of flower rich grassy verge along the proposed internal site access road corridor (refer to Figure 6-5-2 of the BMP) in order to provide suitable foraging habitat and improve overall habitat connectivity for pollinating insects on the Proposed Wind Farm site. Sub peat material comprising calcareous mixed gravels and till will be used during site reinstatement along the proposed internal site access road corridor, ten meters either side of the infrastructure corridor, to encourage the establishment of a flower rich verge from the existing seedbank. This will benefit pollinators by providing flower rich foraging resources and improved habitat connectivity. › It is also proposed to use excavated peat from the construction of the Proposed Project to construct embankments/berms within the two areas proposed for enhancement of pollinator foraging habitat. These berms will be allowed to become recolonised by vegetation naturally to ensure the local seedbank is preserved and provide additional foraging resources for pollinating insects. However, it is also proposed to maintain the south-facing embankment slopes free of vegetation to provide bare soil for nesting solitary bee species. › In addition to the above, the habitat enhancement measures targeted towards marsh fritillary (detailed in Table 6-34 above) will also benefit other pollinating insect species within the Project Site by providing floral feeding resources. › In order to monitor the success of the establishment of suitable foraging habitat for pollinators and to determine usage of these areas by pollinating insects three separate 1km transects will be walked. These will be undertaken on three occasions – once in June, July and August in Years 1, 3, 5, 7, 10, 15 and 20 in order to capture seasonal variability in pollinator communities. The transect routes will be designed to cover representative areas of habitats suitable for pollinator species – i.e. areas of

	species/flower rich grassland, open vegetated peatland and woodland edge habitat. During these transect walks all bees, butterflies/moths and hoverflies observed will be recorded. **Offsetting through Native Tree Planting** In addition, as outlined in Table 6-26 above in relation to bog woodland and scrub, it is proposed to plant a total of 45.3ha of native trees which over time will develop into native scrub and woodland habitat. This tree planting will also serve to offset the loss of habitat for pollinating species, including the Suspected moth, which utilise bog and woodland habitats. As outlined within the BMP (Appendix 6-5) and in Table 6-26 above, the proposed replanting areas are located in five blocks (labelled A-E, see Figure 6-5-2 of BMP, Appendix 6-5) located in Ballydermot North Bog. The planting scheme in all areas will comprise native tree species of various age structures and of local provenance, including downy birch (*Betula pubescens*), rowan (*Sorbus aucuparia*), scots pine (*Pinus sylvestris*), pedunculate oak (*Quercus robur*), holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*), alder (*Alnus glutinosa*), grey willow (*Salix cinerea*) and alder buckthorn (*Frangula alnus*). Planting proposals will be implemented within a 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.
Residual Effect Following Mitigation	Following implementation of the mitigation measures described above, no significant residual effects on pollinators and moths are anticipated at any geographic scale.

6.4.3 Likely Significant Effects During Operational Phase

6.4.3.1 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 Proposed Project includes for the creation of 55.4 km of amenity tracks, however these will be formed from a combination of the proposed internal site access road network and dedicated amenity tracks 3m in width, and as such will provide ample space for pedestrians, cyclists and equestrians and will not encourage any users to travel off-track. Therefore, no significant effects on habitats as a result of proposed amenity use during the operational phase are anticipated.

During the operational phase of the Proposed Project, the measures contained within the Draft Rehabilitation Plans as required under IPC Licence will be implemented throughout the rest of the Proposed Wind Farm site, outside of the infrastructure footprint. It is anticipated that the implementation of the Draft Rehabilitation Plans will result in an improvement in the quality of peatland habitats within the Project Site and will also likely result in an increase in the cover of scrub and woodland habitats throughout drier parts of the Project Site. The future environmental trends in this regard are described fully in Section 6.3.4 above. Cumulative effects in this regard are addressed in Section 6.5.1.3.1 below.

The BMP which has been prepared for the Proposed Project (included as Appendix 6-5) includes for enhancement of 263.8ha of cutover bog, management and enhancement of 11.6ha of suitable marsh fritillary habitat, creation of approximately 45.3ha native woodland habitat and creation of 15.6ha of pollinator foraging habitats, as well as the management of approximately 339ha of Lodge Bog and the reversion of approximately 58ha of conifer plantation to peatland habitats for breeding and wintering bird species, which will also serve to benefit the habitats in these areas.

The habitat enhancement measures within the BMP 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 6-36.

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

Table 6-36 Assessment of potential effects on aquatic habitats and associated aquatic species during operation

Description of Effect	The potential effects on water quality as a result of the operational phase of the Proposed Project are fully described in Chapter 9 'Water' of this EIAR and are described here in relation specifically to ecology. This section assesses the potential for likely significant effects on surface watercourses and associated aquatic faunal species, including, lamprey, white-clawed crayfish, European eel, salmonids, coarse fish, and other aquatic species identified during the desk study and dedicated aquatic surveys and likely to occur within or downstream of the Project Site. **Potential Effects from the Progressive Replacement of Natural Surface with Lower Permeability Surfaces** Progressive replacement of the peat or vegetated surface with lower permeability surfaces could potentially result in an increase in the proportion of surface water reaching the surface water drainage network. This could potentially increase discharge rates from the Project Site and increase flood risk downstream of the Proposed Project. In reality, the internal roads at the bogs comprising the Proposed Wind Farm and the Proposed Onsite Substation will have a higher permeability than the existing peat. However, in the baseline scenario runoff rates are high as a result of the prevailing peat soils (96% runoff). The assessed footprint comprises Proposed Turbine foundations and hardstandings, internal roads, amenity tracks and carparks, site entrances, Proposed Onsite Substation, 2 no. met mast footprints and the relay mast footprint. 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 Suspended Solids Entrainment in 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 increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. During such maintenance works there is also a small risk associated with 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 the Release of Cement-Based Products** During the operational phase, the placed concrete in turbine bases and foundations will remain in contact with the surrounding ground and groundwater and therefore have the potential to cause minor localised effects on groundwater quality through the release of

	cement-based products over time. However, due to the limited surface area of exposed concrete, the anoxic conditions below ground, and the high rate of dilution from the wider groundwater system relative to the small volumes of groundwater that would come in contact with the concrete, the potential for impacts considered to be imperceptible. **Potential Effects from the Release of Wastewater** During the operational phase the wind farm control buildings, and the Proposed Onsite Substation and the Proposed Offsite Substation compounds will include staff welfare facilities. The release of untreated wastewater can have a negative effect on water quality in the receiving watercourses and can also negatively affect groundwater quality.
Assessment of Significance Prior to Mitigation	As outlined in Section 9.5.3.1 of this EIAR, the emplacement of the Proposed Project infrastructure footprint within the Proposed Wind Farm site could result in a potential increase of approximately 0.12%.in the average daily/monthly volume of runoff from the bogs associated with the Proposed Wind Farm and the Proposed Onsite Substation in comparison to the baseline pre-development site runoff conditions. Therefore, in the absence of mitigation, the increase in runoff from the bogs will be negligible and there is no potential for significant effects in this regard. 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 aquatic habitats and associated aquatic species 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 Proposed Wind Farm site has been fully mitigated through appropriate drainage design and mitigation as fully described in Chapter 9 of this EIAR.
Residual Effect Following Mitigation	There will be no significant residual effect on aquatic habitats or associated aquatic species as a result of the operational phase of the Proposed Project.

6.4.3.2 Effects on Protected Fauna During Operation

There is no potential for significant negative effects on non-volant terrestrial fauna (otter, badger, pine marten, red squirrel), herptiles, or marsh fritillary during the operational phase of the Proposed Project. There will be no additional land take and therefore no loss of supporting habitat for these species.

During the operational phase, there will be ongoing servicing and maintenance works within the Proposed Wind Farm site, however these works will not add significantly to the background levels of disturbance currently occurring in the area. The temporary disturbance of fauna is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs, and as such no significant effects are anticipated in this regard.

Consideration has been given to the proposed amenity tracks within the Proposed Wind Farm site. The proposed amenity tracks will result in an increase in footfall within the Proposed Wind Farm site, comprising several waymarked trails of different lengths along the proposed internal roads and proposed dedicated amenity track, ranging in distance, which will accommodate walkers and other amenity users; a dedicated equestrian track will also be supplied as part of the Proposed Wind Farm. As outlined in Chapter 4 of this EIAR, the amenity tracks have been designed to be looped and tie in

with the proposed internal site access road network to minimise disturbance to wildlife and the peatland. It is not anticipated that amenity volumes will significantly add to background levels of disturbance currently occurring in the area. Additionally, in relation to crepuscular and largely nocturnal species such as otter, pine marten and badger, as it is anticipated that the majority of use will be during daylight hours, there is no potential for significant disturbance of these species as a result of the proposed amenity tracks. Additionally, specifically in relation to otter, the NPWS (2009) Threat Response Plan for Otter acknowledges that "*Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure".*

The BMP that has been prepared for the Proposed Project and is in Appendix 6-5 provides for enhancement of 263.8ha of cutover bog, management and enhancement of 11.6ha of suitable marsh fritillary habitat, creation of approximately 45.3ha native woodland habitat and creation of 15.6ha of pollinator foraging habitats. These measures also have the potential to provide suitable habitat for local faunal species. During the operational phase, there will also be ongoing maintenance works within a number of these Proposed Enhancement Areas, as well as within the proposed bat buffers.

The majority of vegetation removal required within the Proposed Enhancement Areas and turbine bat buffers will occur at or prior to the construction phase and as such have been fully considered in Section 6.4.2.3 above. While machinery may be required for the maintenance of bat buffers and the control of scrub, conifers and vegetation height within the proposed Lodge Bog Enhancement and Killina Bog Offsetting Areas (see BMP, Appendix 6-5), these works will be infrequent, will not require any groundworks and will be small scale following the initial works prior to the construction phase. As such there is no potential for significant habitat loss or disturbance to mammals as a result of these works. Additionally, as these works will involve the removal of scrub and conifers, and the maintenance of a short sward height for breeding and wintering waders, there is very low potential for loss of suitable habitat for or disturbance of marsh fritillary, as, by definition, the habitats in question present and will continue to present through the maintenance of a short (7-10cm) sward, sub-optimal habitat conditions for this species (per NBDC *Habitat Condition Assessment for Marsh Fritillary*). Therefore, there is no potential for significant effects on marsh fritillary due to habitat loss or mortality during vegetation management in the Proposed Enhancement Areas during the operational phase.

During the operational phase of the Proposed Project, the measures contained within the Draft Rehabilitation Plans will be implemented throughout the Proposed Wind Farm site outside of the infrastructure footprint. Cumulative effects in this regard are addressed in Section 6.5.1.3.1 below. It is anticipated that the implementation of the Draft Rehabilitation Plans will result in an improvement in the quality of peatland habitats within the Project Site and will also likely result in an increase in the cover of scrub and woodland habitats throughout drier parts of the Project Site. As outlined in Section 6.3.4.1 above, this will create additional suitable habitat for a number of terrestrial faunal species identified as KERs within this Biodiversity Chapter. It will also create enhanced foraging habitats and additional habitat edges for commuting and foraging bat species. However, it is not considered that this will result in an increase in potential collision mortality for bat species due to the implementation and maintenance of bat felling buffers throughout the operational lifespan of the Proposed Project (see Bat Report, Appendix 6-2, for further information on bat felling buffers). As such, these habitats will remain outside the turbine risk zone for bat collisions.

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 6.4.3.1.1 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.

6.4.3.2.1 Assessment of Potential Effects on Bats

Potential effects on bats during operation relate primarily to collision mortality, barotrauma and other turbine-related injuries. These effects were assessed with reference to baseline bat activity, species-specific collision vulnerability, site-risk characteristics and the proposed operational mitigation strategy. This is fully described within the Bat Report, included as Appendix 6-2 to this Biodiversity Chapter, and summarised in the table below.

Table 6-37 Assessment of potential for effects on bats during operation

Description of Effect	The following high collision risk species were recorded during the dedicated surveys: › Leisler's bat › Common pipistrelle › Soprano pipistrelle › Nathusius' pipistrelle The following low collision risk species were also recorded: › Myotis spp. › Brown long-eared 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 *Medium* site risk in accordance with NatureScot (2021). The habitat risk is classified as low due to the absence of any identified roosts within the Project Site, and while the habitats within the vicinity of the Proposed Wind Farm and Proposed Onsite Substation offer suitable foraging and commuting opportunities for bats, particularly along treelines, hedgerows, woodland edges and linear features, the Project Site does not represent a habitat mosaic of particularly high quality. The Proposed Project is classified as a large-scale development, resulting in an overall Medium site risk score for collisions. 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. Typical site-level collision risk for high-risk bat species at the Proposed Wind Farm was assessed as *Low*, with the exception of Leisler's bat which showed *Medium* typical risk in summer and common pipistrelle which showed *Medium* typical risk in summer and autumn. At peak activity levels, the risk assessment reached *Medium* for Leisler's bat, common pipistrelle, Nathusius' pipistrelle and soprano pipistrelle Detailed detector-level analysis identified four locations that recorded *High* median activity for high collision-risk species. Most high activity records occurred in summer, with four detectors (D01, D02, D05, and D06) exceeding high activity thresholds for common pipistrelle, soprano pipistrelle and Leisler's bat (see Bat Report, Appendix 6-2 for survey locations). In summer, D01 and D02 recorded high Leisler's activity and D05 and D06 recorded high common pipistrelle and soprano pipistrelle activity, while in autumn, D06 exceeded the high activity threshold for common pipistrelle. These findings indicate localised peaks in bat activity along edge habitats such as hedgerows, particularly at D05 and D06, both of which were situated adjacent to improved grassland and linear features. Walked transects also recorded higher Leisler's bat activity during summer, consistent with seasonal trends for this species. 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 *Myotis* spp. or brown long-eared bat, as these species are considered to be at low collision risk and were recorded at low activity levels. While the overall site risk is classified as *Medium* and elevated activity is limited to locations associated with localised edge habitats, Leisler's bat, common pipistrelle, soprano pipistrelle and Nathusius' pipistrelle are considered to be at higher collision risk due to their ecological traits and use of the Project Site. In accordance with Bat Conservation Ireland (2026) guidance, *Medium* risk at peak activity levels triggers the requirement for site-specific mitigation. In the absence of mitigation, there is potential for collision mortality to result in negative effects on Leisler's bat, common pipistrelle, soprano pipistrelle and Nathusius' pipistrelle at a local geographic scale. On this basis, the potential operational effect is considered to be a **long-term significant negative effect at a local geographic scale** 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 Project Site. These are fully outlined within the Bat Report (see Appendix 6-2) and 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 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 BMP, including approximately 45.3ha of native woodland planting. › 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. › A bat monitoring and mitigation strategy has also been devised in line with Appendix 5 of NatureScot (2021). Should Year 1 post-construction monitoring identify significant bat fatalities, a curtailment protocol will be implemented. This would be tailored to site-specific seasonal and species-specific patterns and may include curtailment based on wind speed thresholds, weather-based triggers, and increased buffer zones as required.
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.

6.4.4 Likely Significant Effects During Decommissioning Phase

Decommissioning is fully described in Chapter 4 (Section 4.12). 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 Proposed Turbines 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 Proposed Turbines will be disassembled in the reverse order to how they were erected. The Proposed Turbines will be disassembled with a similar model of crane that was used for their erection. The Proposed Turbines will likely be removed from the Proposed Wind Farm using the same transport methodology adopted for delivery to the Proposed Wind Farm initially. The Proposed Turbines materials will be transferred to a suitable recycling or recovery facility.

The underground electrical cabling connecting the Proposed Turbines to the Proposed Onsite Substation will be removed from the cable ducts and any direct buried cables will be cut and left in situ. 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.

All above-ground turbine components would be separated and removed from the Project Site for recycling. Turbine foundations would remain in place underground. Leaving the turbine foundations in situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in unnecessary environmental emissions such as noise, dust and/or vibration.

The Project Site internal access roads could be in use for purposes other than the operation of the Proposed Project by the time the decommissioning of the Proposed Wind Farm is to be considered, and therefore it may be more appropriate to leave the Project Site roads in situ for future use. It is envisaged that the roads will be widely utilised for amenity purposes by the local community.

Upon decommissioning of the Proposed Wind Farm, the Proposed Grid Connection including all the associated transmission infrastructure i.e. substations, underground cables, overhead line cabling, steel masts, Proposed Onsite Substation and Proposed Offsite Substation will form part of the national grid infrastructure and operate in perpetuity as part of Transmission System and Transmission Asset Owner (TAO) assets and will remain in-situ. The assets transferred to the TAO will not form part of the decommissioning works.

A Decommissioning Plan has been prepared (Appendix 4-7), the detail of which will be agreed with the Local Authority prior to any decommissioning. 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 Planning Authority at that time.

During decommissioning, it may be possible to reverse or at least reduce some of the potential impacts caused during construction by rehabilitating construction areas such as turbine bases, hard standing areas and peat and spoil areas. As outlined above, this will be done by covering with peatland vegetation/scraw or poorly humified peat to encourage vegetation growth and reduce run-off and sedimentation. However, as noted in the Scottish Natural Heritage (SNH) report *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 Project, 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 other terrestrial 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, flora or fauna.

6.4.5 Effects on Designated Sites

6.4.5.1 European Designated Sites

The potential for likely significant effects on a number of European Sites was identified within Table 6-5 of this Biodiversity Chapter. The Proposed Wind Farm site is located immediately adjacent to The Long Derries, Edenderry SAC and as such is considered for the potential for dust-related impacts on the QI grassland habitat. Additionally, the Proposed Grid Connection underground electrical cabling route crosses Ballynafagh Lake SAC at the Blackwood feeder canal, and is considered in relation to potential water quality deterioration resulting from the Proposed Project. A downstream hydrological link has also been established between the Proposed Grid Connection underground electrical cabling route and Ballynafagh Bog SAC. The River Barrow and River Nore SAC is likewise considered for potential water quality deterioration due to downstream connectivity with the Proposed Project, as well as *ex-situ* disturbance effects on otter and aquatic QI species. As such, the potential for likely significant effect was identified on the following European Sites:

- The Long Derries, Edenderry SAC [000925]
- Ballynafagh Lake SAC [001387]
- Ballynafagh Bog SAC [000391]
- River Barrow and River Nore SAC [002162]
- Poulaphouca Reservoir SPA [004063]

The potential for likely significant effects on Poulaphouca Reservoir SPA was identified due to the potential for *ex-situ* effects on associated bird species. All potential effects on bird species are fully assessed within Chapter 7 Ornithology of this EIAR.

In relation to European Sites, an AASR and NIS have been prepared to provide the competent authorities with the information necessary to complete an AA 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, individually or in combination with other plans and projects, will not have a significant effect on the following European Sites. Measures intended to avoid or reduce the harmful effects of the Proposed Project on European Sites (i.e., "mitigation measures") or best practice measures have not been taken into account in the screening stage appraisal.*
>
> - *The Long Derries, Edenderry SAC [000925]*
> - *Ballynafagh Lake SAC [001387]*
> - *Ballynafagh Bog SAC [000391]*

- *River Barrow and River Nore SAC [002162]*
- *Poulaphouca Reservoir SPA [004063]*

As a result, a Stage 2 Appropriate Assessment is required, and a Natura Impact Statement shall be prepared in respect of the Proposed Project. It has also been concluded that it can be excluded on the basis of objective information that the Proposed Project, individually or in combination with any other plan or project will not have a significant effect on any other European Site. Accordingly, it is respectfully submitted that a Stage 2 Appropriate Assessment is required for the above European Sites, however it is noted that ACP, as the competent authority, will make its determination in this regard. An NIS has been prepared in respect of the effects of the Proposed Project individually and in combination with any other plans or projects on the aforementioned European Sites."

The findings presented in the NIS are that:

"Where the potential for any adverse effect on the integrity of 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 have an adverse effect on the integrity of any European Site in view of their Conservation Objectives.

Following an examination, evaluation and analysis, in light of best scientific knowledge and the Conservation Objectives of the relevant European Sites, and, on the basis of objective information, having taken into account the relevant mitigation measures, it can be concluded beyond reasonable doubt that the Proposed Project will not have an adverse impact on the integrity of any European Sites, either alone or in combination with other plans or projects."

6.4.5.2 Nationally Designated Sites

The potential for likely significant effects on a number of Nationally Designated Sites was also identified within Table 6-6 of this Biodiversity Chapter. The Proposed Wind Farm site is located immediately adjacent to The Long Derries, Edenderry pNHA and as such is considered for the potential for dust-related impacts. Additionally, the Proposed Grid Connection underground electrical cabling route crosses the Blackwood feeder canal which, while not included as part of the Ballynafagh Lake pNHA area, is regarded as *ex-situ* supporting habitat and as such is considered in relation to potential water quality deterioration resulting from the Proposed Project. A downstream hydrological link has also been established between the Proposed Grid Connection underground electrical cabling route and Ballynafagh Bog pNHA. The Grand Canal pNHA is likewise considered for potential water quality deterioration due to the crossing of the canal as part of the Proposed Grid Connection underground electrical cabling route, as well as disturbance effects on otter as a result of the HDD works in this location. As such, the potential for likely significant effects was identified on the following Nationally Designated Sites:

- The Long Derries, Edenderry pNHA [000925]
- Grand Canal pNHA [002104]
- Ballynafagh Bog pNHA [000391]
- Ballynafagh Lake pNHA [001387]
- Curragh (Kildare) pNHA [000392]
- Poulaphouca Reservoir pNHA [000731]

The Long Derries, Edenderry pNHA, Ballynafagh Bog pNHA and Ballynafagh Lake pNHA are also assessed under their SAC within the AASR and NIS which accompany this application.

As discussed in Sections 6.4.2 and 6.4.2.3.6, a range of mitigation measures are in place to protect surface water receptors and groundwater receptors during construction of the Proposed Project. These will also serve to protect water quality within Ballynafagh Bog pNHA, Ballynafagh Lake pNHA and the Grand Canal pNHA.

Additionally, as outlined in Section 6.4.2.1.1 and Chapter 10 Air Quality of this EIAR, a range of mitigation measures to minimise dust generation during the construction phase of the Proposed Project have been prescribed in order to protect the habitats and species within the Project Site from significant dust-related effects. These will likewise serve to prevent any dust-related effects on The Long Derries, Edenderry pNHA, located outside the Project Site.

Furthermore, as outlined in Section 6.4.2.3.2 above in relation to otter, best-practice mitigation measures have been prescribed for the prevention of significant disturbance related effects on otter throughout the Project Site. These measures will also be implemented at all locations along the Proposed Grid Connection underground electrical cabling route including the location of HDD works within the Grand Canal pNHA.

The Curragh (Kildare) pNHA and Poulaphouca Reservoir pNHA are considered due to the potential for *ex-situ* effects on associated bird species. All potential effects on bird species are fully assessed within Chapter 7 Ornithology of this EIAR.

With the prescribed mitigations in place as outlined in Sections 6.4.2, 6.4.3 as well as mitigations and offsetting measures within Chapter 7, there is no potential for significant residual effects on any Nationally Designated Sites via the identified pathways.

6.5 Cumulative Impacts

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 6.3.5 of this chapter. 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 2.10 of Chapter 2. The full list of projects has been considered and is provided as Appendix 12-3. Relevant projects from this list are discussed below.

6.5.1 Assessment of Projects

As described in Section 2.10 of this EIAR, relevant projects have been assessed in-combination with the Proposed Project. These include planning applications in the vicinity of the Project 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 6.5.3 concludes on the potential for cumulative effects on biodiversity when the Proposed Project is considered in-combination with these projects.

Table 6-38 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 and downstream aquatic receptors.

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

Table 6-38 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 Proposed Wind Farm 200m from Proposed Grid Connection underground electrical cabling route.	Using the precautionary approach and given the nature and scale of the Proposed Project, the geographical boundary for terrestrial ecological aspects, i.e. habitats and terrestrial species, is 10km for cumulative assessment for the Proposed Wind Farm and 200m from the Proposed Grid Connection underground electrical cabling route.
Bats	15km from the Proposed Turbines	Bats are a mobile species which can cover large distances for foraging and roosting over a range of varied habitats. NatureScot (2021) '*Bats and onshore wind turbines survey, assessment and mitigation'* recommends a 10km cumulative study area for bats. Bat Conservation Ireland (2026) '*Bat Survey Assessment & Mitigation Guidelines for Onshore Wind Turbines in Ireland'* 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 and aquatic habitats and species	WFD Catchment for large infrastructural developments such as wind farms, energy and public transport developments. River Sub Basins for all smaller proposed, permitted or existing plans or projects (i.e. private and commercial type developments).	The Proposed Wind Farm is located primarily in the River Barrow Catchment and is drained by the Figile and Slate rivers. The catchments of the Slate and Figile rivers, as far downstream as the confluence with the Barrow River, form the main Study Area. A small area in the north of the Proposed Wind Farm lies within the River Boyne Catchment. However there is no outfall from Ticknevin Bog to the River Boyne or its tributaries. Nevertheless, the Boyne_010 and Boyne_020 WFD river sub-basins are included in the Study Area for the purposes of a conservative impact assessment. The Proposed Grid Connection is also predominantly drained by the Figile and Slate rivers and therefore falls within the main Hydrological (Surface Water) Study Area. A small section of the Proposed Grid Connection underground electrical cabling route and the Proposed Offsite Substation are located in the Liffey and Dublin Bay Catchment. These elements of the Proposed Project are mapped in the Awillyinish Stream_010 WFD river sub-basin which has also been included in the Hydrological (Surface Water) Study Area.

Individual Topic	Maximum Extent	Justification
		The WFD river sub-basins within which the proposed temporary accommodation works along the Proposed Turbine Delivery Route are located have been included in the Study Area. Given the limited scale and nature of the works, inclusion of the wider catchments is not considered to be necessary.

6.5.1.1 Other Wind Farm Projects

As outlined in Table 6-38 above, for the purposes of this cumulative assessment, wind farms within a 15-kilometre radius of the Proposed Turbine locations are listed below in Table 6-39. In total, 10 no. applications relating to wind energy were identified within 15km of the Proposed Turbines. Each identified wind energy project is considered further in the sections below.

Table 6-39 Wind farm projects within 15km of the Proposed Turbines

Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)	County
Cushaling Wind Farm	Existing	9	700m	Counties Kildare and Offaly
Cloncreen Wind Farm	Existing	21	2.9km	County Offaly
Drehid Wind Farm	Proposed	11	7.4km	County Kildare
Ballinla Wind Farm	Permitted	7	7.3km	County Offaly
Derrynadarragh Wind Farm	Proposed	9	7.7km	Counties Kildare, Offaly and Laois
Cushina Wind Farm	Pre-application	11	9.3km	County Offaly
Mountlucas Wind Farm	Existing	28	10.4km	County Offaly
Yellow River Wind Farm	Existing	29	12.1km	County Offaly
Clonarrow Wind Farm	Permitted	4	12.9km	County Offaly
Moanvane Wind Farm	Existing	12	13.9km	County Offaly

6.5.1.1.1 *Cushaling Wind Farm*

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cushaling Wind Farm, which is located approximately 0.7km from the nearest Proposed Turbine, was considered. The planning file[60] was consulted on the ACP website and the EIAR, AASR and NIS were reviewed.

[60] https://www.pleanala.ie/en-ie/case/306924

Cushaling Wind Farm is an existing wind farm consisting of 9 no. turbines on agricultural lands and cutover bog. Within the EIAR, impacts on flora and habitats were considered in terms of habitat loss, disturbance, fragmentation, spread of invasive species and hydrological changes during the construction phase. Impacts on fauna during construction were considered in terms of disturbance and displacement of badger, otter and hare, in addition to habitat loss for bat species, terrestrial macroinvertebrates and amphibians, and impacts of water quality deterioration on aquatic fauna. During operation, the potential for water quality deterioration was discussed and bats were considered in terms of collision risk. Mitigation and monitoring measures were prescribed accordingly, and residual impacts were considered imperceptible. A cumulative assessment was undertaken within the Cushaling Wind Farm EIAR, and it was concluded that significant cumulative effects were not expected.

The AASR and NIS for this wind farm were also reviewed. The site of the existing Cushaling Wind Farm and that of the Proposed Project are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Cushaling Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC as a result of water quality deterioration arising from release of suspended solids and/or other pollutants into surface waters, and disturbance and displacement of QI species. However, following the implementation of mitigation measures prescribed within the NIS, no potential for residual adverse effects on the SAC were identified.

While Cushaling Wind Farm is located in the same hydrological sub-catchment as much of the Proposed Wind Farm (the Figile_SC_010), given the lack of long-term significant residual effects predicted as a result of Cushaling Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.2 Cloncreen Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cloncreen Wind Farm, which is located approximately 2.9km from the nearest Proposed Turbine, was considered. The planning file[61] was consulted on the ACP website and the EIS, AASR and NIS were reviewed.

Cloncreen Wind Farm is an existing wind farm consisting of 21 no. turbines on cutover bog. Within the EIS, impacts on flora and habitats were considered in terms of habitat loss and fragmentation, runoff of pollutants, drainage effects and spread of invasive species during the construction phase. The potential for direct effects on protected plant species (basil thyme and blue fleabane) were also addressed. Impacts on fauna during construction were considered in terms of disturbance and displacement of otter and badger, in addition to habitat fragmentation and barrier effect for bat species, and impacts of water quality deterioration on aquatic fauna. During operation, the potential for water quality deterioration was considered, and bats were discussed in terms of collision risk and disturbance effects. Mitigation and monitoring measures were prescribed accordingly, and residual impacts were considered imperceptible. A cumulative assessment was undertaken within the EIS for Cloncreen Wind Farm, and it was concluded that significant cumulative effects were not expected.

The AA Screening and NIS for this wind farm were also reviewed. The site of the existing Cloncreen Wind Farm and that of the Proposed Project are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Cloncreen Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC as a result of water quality deterioration arising from release of suspended solids and/or other pollutants into surface waters. However, following the implementation of mitigation measures prescribed within the NIS, no potential for residual adverse effects on the SAC were identified.

[61] https://www.pleanala.ie/en-ie/case/PA0047

While Cloncreen Wind Farm is located in the same hydrological sub-catchments as much of the Proposed Wind Farm (the Figile_SC_010 and Figile_SC_020), given the lack of long-term significant residual effects predicted as a result of Cloncreen Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.3 *Drehid Wind Farm*

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Drehid Wind Farm, which is located approximately 7.4km from the nearest Proposed Turbine, was considered. The planning file[62] was consulted on the ACP website and the EIAR, AASR and NIS were reviewed.

Drehid Wind Farm is a proposed wind farm consisting of 11 no. turbines primarily located within agricultural lands and mixed conifer woodland. Drehid Wind Farm is located outside the cumulative study area for hydrological impacts as outlined in Table 6-38 above. While it is located within the same hydrological catchment as a small portion of the Project Site (the Boyne catchment), it is located within the Blackwater(Longwood)_020 sub-basin. According to Chapter 9 Water of this EIAR, there is no surface water outfall from Ticknevin Bog within the Boyne catchment. All water from Ticknevin Bog is directed to the south and discharges via several settlement ponds to the Codd Stream, a tributary of the Figile River. Therefore, due to the nature of the existing drainage within the Project Site and the layout of the Proposed Project infrastructure footprint (i.e. there is no significant infrastructure located within this catchment area), there is no significant surface water connectivity between the Proposed Project and the Boyne catchment. As such, there is no potential for cumulative impacts with Drehid Wind Farm on aquatic habitats or species.

Within the EIAR, impacts on terrestrial flora and habitats were considered in terms of habitat loss/alteration, indirect effects on raised bog and heath habitats, potential root damage to mature broadleaved woodland, and spread of invasive species during the construction phase. Impacts on fauna during construction were considered in terms of disturbance and displacement and loss of habitat for badger, otter, red squirrel, Irish hare, wood mouse, pine marten, Irish stoat, hedgehog, pygmy shrew, red deer, common lizard, common frog, smooth newt, marsh fritillary and bee species in addition to habitat loss, disturbance and loss of insect prey resources for bat species. During operation, the potential for habitat alteration as a result of maintenance of felling areas and potential for establishment of invasive species were discussed, bats were considered in terms of collision risk and other terrestrial species were considered for potential disturbance during maintenance works. Mitigation and monitoring measures were prescribed accordingly, and no significant residual impacts were predicted. A cumulative assessment was undertaken within the EIAR for Drehid Wind Farm, and it was concluded that significant cumulative effects were not expected.

The AA Screening and NIS for this wind farm were also reviewed. The AA Screening for the Drehid Wind Farm project identified potential for likely significant effects on the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA as a result of water quality deterioration, spread of invasive species, dust impacts, and disturbance to otter. The AASR and NIS submitted alongside this EIAR did not identify any potential for likely significant effects on these European Sites as, as outlined above, there is no functional hydrological connectivity between the Project Site and the River Boyne and Blackwater SAC or SPA.

While Drehid Wind Farm is located in the same hydrological catchment as a small portion of the Project Site, (the Boyne catchment), given the lack of functional hydrological connectivity between the Proposed Project and this catchment, the lack of any long-term significant residual effects predicted as a result of Drehid Wind Farm or the Proposed Project, as well as the enhancement measures proposed

[62] https://www.pleanala.ie/en-ie/case/322845

within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.4 Ballinla Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the permitted Ballina Wind Farm, which is located approximately 7.3km from the nearest Proposed Turbine, was considered. The planning file[63] was consulted on the ACP website and the EIAR, AASR and NIS were reviewed.

Ballinla Wind Farm is a permitted wind farm consisting of 7 no. turbines primarily located within agricultural lands, mixed conifer woodland and conifer plantation. Within the EIAR, impacts on flora and habitats were considered in terms of habitat loss, alteration and disturbance, and impacts of water quality deterioration during the construction phase. Impacts on fauna during construction were considered in terms of disturbance and displacement and loss of habitat for badger, otter, pine marten, Irish hare, Irish stoat, European hedgehog, pygmy shrew, red squirrel, terrestrial macro-invertebrates, reptiles and amphibians, as well as habitat loss and disturbance of bat species, disturbance of aquatic species and impacts of water quality deterioration. During operation, the potential for water quality deterioration and altered drainage flow paths were discussed, and bats were considered in terms of collision risk. Mitigation and monitoring measures were prescribed accordingly, and no significant residual impacts were predicted. A cumulative assessment was undertaken within the EIAR for Ballinla Wind Farm, and it was concluded that significant cumulative effects were not expected.

The AA Screening and NIS for this wind farm were also reviewed. The AA Screening for the Ballinla Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC, River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA. The AASR and NIS submitted alongside this EIAR did not identify any potential for likely significant effects on these European Sites as there is no functional hydrological connectivity between the Project Site and the River Boyne and Blackwater SAC or SPA. However, the site of the proposed Ballinla Wind Farm and that of the Proposed Project are both hydrologically linked to the River Barrow and River Nore SAC, and the potential for likely significant effects were identified as a result of construction and decommissioning related impacts on water quality, disturbance and displacement of QI species arising from the proposed Ballinla Wind Farm. However, following the implementation of mitigation measures prescribed within the NIS, no potential for residual adverse effects on the SAC were identified.

While Ballinla Wind Farm is located in the same hydrological sub-catchments as small portions of the Project Site, (the Figile_SC_020 and Boyne_SC_010 sub-catchments), given the lack of any long-term significant residual effects predicted as a result of Ballinla Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.5 Derrynadarragh Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Derrynadarragh Wind Farm, which is located approximately 7.7km from the nearest Proposed Turbine, was considered. The planning file[64] was consulted on the ACP website and the EIAR, AASR and NIS were reviewed.

Derrynadarragh Wind Farm is a proposed wind farm consisting of 9 no. turbines primarily located within agricultural lands, conifer plantation and bog woodland. Within the EIAR, impacts on habitats were considered in terms of habitat loss, fragmentation, disturbance and edge effects, as well as water quality deterioration and spread of invasive species during the construction phase. Impacts on fauna

[63] https://www.pleanala.ie/en-ie/case/323579
[64] https://www.pleanala.ie/en-ie/case/324055

during construction were considered in terms of disturbance and displacement and loss of habitat for badger, otter, bats and threatened bee species, in addition to water quality deterioration effects on whorl snails (*Vertigo pygmaea* and *V. moulinsiana*) and air pollution. During operation, the potential for surface water effects arising from an increase in impermeable surfaces were discussed, bats were considered in terms of collision risk, and the potential effects of operational lighting were outlined. Mitigation and monitoring measures were prescribed accordingly, and no significant residual impacts were predicted. A cumulative assessment was undertaken within the EIAR for Derrynadarragh Wind Farm, and it was concluded that significant cumulative effects were not expected.

The AA Screening and NIS for this wind farm were also reviewed. The site of the Derrynadarragh Wind Farm and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Derrynadarragh Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC as a result of water quality deterioration arising from release of suspended solids and/or other pollutants into surface waters. However, following the implementation of mitigation measures prescribed within the NIS, no potential for residual adverse effects on the SAC were identified.

While Derrynadarragh Wind Farm is located in the same hydrological catchment as part of the Project Site, (the Barrow catchment), given the lack of any long-term significant residual effects predicted as a result of Derrynadarragh Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.6 Cushina Wind Farm

The potential for the Proposed Project to result in significant cumulative or in combination effects when assessed alongside Cushina Wind Farm, which is located approximately 9.3km from the nearest Proposed Turbine, was considered. The planning files[65] were reviewed on the ACP website, however this project is at the pre-planning stage and therefore no planning application has been lodged, and no impact assessment has been completed.

Based on a desk study and aerial imagery, Cushina Wind Farm is located within open farmland, cutover bog and commercial forestry. These habitats provide suitable habitat for a number of the species identified as KERs within this Biodiversity Chapter, including badger, pine marten, red squirrel and Irish stoat.

While Cushina Wind Farm is located in the same hydrological catchment as part of the Project Site, (the Barrow catchment), given the lack of any long-term significant residual effects predicted as a result of the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.7 Mountlucas Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Mountlucas Wind Farm, which is located approximately 10.4km from the nearest Proposed Turbine, was considered. The planning file[66] was consulted on the Offaly County Council Planning Register and the EIS was reviewed.

Mountlucas Wind Farm is an existing wind farm consisting of 28 no. turbines primarily located within cutover bog habitats. Mountlucas Wind Farm is located further than 10km from the Project Site and is therefore outside the cumulative study area for terrestrial habitats and species (excluding bats). In

[65] https://www.pleanala.ie/en-ie/case/323296
[66] https://www.eplanning.ie/OffalyCC/AppFileRefDetails/09453/0

relation to impacts on aquatic ecological receptors, within the EIS the potential for degradation of downstream aquatic habitats and related species was considered during the construction phase. Mitigation measures were prescribed accordingly, and no significant residual impacts were predicted. On a precautionary basis, as outlined in Table 6-38 above, Mountlucas Wind Farm has also been included in the cumulative assessment for bats. However, within the EIS, in the absence of mitigation, no potential for significant effects on bats were anticipated due to the lack of bat activity or roosting opportunities. As such, there is no potential for adverse cumulative effects on bats as a result of the Proposed Project and Mountlucas Wind Farm.

No separate AA Screening or NIS were submitted as part of this application. Within the EIS, designated sites were considered and no potential for likely significant effects on any European Sites were identified as a result of the development. However, Mountlucas Wind Farm is drained through a series of drains to the Philipstown River, which is a tributary of the River Barrow. Therefore, both the site of the Mountlucas Wind Farm and the Project Site are hydrologically linked to the River Barrow and River Nore SAC. As such the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC have been considered in relation to construction and decommissioning related impacts on water quality. However, following the implementation of mitigation measures prescribed within the NIS which accompanies this EIAR, no potential for residual adverse effects on the River Barrow and River Nore SAC were identified.

While Mountlucas Wind Farm is located in the same hydrological sub-catchment as a small portion of the Project Site, (the Figile_SC_020 sub-catchment), given the lack of any long-term significant residual effects predicted as a result of Mountlucas Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.8 *Yellow River Wind Farm*

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Yellow River Wind Farm, which is located approximately 12.1km from the nearest Proposed Turbine, was considered. The planning file[67] was consulted on the An Coimisiún Pleanála website and the EIS and AA Screening were reviewed.

Yellow River Wind Farm is an existing wind farm consisting of 29 no. turbines primarily located within agricultural lands and cutover bog habitats. Yellow River Wind Farm is located further than 10km from the Project Site and is therefore outside the cumulative study area for terrestrial habitats and species (excluding bats). Additionally, Yellow River Wind Farm is located outside the cumulative study area for hydrological impacts as outlined in Table 6-38 above. While it is located within the same hydrological catchment as a small portion of the Project Site (the Boyne catchment), it is located within the Yellow (Castlejordan)_020/030 and Castlejordan_020/030 sub-basins. According to Chapter 9 Water of this EIAR, there is no surface water outfall from Ticknevin Bog within the Boyne catchment. All water from Ticknevin Bog is directed to the south and discharges via several settlement ponds to the Codd Stream, a tributary of the Figile River. Therefore, due to the nature of the existing drainage within the Project Site and the layout of the proposed infrastructure footprint (i.e. there is no significant infrastructure located within this catchment area), there is no significant surface water connectivity between the Proposed Project and the Boyne catchment. As such, there is no potential for cumulative impacts with Yellow River Wind Farm on terrestrial or aquatic habitats or species.

In relation to bats, loss of trees, lighting impacts and works on bridges are considered during the construction phase and collision risk is discussed in relation to the operational phase. Mitigation and monitoring measures were prescribed accordingly, and no significant residual impacts were predicted. A cumulative assessment was undertaken within the EIS for Yellow River Wind Farm, and it was concluded that significant cumulative effects were not expected.

[67] https://archive.pleanala.ie/en-ie/case/PA0032

The AA Screening for this wind farm was also reviewed. No potential for likely significant effects on any European Sites was identified as a result of the development.

While Yellow River Wind Farm is located in the same hydrological catchment as a small portion of the Project Site, (the Boyne catchment), given the lack of functional hydrological connectivity between the Proposed Project and this catchment, the lack of any long-term significant residual effects predicted as a result of Yellow River Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.9 *Clonarrow Wind Farm*

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the permitted Clonarrow Wind Farm, which is located approximately 12.9km from the nearest Proposed Turbine, was considered. The planning file[68] was consulted on the Offaly County Council Planning Register and the EIAR, AASR and NIS were reviewed.

Clonarrow Wind Farm is a permitted wind farm comprising of 4 no. turbines located within agricultural lands and cutover bog habitats. Clonarrow Wind Farm is located further than 10km from the Project Site and is therefore outside the cumulative study area for terrestrial habitats and species (excluding bats). In relation to impacts on aquatic ecological receptors, within the EIAR the potential for water quality deterioration and habitat loss were considered during the construction phase, and no significant effects were predicted during the operational phase. In relation to bat species, habitat loss and disturbance were considered during the construction phase, and collision risk, barotrauma effects and operational lighting were assessed in relation to the operational phase. Mitigation and monitoring measures were prescribed accordingly, and no significant residual impacts were predicted. A cumulative assessment was undertaken within the EIAR for Clonarrow Wind Farm, and it was concluded that significant cumulative effects were not expected.

The NIS for this wind farm was also reviewed. The site of the proposed Clonarrow Wind Farm and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Clonarrow Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC as a result of water quality deterioration arising from release of suspended solids and/or other pollutants into surface waters. However, following the implementation of mitigation measures prescribed within the NIS, no potential for residual adverse effects on the SAC were identified.

While Clonarrow Wind Farm is located in the same hydrological sub-catchment as a small portion of the Project Site, (the Figile_SC_020 sub-catchment), given the lack of any long-term significant residual effects predicted as a result of Clonarrow Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.1.10 *Moanvane Wind Farm*

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Moanvane Wind Farm, which is located approximately 13.9km from the nearest Proposed Turbine, was considered. The planning file[69] was consulted on the ACP website and the EIAR, AASR and NIS were reviewed.

Moanvane Wind Farm is an existing wind farm consisting of 12 turbines and is located approximately 13km from the Project Site. Moanvane Wind Farm is located further than 10km from the Project Site

[68] https://www.eplanning.ie/OffalyCC/AppFileRefDetails/2560189/0
[69] https://www.pleanala.ie/en-ie/case/301619

and is therefore outside the cumulative study area for terrestrial habitats and species (excluding bats). In relation to impacts on aquatic ecological receptors, within the EIAR the potential for habitat loss was considered during the construction phase and the potential for water quality deterioration was considered during both the construction and operational phases. In relation to bat species, habitat loss, disturbance and loss of insect prey resources were considered during the construction phase, and collision risk was assessed in relation to the operational phase. Mitigation measures were prescribed accordingly, and no significant residual impacts were predicted. A cumulative assessment was undertaken within the EIAR for Moanvane Wind Farm, and it was concluded that significant cumulative effects were not expected.

The NIS for this wind farm was also reviewed. The site of the Moanvane Wind Farm and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Moanvane Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC as a result of water quality deterioration arising from release of suspended solids and/or other pollutants into surface waters, and disturbance and displacement of QI species. However, following the implementation of mitigation measures prescribed within the NIS, no potential for residual adverse effects on the SAC were identified.

While Moanvane Wind Farm is located in the same hydrological catchment as part of the Project Site, (the Barrow catchment), given the lack of any long-term significant residual effects predicted as a result of Moanvane Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMP for the Proposed Project (Appendix 6-5 of this EIAR), there is no potential for significant cumulative effects on biodiversity, flora or fauna.

6.5.1.2 Other EIA or Large-scale Projects

A number of other large-scale projects (excluding wind farms) were identified which have been subject to the EIA process were identified within 10km of the Proposed Wind Farm, 200m of the Proposed Grid Connection and/or within the hydrological cumulative area as outlined in Table 6-38 above.

The proposed Water Supply Project for the Eastern and Midlands Region, the proposed Edenderry Gas Pipeline and the Substitute Consent Application for Extraction on Ballydermot and surrounding bogs are also discussed in more detail in the following subsections as these large-scale projects have been identified as overlapping with the Project Site.

The full list of projects considered is included in Appendix 2-3 of this EIAR. No additional pathways for cumulative effects were identified in conjunction with the Proposed Project. With the implementation of mitigation measures proposed as part of the both projects listed in Appendix 2-3 and the Proposed Project, no potential for significant cumulative effect in combination with these projects is predicted.,

Eastern and Midlands Region Water Supply Project – ACP Case Ref: PA92.323980

An application for the Eastern and Midlands Region Water Supply Project was submitted to An Coimisiún Pleanála (Case Ref: PA92.323980) on the 19th of December 2025. The Water Supply Project includes a water pipeline from a new water treatment plant near Birdhill, Co. Tipperary to a termination point reservoir at Peamount, Co. Dublin. The Water Supply Project pipeline traverses the Project Site in an east- west direction across Codd 2, Glashabaun North, Glashabaun South and Derrybrennan bogs and will include a proposed abstraction from the Figile River (during the testing and commissioning phase). An overlap of the construction periods associated with the Proposed Project and the Water Supply Project could result in cumulative effects on the local water environment. Without appropriate management, concurrent construction works could result in cumulative pressures on the local water environment, including increased sediment generation and disturbance. The Water Supply Project has been considered in the design of the Proposed Project. To minimise the potential for cumulative effects, the respective project teams will maintain ongoing liaison during the construction

phases, as required. This will facilitate the exchange of programme information and coordination of construction activities where appropriate.

The Biodiversity Chapter of the EIAR for the Eastern and Midlands Region Water Supply Project was reviewed. It is concluded within the Chapter that, through the implementation of well-established approaches to mitigation which will be implemented in accordance with best practice guidance, it would be possible to reduce the impacts to not significant for the majority of ecological receptors. However, even after the application of mitigation measures, there would be likely significant residual effects on terrestrial habitats, bats and badger.

The EIAR for the Eastern and Midlands Region Water Supply Project concludes a likely significant negative residual effect on terrestrial habitats. A number of these habitats were also identified as KERs for the Proposed Project in Section 6.3.5 above, including Scrub (WS1), Bog woodland (WN7), Raised bog (PB1), Poor fen and flush (PF2) and Treelines (WL2). However, as outlined in Section 6.4.2.1 above, due to the prescribed mitigation by avoidance, reduction and offsetting through habitat creation and enhancement within the Proposed Enhancement Areas, no long-term significant residual effects on any of these habitats is predicted as a result of the Proposed Project, with an overall net gain of these habitats within the Project Site anticipated, As such, there is no potential for the Proposed Project to result in cumulative habitat loss impacts, when considered in combination with the Eastern and Midlands Region Water Supply Project.

In relation to bats, short-term likely significant residual effects were concluded at the local level due to the loss of five roosts. As outlined in Section 6.4.2.3.4 above, there will be no loss of any bat roosts as a result of the Proposed Project as the majority of the trees to be lost (i.e. those within conifer plantation and bog woodland) provide *Negligible* or no (*None*) roosting potential. Furthermore, there will be no loss of any roosts within structures within the Project Site, including buildings or bridges within the Proposed Wind Farm site or along the Proposed Grid Connection underground electrical cabling route. Therefore, there is no potential to the Proposed Project to act cumulatively in this regard.

Considering badger, short-term likely significant residual effects were concluded at the local level due to the loss of 33 no. setts. As outlined in Section 6.4.2.3.2 above, one active badger sett (i.e. sett G) was identified within the Project Site which is located within 20m of the Proposed Project infrastructure footprint, and will therefore require exclusion, should it be found to remain active during pre-commencement surveys prior to the construction phase. The potential for the loss of this sett to act cumulatively with the residual impact on badger as a result of the Eastern and Midlands Region Water Supply Project has been considered. However, the exclusion of this sett will not result in any residual effects on badger as a result of the Proposed Project as strict mitigations have been prescribed for the protection of badger, and the exclusion will be undertaken in consultation with the NPWS and adhering to all conditions of the derogation licence. Additionally, there are significant areas of available alternative suitable habitat for badger within the Project Site. Therefore, the Proposed Project is not considered to have potential to result in significant cumulative effects in this regard.

Gas to Bord na Móna Edenderry – ACP Case Ref: GA19.324280

An application for Gas to Bord na Móna Edenderry was submitted to ACP (Case Ref: PA92.323980) on the 12th of May 2026. The Edenderry Gas Pipeline Project includes for the proposed development of a new downstream underground high pressure gas pipeline, the provision of an offtake installation compound, and an above ground installation (AGI) compound and associated development, including associated access arrangements, landscaping and ancillary works. The proposed underground gas pipeline connection (approximately 23.65km in length) is between the existing Edenderry Power Station and the Dublin to Galway high pressure gas pipeline. The Edenderry Gas Pipeline overlaps with a small area of the Proposed Wind Farm in the vicinity of Edenderry Power Station and includes 2 no. crossings over the Ballykilleen Stream.

The Biodiversity Chapter of the EIAR for the Gas to Bord na Móna Edenderry Project was reviewed. It is outlined that the Ballykilleen Stream will be crossed via trenchless methods, with no requirement for

in-stream works. Additionally, it is concluded that, with the employment of appropriate mitigation measures, the residual effects of both the construction and operational phases on biodiversity would be not significant. The Proposed Ballydermot Wind Farm was also considered within the cumulative assessment for the Gas to Bord na Móna Edenderry EIAR and it was concluded that, in the event of direct overlap in peak construction activity, any cumulative effects would be not significant. Similarly during the operational phase, the potential for significant cumulative effects were considered not significant. Therefore, there is no potential for the Proposed Project to result in significant cumulative effects, when considered in combination with the Gas to Bord na Móna Edenderry.

Substitute Consent Application for Extraction on Ballydermot and Surrounding Bogs – ACP Case Ref: SU09.324604

An application for substitute consent for peat extraction and ancillary works has been submitted to An Coimisiún Pleanála (Case Ref: SU09.324604) on the 20th of August 2026. The substitute consent application includes all areas of where historical industrial peat extraction occurred within the Project Site. Described below in Section 6.5.1.3.1, current activities onsite include site management and environmental monitoring as required under IPC Licence P0503-01 issued by the EPA. The rEIAR and rNIS describe these activities in detail and in particular describe the activities that are intended to be carried out within part of the Project Site into the future (i.e. the 'Remedial Phase'). Whilst the Draft Rehabilitation Plans detailed below in Section 6.5.1.3.1 and included as Appendix 2-4 are the most up to date plans, due consideration of this planning application, and in particular the findings of rEIAR and rNIS have been taken into account in describing the baseline and future environment within this cumulative assessment.

Overall, when assessed in combination, it is concluded that the Proposed Project and the Substitute Consent Application for Extraction on Ballydermot and surrounding bogs will not result in any significant negative cumulative effects on biodiversity, flora or fauna. The rehabilitation of cutaway peatlands is expected to contribute positively to the wider ecological context over the longer term, independent or in combination with the Proposed Project.

6.5.1.3 EPA Licenced Activities

EPA licensed activities refer to industrial and waste management operations that require a license from the EPA under various pieces of environmental legislation. A list of all EPA licenced activities within the cumulative study area is included in Appendix 2-3.

The categories of EPA licenced activities considered as part of the cumulative assessment are as follows:

- Industrial Emissions (IE) Licensing;
- Integrated Pollution Control (IPC) Licensing;
- Waste Licensing; and
- Waste Water Discharge Authorisations.

Current activities onsite include decommissioning, site management and environmental monitoring as required under IPC Licence P0503-01[70] from the EPA. Active commercial peat extraction under IPC Licence No. 503-01 ceased in June 2020. BnM's statutory duties to discharge the conditions of its IPC Licence from the EPA for the Allen Bog Group also remain on-going. These ongoing duties, such as environmental monitoring, do not facilitate the continuation of peat extraction, but rather ensure compliance with BnM's extant IPC Licence.

The IPC Licence is subject to 14 no. conditions pertaining to the ongoing monitoring and maintenance to ensure any emissions from site activities will comply with and not contravene, any of the

[70] *Integrated Pollution Control License PO-503-01 issued by the EPA for the Allen Bog Group*

requirements of Section 83(3) of the Environmental Protection Agency Act, 1992. Conditions 1-4 of the licence outlined the Scope, Management, Interpretation and Notification procedures required by the BnM, respectively. Conditions 5 to 10 pertain to environmental monitoring and management. Conditions 11 to 14 detail the Monitoring (equipment use), Recording and Reporting, Emergency Response and Financial Provisions duties of BnM.

6.5.1.3.1 IPC Licence (P0503-01) - Draft Rehabilitation Plans

It is also a requirement of '*Condition 10 Cutaway Bog Rehabilitation'* of the IPC Licence that following the decommissioning of use of all or part of their bogs, BnM, prepares (to the satisfaction and approval of the EPA) and implements a Cutaway Bog Rehabilitation Plan for each bog within its landbank under IPC Licence. BnM have produced Draft Rehabilitation Plans for the Bogs contained within the Allen Bog Group which form part of the Project Site, and it is the intention of BnM to rehabilitate the bogs in a phased approach under IPC Licence. The 9 no. Draft Rehabilitation Plans and 1 no. Final Rehabilitation Plan (Lodge Bog) are included as Appendix 2-4 to this EIAR.

The Proposed Project has been designed to be compatible with the planned rehabilitation of the constituent bogs within the Allen Bog Group. There is no overlap in activities or impact pathways that would give rise to adverse cumulative effects on the integrity of any European Sites.

The plans also provide a framework and outline of the works that will be undertaken to achieve the aims of successful rehabilitation (the criteria for which are defined in each plan) and a timescale for when the various elements of the Draft Rehabilitation Plans will be implemented. Irrespective any further development on the Proposed Wind Farm site, the measures outlined in the Draft Rehabilitation Plans will be implemented by BnM in agreement with the EPA, per BnM's IPC Licence Obligations.

The potential for cumulative effects between the Proposed Project and the implementation of the Draft Rehabilitation Plans have been assessed for all relevant Key Ecological Receptors identified in Section 6.3.5 above. Potential interaction pathways considered include habitat condition, hydrology and surface water quality, and indirect effects on downstream receptors.

In relation to aquatic habitats and species, both the part of the Project Site located on lands under IPC Licence and the Draft Rehabilitation Plans include measures to protect surface water quality. These measures are complementary and are not predicted to interact in a manner that would result in cumulative effects on receiving watercourses or downstream aquatic ecological receptors.

Overall, when assessed in combination, due to the design of the Proposed Project and contents of the Draft Rehabilitation Plans, which have each been developed to be compatible and complementary to one another, there will be no significant negative cumulative effects on any Key Ecological Receptors considered within this Biodiversity Chapter. The overall footprint of the Proposed Project will be less than 3% of the total area of the Project Site and therefore will not impact or change the overall goals and outcomes of the Draft Rehabilitation Plans. The rehabilitation of cutaway peatlands is expected to contribute positively to the wider ecological context over the longer term, independent of the Proposed Project.

6.5.1.4 Peatland Climate Action Scheme

PCAS is a form of enhanced peatland rehabilitation which provides additional measures than that are required under IPC license and has been successfully incorporated at the recently constructed Cloncreen Wind Farm. To date, approximately 24,503ha of peatland has been rehabilitated under the PCAS[71]. PCAS is supported by Government through the Climate Action Fund and Ireland's National Recovery and Resilience Plan administered by the Department of Environment, Climate and Communications (DECC). Please see https://www.bnmpcas.ie/ for details. The NPWS acts as the

[71] https://www.bnmpcas.ie/news-and-updates/

Scheme regulator and there is ongoing engagement with the EPA. This scheme is separate to the IPC Licence requirements and does not form part of the Proposed Project application.

PCAS works have been completed within sections of Lodge Bog within the Project Site. These sections were subject to enhanced restoration, including targeted rewetting measures. The implementation of PCAS measures at this site have provided greater surface water attenuation and water quality benefits both in and downstream of the restoration areas. These PCAS measures completed at Lodge Bog and the standard remedial measures which will be implemented across the Proposed Wind Farm site will not contribute to any cumulative negative effects on biodiversity, flora or fauna.

PCAS involves peatland rehabilitation measures including rewetting and revegetation which are intended to restore ecological function to degraded peatlands. These activities do not introduce hydrological, disturbance or habitat loss pathways that would interact with the Proposed Project in a manner that could result in significant negative cumulative effects on biodiversity, flora or fauna. There is therefore no potential for significant cumulative effects to occur between the Proposed Project and PCAS at Lodge Bog during construction, operation or decommissioning.

6.5.1.5 Arterial Drainage Schemes

The OPW carried out several Arterial Drainage Schemes on catchments under the Arterial Drainage Act, 1945. Under section 37 of the 1945 Act, the OPW is required to maintain drainage works in proper repair and effective condition. These drainage works include watercourses, embankments and other structures. The Boyne Arterial Drainage Scheme is located on the northern perimeter of the Project Site.

The potential for these drainage works to result in significant negative cumulative on biodiversity, flora and fauna has been considered. As outlined within Chapter 9 Water, there is no surface water outfall from the Proposed Wind Farm to the River Boyne or its tributaries, and therefore no potential for negative impacts on downstream receptors within this catchment as a result of water quality deterioration. Furthermore, the potential for significant impacts on otter as a result of disturbance arising from the Proposed Project have been fully considered and mitigated in Section 6.4.2.3.2 above.

Therefore, due to the lack of any residual significant effects as a result of the Proposed Project, there is no potential for the Proposed Project to result in any significant negative cumulative effects on the biodiversity, flora or fauna when considered in combination with the Boyne Arterial Drainage Scheme.

6.5.1.6 Forestry Operations

The forestry works (felling/planting) associated with the forestry in the wider surroundings of the Project Site will be subject to relevant licencing and guidance from the Forestry Service. These land-uses have been taken into account in this cumulative assessment.

Forestry Felling Associated with the Proposed Project

The Proposed Project will result in the loss of 60.7ha of conifer plantation which has the potential to provide habitat for protected species. However, the loss of this habitat within the Project 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 Project Site, as required as part of the Forest Service felling licence.

The Forest Service is responsible for ensuring the development of Forestry within Ireland occurs in a manner and to a scale that maximises its contribution to national socio-economic well-being on a sustainable basis that is compatible with the protection of the environment. The forestry felling

associated with the Proposed Project will be carried out under the relevant guidance and under licence from the Forest Service and full details are set out in Section 4.4.1.8 of this EIAR. Permanent felling of conifer plantation will be required as part of the Proposed Project. The felling activities will be subject to a Limited Felling Licence application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017. The Forest Service policy requires that planning permission for the Proposed Project is available prior to determination of the associated felling licence application. Where replacement afforestation is required by the Forest Service as part of the felling licence process, the replacement afforestation lands will also be subject to the applicable statutory forestry consent process. The specific lands on which any such replacement afforestation would occur have not been identified at this stage.

It is also noted that the Forestry Service's Felling and Reforestation Policy provides for circumstances in which permanent forest removal may be permitted without a requirement for alternative afforestation, including where deforestation is justified by overriding environmental considerations and conversion to open habitat is necessary to benefit the habitat or species concerned. In the case of the Proposed Project, large areas of permanent forestry removal are associated with ornithological offsetting and biodiversity enhancement as described in the BMP, Appendix 6-5. The applicability of this provision to the Proposed Project will ultimately be a matter for determination by the Forestry Service through the relevant felling licence process. Accordingly, this Biodiversity Chapter does not assume that an exemption will apply and, on a precautionary basis for the purposes of the environmental assessment, considers the potential effects associated with replacement afforestation on the basis that it may be required.

Replacement of Forestry

Where replacement afforestation is required, the replacement of forestry, felled as part of the Proposed Project, may occur on any lands, within the state, benefitting from Forest Service Technical Approval[72] for afforestation, subject to the spatial and hydrological criteria set out below and to the applicable statutory forestry consent process, should the Proposed Project receive planning permission. Under the Forestry Regulations 2017, all applications for licences for afforestation require the prior written approval (technical approval) of the Minister for Agriculture, Food and the Marine.

The requirements for afforestation licencing are set out in the Forestry Regulations 2017 - this includes consideration of Environmental Impact Assessment and Appropriate Assessment as set out in parts 7 and 8 of the Regulations, respectively. Further detail is set out in the Environmental Requirements for Afforestation (DAFM, 2016)[73]. This ensures that afforestation takes place in a way that complies with environmental legislation and enhances the contribution new woodlands and forests can make to the environment and to the provision of ecosystem services, such as water protection and landscape enhancement.

The typical environmental effects of afforestation which may be considered within the Ecological Impact Assessment include potential habitat loss, degradation or fragmentation, disturbance to fauna, hydrological and hydrogeological impacts, and impacts to air quality.

The Applicant is seeking a ten-year planning permission which incorporates time to secure a grid connection agreement, a route to market, select the preferred equipment suppliers and put the necessary capital funding in place to allow construction and delivery to commence. Thus, the identification of forestry replacement lands at this stage is seen as premature. If a licence for afforestation was obtained prior to seeking and/or obtaining planning permission, it is highly likely that any licencing approvals sought from the Forest Service would have expired before it could be taken up

[72] *All proposed forestry developments where the area involved is greater than 0.1 hectare must receive the prior written approval of the Forest Service. The application for approval is known as Pre-Planting Approval – Form 1.*
[73] https://www.gov.ie/en/publication/642e6-forestry/#environmental-requirements

due to the time required for the planning processes and post-planning delivery preparations. The Forest Service Afforestation Licences expire after 3 years from when they are consented.

Furthermore, as mentioned above, the key environmental issues relating to afforestation include water, flora and fauna. Each is subject to regular updates in terms of best practice, guidelines, standards and national policies. Delaying the identification of alternative afforestation lands until such time as they are required enables identification of optimum lands available (from an environmental perspective) for afforestation at that time. This EIAR and the AASR and NIS which accompany this planning application identify the relevant effect pathways and establish binding spatial and hydrological parameters for future site selection, with the eventual site-specific assessment then undertaken through the statutory forestry consent process, if afforestation is required.

Notwithstanding that the specific replacement afforestation lands are not presently identified, the potential environmental effects associated with replacement afforestation have been considered within this Biodiversity Chapter. The cumulative study areas identified in Table 6-38 have been established for the assessment of the Proposed Project and are specific to the nature of the potential effects being assessed within this Biodiversity Chapter. It is not therefore appropriate to apply each of these study areas automatically as an exclusion area for future replacement afforestation. In particular, cumulative study areas established for effects associated with wind turbines, including those relating to bats, do not necessarily represent the spatial extent of potential effects associated with afforestation.

The assessments undertaken in this Biodiversity Chapter, each of the other discipline-specific chapters of this EIAR, as well as those within the AASR and NIS which accompany this planning application, have considered the realistic cumulative effect pathways associated specifically with replacement afforestation. These assessments identify 10km from the Proposed Wind Farm site as the maximum precautionary spatial extent within which cumulative effects associated with replacement afforestation could reasonably arise across the relevant terrestrial receptors. Potential effects on the water environment are not appropriately defined by radial distance and are instead dependent on hydrological connectivity and, where relevant, temporal overlap.

On a precautionary basis, the Applicant commits that, where replacement afforestation is required, the replacement afforestation lands will be located at least 10km from the Proposed Wind Farm site and will not be located where there is a hydrological pathway through which the afforestation works could give rise to cumulative effects with the Proposed Project. On this basis, it is reasonable to conclude that there will be no potential for cumulative effects on any Key Ecological Receptors associated with the replacement afforestation.

The 10km spatial criterion represents the maximum identified spatial extent within which cumulative effects associated specifically with replacement afforestation could reasonably arise, having regard to the principal pathways through which replacement afforestation could potentially interact cumulatively with the Proposed Project including changes to habitats and habitat availability, disturbance or changes in habitat suitability for protected species, or effects on the water environment associated with afforestation establishment and drainage. It also takes into account landscape and visual constraints, as addressed within Chapter 13 of this EIAR.

In addition, the Applicant commits to not commencing the Proposed Project until the required felling licence(s), and where replacement afforestation is required, the associated afforestation licence(s), are in place. This will ensure that any required replacement afforestation lands are identified, assessed and licenced appropriately by the relevant consenting authority.

6.5.1.7 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. Within the context of the cumulative study area for other plans and projects, the land-uses cover everything from agriculture to urban fabric. Land-use in the wider landscape of the Project Site

comprises a mix of agriculture, peat cutting, quarrying, low density residential, public road corridor, and commercial forestry. These land-uses will continue in conjunction with the construction, operation and decommissioning of the Proposed Project.

The Proposed Project is located primarily on industrially cutaway peatlands and revegetated habitats, conifer plantation, and agricultural grassland, with the Proposed Grid Connection underground electrical cabling route largely located within existing road network. The Proposed Project will result in the loss of conifer plantation which has the potential to provide habitat for some protected species. However, the loss of this habitat within the Project Site will be small 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. The potential cumulative effects of replanting of conifer plantation lost as a result of the Proposed Project is considered fully in Section 6.5.1.6 above. The Proposed Project is also partially located within improved agricultural grasslands at the location of the Proposed Offsite Substation, 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. 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.

There is private peat cutting within and adjacent to Proposed Wind Farm site which is ongoing. The construction phase of the Proposed Project is likely to interact with these turbary activities and result in deterioration of downstream surface water quality, where it occurs in proximity to watercourses. However, the area of private peat cutting is small relative to the total area of the Project Site and the majority of the peat within these areas has already been extracted, significantly limiting the potential for cumulative effects to arise with the Proposed Project. Nonetheless, the mitigation measures detailed for the construction, operational, and decommissioning phases of the Proposed Project will ensure the protection of downstream surface water quality, and through the design of the Proposed Project and the creation of the Proposed Enhancement Areas, no significant cumulative effects on biodiversity, flora or fauna are anticipated, when considered in combination with turbary activities.

Therefore, there will be no significant cumulative effects as a result of the Proposed Project, when considered in combination with the land-uses in the wider area.

6.5.2 Assessment of Plans

The following development and biodiversity action plans have been reviewed and taken into consideration as part of this assessment[74]:

- Ireland's 4th National Biodiversity Action Plan 2023-2030
- Regional Spatial and Economic Strategy, Eastern and Midlands Regional Assembly 2019-2031
- Kildare County Development Plan 2023-2029
- Offaly County Development Plan 2021-2027
- Kildare County Council Biodiversity Action Plan 2026-2031
- Offaly Biodiversity Action Plan 2025-2030
- Allenwood Biodiversity Action Plan 2021-2025
- Bord na Móna Biodiversity Action Plan 2016-2021

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 Table 6-40.

Potential for cumulative impacts on European Sites are considered within the AASR and NIS that accompanies this application.

Table 6-40 Assessment of Plans

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
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	The National Biodiversity Action Plan (NBAP) was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity. The Proposed Project will not contravene the objectives of the NBAP. On review of the NBAP, no potential for cumulative effects when considered in-combination with the Proposed Project was identified.

[74] *The relevant development and biodiversity action plans have been considered as varied at the time of writing.*

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	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.	
Regional Spatial and Economic Strategy, Eastern and Midlands Regional Assembly 2019-2031	**Growth Strategy Policies** <u>Environmental Assessment</u> **RPO 3.4:** Ensure that all plans, projects and activities requiring consent arising from the Regional Spatial and Economic Strategy are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate. In addition, the future strategic development of settlements throughout the Region will have full cognisance of the legal requirements pertaining to sites of International Nature Conservation Interest. <u>Water Quality</u> **RPO 7.10:** Support the implementation of the Water Framework Directive in achieving and maintaining at least good environmental status for all water bodies in the Region and to ensure alignment between the	The Strategy was comprehensively 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.

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	core objectives of the Water Framework Directive and other relevant Directives, River Basin Management plans and local authority land use plans. **RPO 7.11:** For water bodies with 'high ecological status' objectives in the Region, local authorities shall incorporate measures for both their continued protection and to restore those water bodies that have fallen below high ecological status and areas 'At Risk' into the development of local planning policy and decision making any measures for the continued protection of areas with high ecological status in the Region and for mitigation of threats to waterbodies identified as 'At Risk' as part of a catchment based approach in consultation with the relevant agencies. This shall include recognition of the need to deliver efficient wastewater facilities with sufficient capacity and thus contribute to improved water quality in the Region. Biodiversity and Natural Heritage **RPO 7.16:** Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and Habitats Directives and local authority development plans **RPO 7.17:** Facilitate cross boundary co-ordination between local authorities and the relevant agencies in the Region to provide clear governance arrangements and coordination mechanisms to support the development of ecological networks and enhanced connectivity between protected sites whilst also addressing the need for management of alien invasive species and the conservation of native species. Green Infrastructure **RPO 7.22:** Local authority development plan and local area plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species.	
Kildare County Development Plan 2023-2029	**Biodiversity and Green Infrastructure Policies and Objectives:** National Policy Context	The Kildare County Development Plan (KCDP) was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity. A

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	BI P1 Integrate in the development management process the protection and enhancement of biodiversity and landscape features by applying the mitigation hierarchy to potential adverse impacts on important ecological features (whether designated or not), i.e. avoiding impacts where possible, minimising adverse impacts, and if significant effects are unavoidable by including mitigation and/or compensation measures, as appropriate. Opportunities for biodiversity net gain are encouraged. **BI O6** Apply the precautionary principle in relation to proposed developments in environmentally sensitive areas to ensure that all potential adverse impacts on a designated NHA or Natura 2000 Site arising from any proposed development or land use activity are avoided, remedied, or mitigated. **BI P5** Identify and conserve locally important biodiversity sites in the county which contribute to the overall ecological network of County Kildare. **EC P19** Support the development, reinforcement, renewal and expansion of the electricity transmission and distribution grid to provide for the future physical and economic development of Kildare Such projects shall be subject to AA screening and where applicable, Stage 2 AA. The developments will have regard for protected species and provide mitigation and monitoring where applicable. **BI O1** Require, as part of the Development Management Process, the preparation of Ecological Impact Assessments that adequately assess the biodiversity resource within proposed development sites, to avoid habitat loss and fragmentation and to integrate this biodiversity resource into the design and layout of new development and to increase biodiversity within the proposed development. Such assessments shall be carried out in line with the CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. **BI O18** Require all applications for new developments to identify, protect and sensitively enhance the most important ecological features and habitats, and incorporate these into the overall open space network, keeping free from development and to provide links to the wider Green Infrastructure network as an essential part of the design process and by making provision for local biodiversity (e.g. through provision of swift boxes or towers, bat roost sites, hedgehog highways, green roofs, etc.).	comprehensive AA Screening and NIS has been submitted along with this application in which impacts with regard to European Sites is assessed. The Proposed Project will not contravene the objectives of the Kildare County Development Plan. As part of the Proposed Project, a number of biodiversity management and enhancement measures are proposed, including peatland enhancement, woodland planting, management of marsh fritillary habitat and the creation of pollinator-friendly corridors through the Proposed Wind Farm site (see BMP, Appendix 6-5), supporting the objectives of the KCDP and enhancing the overall biodiversity of the Project Site. Additionally, as discussed in Section 6.4 above, potential for impacts on local water quality has been identified. Appropriate mitigation measures have been applied to prevent impacts in this regard, as described in Section 6.4 above and in Section 9.5 of Chapter 9 Water of this EIAR. As such, on review of the plan, no potential for cumulative effects when considered in-combination with the Proposed Project was identified.

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	LR O39 Promote and enhance public access for all to the upland areas, rivers, lakes and other natural amenities of County Kildare, in conjunction with the relevant landowners and agencies, while protecting environmental sensitivities, ecological corridors and built heritage. **LR O12** Recognise that boglands, including cutaway and cut-over bogs, are critical natural resources for ecological and environmental reasons, particularly for climate mitigation and adaptation. Development proposals for boglands that reduce biodiversity and increase greenhouse gas will not be considered. Appropriate environmental assessment should be carried out for any development proposals which impact on boglands. **EC P2** Promote renewable energy use generation and associated electricity grid infrastructure at appropriate locations within the built environment and open countryside to meet national objectives towards achieving a net zero carbon economy by 2050. **EC O2** Adopt an informed and positive approach to renewable energy proposals, having regard to the proper planning and sustainable development of the area, including community, environmental and landscape impacts and impacts on protected or designated heritage areas / structures. <u>Biodiversity Net Gain (BNG)</u> **BI O5** Move towards no net loss of biodiversity through strategies, plan, mitigation measures, appropriate offsetting and/or investment in Blue Green infrastructure. **BI O7** Pursue insofar as possible and practical, a policy of biodiversity net gain through strategies, plans, developments, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure. <u>Biodiversity Enhancement</u> **BI O3** Actively support the implementation of national biodiversity initiatives such as the All-Ireland Pollinator Plan 2021-2026	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	BI O24 Identify biodiversity corridors, watercourses, significant as well as native and indigenous hedgerows, or marginal habitat, between County Biodiversity Sites in order to appropriately landscape same in order to ensure population recovery and survival, abundance, productivity, genetic diversity and species richness. **LR O8** Ensure that all quarrying activities and projects associated with the extractive industry comply with all relevant Planning and Environmental Legislation and the Guidelines for the Protection of Biodiversity within the Extractive Industry document 'Wildlife, Habitats & the Extractive Industry'. **LR O74** Protect and enhance existing biodiversity rich areas within state and publicly owned land, peatlands, river, canal and railway corridors, grass verges along public roads and existing and future greenways, public parks and public open spaces in towns and villages. **LR O77** Encourage the planting of pollinator friendly trees and plants, where appropriate, to improve pollinator populations within state and publicly owned land, public parks and public open spaces in towns and villages, including as part of mixed use and residential developments, in accordance with the All Ireland Pollinator Plan 2015- 2020. **BI O19** Require that all biodiversity data gathered in the preparation of planning applications will be made available to the National Biodiversity Data Centre (NDBC). <u>Designated sites for nature conservation</u> **BI O6** Apply the precautionary principle in relation to proposed developments in environmentally sensitive areas to ensure that all potential adverse impacts on a designated NHA or Natura 2000 Site arising from any proposed development or land use activity are avoided, remedied, or mitigated. **BI P2** Seek to contribute to maintaining or restoring the conservation status of all sites designated for nature conservation or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs), Ramsar Sites and Statutory Nature Reserves.	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	BI O8 Support the implementation of the National Raised Bog Special Areas of Conservation Management Plan 2017-2022. **BI O9** Avoid development that would adversely affect the integrity of any Natura 2000 site and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive, to support the conservation and enhancement of Natura 2000 Sites including any additional sites that may be proposed for designation during the period of this Plan and protect the Natura 2000 network from any plans and projects that are likely to have a significant effect on the coherence or integrity of a Natura 2000 Site. **BI O10** Ensure an Appropriate Assessment Screening, in accordance with Article 6(3) and Article 6(4) of the Habitats Directive, Section 177A of the Planning and Development Act (2001-2022) or any superseding legislation and with DEHLG guidance (2009), is carried out in respect of any plan or project not directly connected with or necessary to the management of a Natura 2000 site to determine the likelihood of the plan or project having a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects and to ensure that projects which may give rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites will not be permitted (either individually or in combination with other plans or projects) unless for reasons of overriding public interest. **BI O11** Support the establishment of conservation measures and the preparation and implementation of management plans for the conservation of Natura 2000 sites by NPWS, as required by Article 6(1) of the Habitats Directive. **BI O15** Ensure that any new development proposal does not have a significant adverse impact on rare and threatened species, including those protected under the Wildlife Acts 1976 and 2012, the Birds Directive 1979 the Habitats Directive 1992 and the Flora Protection Order species and any species listed under the national red lists or that could be listed on a national red list. **BI O16** Ensure appropriate species and habitat avoidance and mitigation measures are incorporated into all new development proposals.	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	BI O17 Require a derogation licence, where necessary, issued by the DHLGH, in the event of a proposed development impacting on a site known to be a breeding or resting site of species listed in the Habitats Directive (Annex IV species). **BI O20** Conserve and protect habitats and species listed in the Annexes of the EU Habitats Directive (92143/EEC) (as amended), the Birds Directive (20091147/EC), Directive Annex 2, the Wildlife Acts 1976 to 2000, The Wildlife Acts 1976 (as amended) and the Flora Protection Order No 94 of 1999. **BI O21** Work with bodies such as the NPWS and National Biodiversity Data Centre to ensure that species for which Kildare is a national stronghold such as Green-Flowered Helleborine Orchid, Yellowhammer and Linnet, which are nationally rare or declining, are supported to flourish and seek to ensure the habitat conditions favourable to such species are retained in the county. **BI O22** Identify and protect areas of high nature conservation value (including but not limited to SAC/SPA/pNHA) and support the landscape features which act as ecological corridors/networks and stepping-stones, such as river corridors, hedgerows, and road verges so as to minimise the loss of habitats and features of the wider countryside which are of major importance for wild fauna and flora in accordance with Article 10 of the Habitats Directive. **BI O12** Require the preparation of an Ecological Impact Assessment (EcIA) by a suitably qualified professional for proposals for development within or adjacent to a Natural Heritage Area (NHA)/proposed Natural Heritage Areas (pNHA), to ensure the development is designed and sited to minimise its impact on the biodiversity, ecological, geological and landscape value of the site, particularly plant and animal species listed under the Wildlife Acts. Such assessments shall be carried out in line with the CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. **BI O14** Conserve, preserve and protect the integrity of and maintain the favourable conservation value/status within or adjacent to Ramsar Sites, Statutory Nature Reserves, Biogenetic Reserves, Wildfowl Sanctuaries, all existing and proposed NHAs. They should be designed and sited so as to minimise their impact on the ecological and landscape values of these sites under National and European legislation and International Agreements.	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	LR O23 Co-operate with the relevant government departments in the protection and conservation of both the Royal and Grand Canals and the River Barrow, designated as a cNHA and SAC respectively and in the sections of the River Liffey designated as a cNHA" <u>Protected Habitats and Species</u> **BI P4** Ensure that any new development proposal does not have a significant adverse impact, incapable of satisfactory mitigation on plant, animal or bird species which are protected by law **BI O22** Identify and protect areas of high nature conservation value (including but not limited to SAC/SPA/pNHA) and support the landscape features which act as ecological corridors/networks and stepping-stones, such as river corridors, hedgerows, and road verges so as to minimise the loss of habitats and features of the wider countryside which are of major importance for wild fauna and flora in accordance with Article 10 of the Habitats Directive. <u>Watercourse Protection</u> **BI P7** Recognise and promote inland waters, natural environmental assets and to protect rivers, streams and other watercourses and, wherever possible, maintain them in an open state capable of providing suitable habitats for fauna and flora while discouraging culverting or realignment. **BI P8** Ensure that Kildare's wetlands and watercourses are retained for their biodiversity, climate change mitigation properties and flood protection values and at a minimum to achieve and maintain at least good ecological status for all wetlands and watercourses in the county by, at the latest, 2027 in line with the Water Framework Directive and Ramsar Convention **IN O5** Manage, protect, and enhance surface water and groundwater quality to meet the requirements of the EU Water Framework Directive. **IN O6** Require an undisturbed edge or buffer zone to be maintained, where appropriate, having regard to the riparian buffer zones (Table 12.4 refers) to maintain the natural function of existing ecosystems associated with water courses and their riparian zones, and to enable sustainable public access. The width	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	of the edge or buffer zone shall be determined during the appropriate environmental assessment such as EcIA or AA. **IN O7** Protect recognised salmonid water courses in conjunction with Inland Fisheries Ireland such as the Liffey catchment, which are recognised to be exceptional in supporting salmonid fish species. **AH O44** Co-operate with Waterways Ireland in the management, maintenance and enhancement of the Royal Canal and Grand Canal and associated structures/features. Such projects shall be subject to an AA Screening Report, and where applicable, Stage 2 AA. They shall have a regard for any hydrological connection shared with a European Site and their qualifying interest species. The project shall account for any potential likely significant effects and provide mitigation and monitoring where appropriate. **BI O37** Ensure the protection of rivers, streams and other watercourses and, wherever possible, maintain them in an open state capable of providing suitable habitats for fauna and flora while discouraging culverting or realignment. Endeavour to re-open previously culverted streams and watercourses through any future development/redevelopment proposals. **BI O38** Require the preparation and submission of an Ecological Impact Assessment (EcIA) including, but not limited to, bat and otter surveys for developments along river or canal corridors. **BI O39** Consult with Inland Fisheries Ireland (IFI) and Waterways Ireland in relation to any development (greenfield development or redevelopment of brownfield sites) that could potentially impact on the aquatic ecosystems and associated riparian habitats while taking account of 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites' (IFI, 2004) and 'Planning for Watercourses in the Urban Environment' (IFI, 2020). **BI O40** Support Inland Fisheries Ireland's pilot projects to investigate the incorporation of habitat restoration measures on waters draining the Bog of Allen into flood management schemes. **BI O41** Maintain riparian buffer zones and potential uses as identified in Table 12.4 when considering potential development and proposed development layouts within or adjacent to waterways.	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	BI O42 Ensure that any proposals for a National Peatlands Park will consider the important rivers and populations of native fish and other species, when draining the Bog of Allen area. **BI O43** Consult with Inland Fisheries Ireland (IFI) and Waterways Ireland in relation to any structures designed for crossing fisheries waters. In this regard consideration must be given to the following biological criteria: • species of fish required to safely pass • size of fish required to pass (life stage) • time of year in which fish passage is required • high and low design passage flows etc. **BI O44** Require that expert advice is sought from a suitably qualified bat expert, in developing lighting proposals along river and stream corridors or other important locations or corridors for wildlife, to mitigate impacts of lighting on bats and other species. The use of artificial lighting shall be avoided in streamside zones (see Figure 12.2) and artificial lighting should be restricted unless absolutely necessary in the middle zone (See Table 12.4). LEDs should, where permitted, be warm white to minimise disturbance to wildlife. **BI O45** Ensure that any runoff from developed areas does not result in any deterioration of downstream watercourses or habitats and require that pollution generated by a development is treated within the development area prior to discharge to local watercourses. **BI O46** Generally, prohibit infilling of land adjacent to rivers, including natural floodplains, prior to or during any development. This will only be permitted, where, in the opinion of the planning authority, there is an overriding public interest in order to provide a key public infrastructure or to provide a more coherent design approach (in line with an approved urban design strategy) but, it will be subject to ensuring that adequate compensatory flood storage (if necessary) is provided elsewhere. **BI O47** Ensure the protection, improvement or restoration of riverine floodplains and to promote strategic measures to accommodate flooding at appropriate locations including nature-based solutions, in order to protect ground and surface water quality and build resilience to climate change. <u>Invasive Species and Noxious Weeds</u>	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	BI P9 Implement and support measures for the prevention and/or eradication of invasive species within the county and the control of noxious weeds **BI O58** Require all development proposals to address the presence or absence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan where such species exist, in order to comply with the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011-2015. Green Infrastructure within Public Open Spaces and Parks **BI P14** Protect and enhance the Green Infrastructure network throughout the county **BI O74** Strengthen ecological networks between urban areas to create greater linkages to Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional Green Infrastructure network. **Infrastructure and Environmental Services Policies and Objectives:** Water Services **IN P2** Ensure the protection and enhancement of water quality throughout Kildare in accordance with the EU WFD and facilitate the implementation of the associated programme of measures in the River Basin Management Plan 2018-2021 (and subsequent updates). **IN O5** Manage, protect, and enhance surface water and groundwater quality to meet the requirements of the EU Water Framework Directive. **IN O6** Require an undisturbed edge or buffer zone to be maintained, where appropriate, having regard to the riparian buffer zones to maintain the natural function of existing ecosystems associated with water courses and their riparian zones, and to enable sustainable public access. The width of the edge or buffer zone shall be determined during the appropriate environmental assessment such as EcIA or AA.	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	Pollution Control – Water, Air, Noise and Light **IN P7** Support the implementation of the Water Framework Directive, the River Basin Management Plan, and the Local Authority Waters Programme in achieving and maintaining at least good ecological status for all water bodies in the county. **IN P8** Implement the provisions of EU and National legislation on air, noise, and light pollution and other relevant legislative requirements, as appropriate **IN O57** Assess applications for developments, having regard to the impact on the quality of surface waters and any targets and measures set out in the River Basin Management Plan and any subsequent local or regional plans. Where developments have the potential to impact the water qualify of surface waters and/or any of the targets and measures set out in the RBMP, such a project should be subject to AA screening and where applicable, Stage 2 AA.	
Offaly County Development Plan 2021-2027	**Biodiversity and Landscape Policies** Designated and Non-Designated Sites **BLP-01** It is Council policy to protect, conserve, and seek to enhance the county's biodiversity and ecological connectivity. **BLP-02** It is Council policy to conserve and protect habitats and species listed in the Annexes of the EU Habitats Directive (92/43/EEC) (as amended) and the Birds Directive (2009/147/EC), the Wildlife Acts 1976 (as amended) and the Flora Protection Orders. **BLP-03** It is Council policy to support and co-operate with statutory authorities and others in support of measures taken to manage proposed or designated sites in order to achieve their conservation objectives. **BLP-04** It is Council policy to protect and maintain the conservation value of all existing and future Natural Heritage Areas, proposed Natural Heritage Areas, Nature Reserves, Ramsar Sites, Wildfowl Sanctuaries and Biogenetic Reserves in the county.	The Offaly County Development Plan (OCDP) was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity. A comprehensive AA Screening and NIS has been submitted along with this application in which impacts with regard to European Sites is assessed. The Proposed Project will not contravene the objectives of the OCDP. As part of the Proposed Project, a number of biodiversity management and enhancement measures are proposed, including peatland enhancement, woodland planting, management of marsh fritillary habitat and the creation of pollinator-friendly corridors through the Proposed Wind Farm site (see BMP, Appendix 6-5), supporting the objectives of the OCDP and enhancing the overall biodiversity of the Project Site.

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	BLP-05 It is Council policy to ensure that development does not have a significant adverse impact, incapable of satisfactory avoidance or mitigation, on plant, animal or bird species protected by law. **BLP-06** It is Council policy to consult with the National Parks and Wildlife Service, and take account of any licensing requirements, when undertaking, approving or authorising development which is likely to affect plant, animal or bird species protected by law. **BLP-07** It is Council policy to support the implementation of the National Biodiversity Action Plan 2017-2021 and the Offaly Heritage Plan Key Actions 2017-2021 and future editions in partnership with relevant stakeholders subject to available resources. **BLP-08** It is Council policy to work with all state agencies to promote the development of all aspects of park management in the Slieve Bloom Mountains. <u>Peatlands</u> **BLP-14** It is Council policy to protect the county's designated peatland areas and landscapes, including any historical walkways through bogs and to conserve their ecological, archaeological and cultural heritage and to develop educational heritage. **BLP-15** It is Council policy to work with adjacent local authorities and relevant stakeholders in promoting a National Park designation for the peatlands in the midlands and a 'Regional Peatway' connecting natural and cultural attractions. **BLP-16** It is Council policy to support the provision of outdoor pursuits, walking and cycling routes through the county's peatlands and network of industrial railways linking the River Shannon Blueway, Royal Canal, Grand Canal and Barrow Blueway across the midlands as outlined in the 'Major Cycling Destination in the Midlands of Ireland –Feasibility Study 2016', which is a priority of the 'Outdoor Recreation Plan State Lands and Waters' (2017). **BLP-18** It is Council policy to support collaboration between Offaly County Council, Regional Transition Team and relevant stakeholders of a partnership approach to integrated peatland management for a just	Additionally, as discussed in Section 6.4 above, potential for impacts on local water quality has been identified. Appropriate mitigation measures have been applied to prevent impacts in this regard, as described in Section 6.4 of this Biodiversity Chapter and in Section 9.5 of Chapter 9 Water of this EIAR. In relation to the National Peatlands Park proposals, the presence of the Proposed Wind Farm will not prohibit the designation of the National Peatlands Park. The Proposed Enhancement Areas outlined within the BMP (Appendix 6-5), in combination with the implementation of the Draft Rehabilitation Plans will continue to add to the natural landscapes within the Proposed Wind Farm site. Additionally, the key areas of ecological interest as outlined within the National Peatlands Park brochure (see Section 6.3.1.11.1 above) have been fully considered in this Biodiversity Chapter. As such, on review of the plan, no potential for cumulative effects when considered in-combination with the Proposed Project was identified.

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	transition that incorporates the management, rehabilitation and restoration / re-wetting of significant tracts of peatlands in conjunction with appropriate developed after uses. Waterways, Lakes and Wetland Landscapes **BLP-20** It is Council policy to preserve riparian buffer strips free from development by reserving a minimum of 10 metres either side of all watercourses (measured from top of bank) with the full extent of the protection determined on a case-by-case basis by the Council, based on site specific characteristics and sensitivities. **BLP-21** It is Council policy to promote clear span bridging structures as the preferred option for culverts Any development proposal requiring culverting should also document stream habitat lost and provide compensatory habitat where possible. Realignment of water courses should incorporate stream enhancement measures, as outlined in Office of Public Works Environmental Guidance. The Council will consult with Inland Fisheries Ireland in relation to riparian and instream works as appropriate. **BLP-22** It is Council policy to promote the removal of historic culverts and infilling of watercourses. **BLP-23** It is Council policy to consider the Waterways Corridor Study 2002 and protect the recreational, educational and amenity potential of navigational and non-navigational waterways within the county, such as the Grand Canal Corridor, towpaths and adjacent wetland landscapes, taking into account more recent heritage and environmental legislation (including the SEA Directive) and environmental policy commitments. Trees, Forestry and Hedgerows **BLP-24** It is Council policy to support the protection and management of existing networks of woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character, and to strengthen local networks. **BLP-25** It is Council policy to encourage the planting of native species in all new residential developments (individual and multiple units) and as part of landscaping for commercial and industrial developments.	

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	BLP-26 It is Council policy to require, where practical, the management of mature trees, such as tree surgery instead of felling particularly where the trees contribute to amenity. **BLO-14** It is an objective of the Council to preserve individual trees and groups of trees that are included in Table 4.13 and 4.14 of the County Development Plan. **BLO-16** It is an objective of the Council to encourage the preservation and enhancement of native and semi-natural woodlands, groups of trees and individual trees, not listed in Table 4.13 and 4.14; (a) in particular, on the grounds of Country Houses, Gardens and Demesnes and on approaches to settlements in the county; and (b) as part of the development management process, require the planting of native, deciduous, pollinator friendly trees in all new developments where possible. **BLO-17** It is an objective of the Council to encourage pursuant to Article 10 of the Habitats Directive, the management of features of the landscape, such as traditional field boundaries, important for the ecological coherence of the Natura 2000 network and essential for the migration, dispersal and genetic exchange of wild species. **BLO-18** It is an objective of the Council to encourage the retention, wherever possible, of hedgerows and other distinctive boundary treatment in the county. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, provision of the same type of boundary will be required of similar length and set back within the site in advance of the commencement of construction works on the site (unless otherwise agreed by the Planning Authority). All Ireland Pollinator Plan **BLP-32** It is Council policy to support the aims and objectives of the All Ireland Pollinator Plan 2021- 2025 and any subsequent editions by delivering appropriate management actions as set out in their guidance documents. **BLP-33** It is Council policy to support alternative landscape maintenance regimes which promote and work towards the reduction and ultimate elimination of use of herbicides in Parks and public land, while supporting the National Bee Pollinator Plan in promoting bee friendly habitats.	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	Invasive Species **BLP-34** It is Council policy to continue to deliver and support measures for the prevention, control and/or eradication of invasive species within the county, and to seek details of how these species will be managed and controlled where their presence is identified. **Biodiversity and Landscape Objectives** Designated and Non-Designated Sites **BLO-02** It is an objective of the Council that no plans, programmes or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc., or projects). **BLO-03** It is an objective of the Council that all projects and plans arising from this Plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. A plan or project will only be authorised after the competent authority has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and subsequent Appropriate Assessment where necessary, that: › The plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or › The plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or › The plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000. **BLO-04** It is an objective of the Council to ensure that the impact of development within or adjacent to national designated sites, Natural Heritage Areas, proposed 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 prepared by a suitably qualified professional, which should accompany planning applications. **BLO-05** It is an objective of the Council in accordance with Article 4(4) of the Birds Directive and Regulation 27(4) of the European Communities (Birds and Habitats) Regulations 2011-2015 to strive to avoid pollution or deterioration of bird habitats outside Special Protection Areas. **BLO-06** It is an objective of the Council to take account of the objective and management practices proposed in any management or related plans for European Sites (SACs and SPAs) in and adjacent to the county published by the Department including the National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017-2022 and any subsequent editions. <u>Peatlands</u> **BLO-10** It is an objective of the Council to require the preparation and submission of a Hydrological Report/Assessment for significant developments within and in close proximity to protected raised bogs and to take account of same in the assessment of impacts on the integrity of peatland ecosystems. **BLO-11** It is an objective of the Council to work with relevant stakeholders on suitable peatland sites in order to demonstrate best practice in sustainable peatland conservation, management and restoration techniques to promote their heritage and educational value subject to ecological impact assessment and appropriate assessment screening.	

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	Waterways, Lakes and Wetland Landscapes **BLO-12** It is an objective of the Council to maintain a riparian zone for larger and smaller river channels based on the Inland Fisheries Ireland updated guideline document, 'Planning for Watercourses in the Urban Environment, a Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning'. **BLO-13** It is an objective of the Council to (a) investigate the feasibility of and cooperate with relevant agencies in providing a Linear Park based on the River Shannon from Banagher to Meelick, which takes account of the sensitive ecological nature of the Callows area and (b) to support the development of an overall vision/strategy for the Shannon Callows in co-operation with all stakeholders to ensure that the area is appropriately managed at a landscape scale. Invasive Species **BLO-20** It is an objective of the Council to require, as part of the planning application process, the appropriate eradication/control of invasive species when identified on site or in the vicinity of a site, in accordance with Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015. **BLO-21** It is an objective of the Council to continue to maintain mapping identifying the location of invasive species in the county in conjunction with the National Biodiversity Data Centre. Wilderness Corridors **BLO-28** It is an objective of the Council to protect the County's 'Peatland and Nature Corridors' as shown in Figure 4.9(b) in such a manner that any future development therein is of an appropriate scale and design that does not give rise to significant adverse impacts on the environment, biodiversity & habitats, landscape character, or visual amenity and can integrate effectively into its surroundings; to strictly direct large scale energy production projects, most particularly wind farms, onto areas that are located outside of the 'Peatland and Nature Corridors', and to integrate routes identified in the Midlands Cycling Destination - Offaly Network Map and the National Cycle Network within the corridors.	

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
Kildare County Council Biodiversity Action Plan 2026-2031	**Objective 1** – Landscapes for Nature **1.5:** To support the implementation of Objective BI O21 in the CDP: "Work with bodies such as the NPWS and National Biodiversity Data Centre to ensure that species for which Kildare is a national stronghold such as Green-Flowered Helleborine Orchid, Yellowhammer and Linnet, which are nationally rare or declining, are supported to flourish and seek to ensure the habitat conditions favourable to such species are retained in the county." **1.6:** To support the implementation of Objective BI A31 in the County Development Plan; Work with Bord Na Mona and other stakeholders to prepare a Green Infrastructure Masterplan that will inform the delineation of core areas, stepping stones and corridors (long distance peatways) that may inform the designation of an interconnected Bog of Allen Nature Reserve, Special Amenity Area Order and/or National Peatlands Park **1.7:** Support LAWPRO, IFI and other key stakeholders to identify and support waterbody, wetland and water quality projects with benefits for biodiversity and climate action. **1.8:** Continue to promote 'Nature Based Solutions' in all development, and require local authority capital, public realm and other council-related projects9 to consider nature-based solutions10 at concept stage, and to set out how biodiversity outcomes have been included in the design. **1.10:** Actively support the implementation of national biodiversity initiatives, including the All-Ireland Pollinator Plan **1.11:** Promote native tree and broadleaf planting within the council and throughout the community. Promote the "Right Tree, Right Place" message **Objective 2 –** Engagement, Awareness and Understanding **Objective 3** – Recording, Monitoring and Data Management	The Kildare Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity. The Proposed Project will not contravene the objectives of the Kildare Biodiversity Action Plan. As part of the Proposed Project, a number of biodiversity management and enhancement measures are proposed, including peatland enhancement, woodland planting, management of marsh fritillary habitat and the creation of pollinator-friendly corridors through the Proposed Wind Farm site (see BMP, Appendix 6-5), supporting the objectives of the Biodiversity Action Plan and enhancing the overall biodiversity of the Project Site. In relation to the National Peatlands Park proposals, the presence of the Proposed Wind Farm will not prohibit the designation of the National Peatlands Park. The Proposed Enhancement Areas outlined within the BMP (Appendix 6-5), in combination with the implementation of the Draft Rehabilitation Plans will continue to add to the natural landscapes within the Proposed Wind Farm site. Additionally, the key areas of ecological interest as outlined within the National Peatlands Park brochure (see Section 6.3.1.11.1 above) have been fully considered in this Biodiversity Chapter. As such, on review of the Kildare Biodiversity Action Plan, no potential for cumulative effects when considered in-combination with the Proposed Project was identified.

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	3.4: Support the National Biodiversity Data Centre (NBDC) to have up to date biological records for Kildare by ensuring survey results from KCC projects and surveys are fed into the national database **Objective 4** – Embed Actions Across Kildare County Council **4.6:** Advance a policy of 'biodiversity net gain' (BNG), wherever possible, through strategies, plans, developments, mitigation measures, appropriate off-setting and/or investment in Green and Blue Infrastructure with specific evidence-based and locally relevant biodiversity and environmental measures, through the review of the next County Development Plan. **4.10:** Support the work of environmental non-governmental organisations and communities working to promote and conserve peatlands throughout the county. **Objective 5** – Support Community-led Initiatives	
Offaly Biodiversity Action Plan 2025-2030	The Plan has been developed to closely align with the objectives and actions of the 4th National Biodiversity Action Plan 2023 – 2030 which ensures the work will benefit habitats and species both locally and nationally. <u>Actions for biodiversity</u> **21** Implement actions of the All-Ireland Pollinator Plan for Councils **22** Support initiatives under the Water Framework Directive that contribute to the restoration of ecology in water bodies, and the Blue Dot Catchments Programme. **23** Protect existing and maximise nesting opportunities arising from new developments for Swift, House Sparrow, House Martin, Swallows and bats. <u>Invasive Alien Species</u>	The Offaly Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity. The Proposed Project will not contravene the objectives of the Offaly Biodiversity Action Plan. As part of the Proposed Project, a number of biodiversity management and enhancement measures are proposed, including peatland enhancement, woodland planting, management of marsh fritillary habitat and the creation of pollinator-friendly corridors through the Proposed Wind Farm site (see BMP, Appendix 6-5), supporting the objectives of the Offaly Biodiversity Action Plan and enhancing the overall biodiversity of the Project Site.

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	25 Prioritise the assessment and management of new IAS discoveries in the county in collaboration with other counties + agencies Building Resilience **28** Work with the relevant authorities to support the preparation of, and implement, Ireland's Nature Restoration Plan, when adopted, and where relevant for Offaly County Council, to help achieve national restoration targets. **30** Work with relevant agencies annually to continue to assess wildfire risk to bogs and upland habitats and management of same.	As such, on review of the Offaly Biodiversity Action Plan, no potential for cumulative effects when considered in-combination with the Proposed Project was identified.
Allenwood Biodiversity Action Plan 2021-25	**Objective 1:** Making Allenwood wildlife friendly **Objective 2:** Raising awareness of local wildlife and how to protect it. **Objective 3**: Collecting evidence to track change and measure success. **Objective 4:** Build local capacity to manage and record biodiversity.	The Allenwood Local Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity. The Proposed Project will not contravene the objectives of the Allenwood Local Biodiversity Action Plan. The Proposed Grid Connection underground electrical cabling route will pass through Allenwood, however these works will be entirely contained within the existing road corridor. As such, on review of the Allenwood Local Biodiversity Action Plan, no potential for cumulative effects when considered in-combination with the Proposed Project was identified.
Bord na Móna Biodiversity Action Plan 2016-2021	**Objective 1 –** Carry out all works in line with best practice guidelines and relevant legislation across all Bord na Móna Bogs **Objective 2 –** Monitor biodiversity areas and identify and survey further biodiversity hotspots within Bord na Móna Bogs	The Bord na Móna Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity.

Plans	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Proposed Project compliance with policy, and potential to result in cumulative effects
	Objective 3 – Develop and promote best practice in terms of rehabilitation for all Bord na Móna Bogs to stabilise former peat production areas and enhance biodiversity **Objective 4 –** Raise awareness and create a greater appreciation of the biodiversity and natural heritage of Bord na Móna cutaway bogs and associated lands **Objective 5 –** Monitor the progress of the Bord na Móna Biodiversity Action Plan	The Proposed Project will not contravene the objectives of the Bord na Móna Biodiversity Action Plan. It is proposed to undertake peatland enhancement measures within an area of 263.8ha of cutover bog as part of the Proposed Project (see BMP, Appendix 6-5), supporting objectives relating to peatland rehabilitation and enhancing the overall biodiversity in these areas. As such, on review of the Bord na Móna Biodiversity Action Plan, no potential for cumulative effects when considered in-combination with the Proposed Project was identified.

6.5.3 Conclusion of Assessment of Cumulative Effects

The residual construction, operational and decommissioning impacts of the Proposed Project are considered cumulatively with other plans and projects as described above. Particular focus has been placed on those plans and projects that are in closest proximity to the Proposed Project and those that could be potentially affected via downstream surface water.

Following the detailed surveys undertaken and impact assessment provided in Section 6.5, it is concluded that there will be no significant residual cumulative effects on biodiversity. The other permitted, proposed, and/or existing wind farms in the area were considered cumulatively and the Proposed Project has been deliberately designed to minimise the effects on biodiversity. The habitats lost to the Proposed Project permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site). A large portion of this loss comprises bare cutover bog (which is heavily degraded through extensive drainage and former peat extraction activities) and conifer plantation, which are of low ecological value. The remainder of the habitat loss includes revegetating bog, scrub and woodland habitats. These losses represent a very small proportion of the overall quantum of habitats within the Project Site. In addition, the Proposed Project includes enhancement in the form of habitat management and enhancement that will protect and enhance a far greater area than that which will be lost. This is fully described in the BMP provided as Appendix 6-5. As such, there is no potential for the Proposed Project to contribute to any significant cumulative habitat loss when considered in combination with any other plans and projects.

The potential for the Proposed Project to contribute to a cumulative effect on water quality in the hydrological cumulative study area was considered in this chapter and also in Chapter 9 of this EIAR. The Proposed Project includes a range of measures that are in place to prevent any water pollution or hydrological effects outside the Proposed Project development footprint. The implementation of these measures ensures that there is no potential for significant cumulative effects on any downstream receptors, whether the Proposed Project is considered on its own or in combination with other plans or projects.

No significant effects as a result of the Proposed Project in relation to disturbance, displacement or mortality of faunal species has been identified. Furthermore, there is no identifiable pathway through which the Proposed Project could interact with other plans or projects to give rise to cumulative effects on faunal species. Therefore, there is no potential for the Proposed Project to contribute to any cumulative effect in this regard.

The Proposed Project will not result in any long-term 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 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.

6.6 Summary

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 Designated 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, is not likely to have adverse effects on the European Sites that were assessed as part of the AA process. Similarly, with the prescribed mitigations in place, there is no potential for impact on any Nationally Designated Site.

Based on the design of the project and implementation of best practice and mitigation described within the application, significant individual or cumulative impacts effects on biodiversity are not anticipated at the international, national, county, or local scales or on any of the identified KERs.