GDG
GAVIN & DOHERTY
GEOSOLUTIONS

Illaunbaun Wind Farm - Environmental Impact Assessment Report

Appendix A08-01: Designated Sites Baseline

This report considers the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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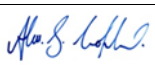
Quality Assurance

The findings outlined within this report and the data we have provided are to our knowledge true and express our bona fide professional opinions. This report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidelines. Where pertinent CIEEM Guidelines used in the preparation of this report include the *Guidelines for Ecological Report Writing* (CIEEM, 2017a), *Guidelines for Preliminary Ecological Appraisals* (CIEEM, 2017b) and *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2024). CIEEM Guidelines include model formats for Preliminary Ecological Appraisal and Ecological Impact Assessment. Also, where pertinent, evaluations presented herein take cognisance of recommended Guidance from the EPA such as *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2022), and in respect of European sites, *Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (European Commission, 2019).

Due cognisance has been given at all times to the provisions of the *Wildlife Acts 1976-2023,* the *European Union (Natural Habitats) Regulations*, the *European Communities (Birds and Natural Habitats) Amendment Regulations 2021,* EU Regulation on Invasive Alien Species under *EU Regulation 1143/2014*, the EU Birds *Directive 2009/147/EC* and *Habitats Directive 92/43/EEC*.

No method of assessment can completely remove the possibility of obtaining partially imprecise or incomplete information. Any limitation to the methods applied or constraints however are clearly identified within the main body of this document.

Version	Date		Name	Signature
1	10/01/2024	**Report Prepared by:**	Conor Daly MSc BSc ACIEEM	
2	14/03/2024	**Report Checked and amended by:**	Dr Alex Copland BSc PhD MIEnvSc MCIEEM	
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Project Reference	**2216L**	**Title**	Designated Sites Baseline Technical Appendix

Notice

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1. INTRODUCTION

1.1. Purpose of Technical Appendix

This appendix presents the statutory sites designated for conservation (Designated Sites) which contribute to the ecological baseline information for the proposed Illaunbaun Wind Farm Project (from here on referred to as 'the Proposed Development') and the associated Zone of Influence (ZoI) of the Proposed Development relevant to European and National sites designated for conservation to inform the biodiversity chapter of the Environmental Impact Assessment (EIA). The Proposed Development comprises all the land under consideration at the time of surveys that falls within the "Site Layout" of the Wind Farm site and Turbine Delivery Route (TDR) and is provided in the Description of the Development in the Main EIA Document.

1.1.1. Statements of Authority

This report has been prepared by experienced Inis Environmental Consultants Ltd (INIS) ecologists, based on field data collected by skilled INIS ecologists who are experienced in undertaking field surveys in relevant habitats and for relevant species. The contributors to this chapter are listed below:

Dr Alex Copland BSc PhD MIEnvSc MCIEEM is Technical Director with INIS and **checked** this report. Alex has over 30 years of professional experience working in both statutory and private companies, in third-level research institutions and with environmental NGOs. He is a full member of the Institute of Environmental Sciences (IES) and the Chartered Institute of Ecology and Environmental Management (CIEEM). He is proficient in experimental design and data analysis and has managed several large-scale, multi-disciplinary ecological projects, managing staff and resources to meet budgetary constraints and the successful delivery of projects on time. These have included research and targeted management work for species of conservation concern, ecological assessments (including fieldwork and reporting) for large-scale infrastructure projects (including Strategic Infrastructure Developments) and delivering successful planning outcomes, the design and delivery of practical conservation actions with a range of stakeholders and end-users, education and interpretation on the interface between people and the environment and the development of coordinated, strategic plans for birds and biodiversity. He has written numerous scientific papers, developed and contributed to evidence-based position papers, visions and strategies on birds and habitats in Ireland. He has supervised the successful completion of research theses for several post-graduate students, including doctoral candidates and is a collaborative researcher with both UCD and UCC. He also sits on the Editorial Panel of the scientific journal, *Irish Birds*, which publishes original ornithological research relevant to Ireland's avifauna, and CIEEM'S Irish Policy Group.

Mr Conor Daly ACIEEM MSc BSc (Hons.) (Ecologist, INIS): Conor is the Report Team Lead with Inis Environmental and authored this report as part of the Inis report writing team baseline technical reports submissions. Conor was awarded an MSc in Biodiversity and Conservation from Trinity College Dublin in 2017 and an Honours BSc in Zoology for the University of Galway in 2016. Conor has been conducting ornithological surveys for projects since 2021 for a variety of projects including industrial estates and Wind Farms (small- large). Conor has experience in raptor conservation with ample experience with bird of prey pressures and threats to protected species and has provided reports for EIAR and NIS reports while working with Inis Environmental Ltd. Conor is an Associate member of CIEEM.

Darren McCartney BSc (Hons) HDip ACIEEM: Darren generated the maps for this report. Darren has worked in both the Field Ecology and GIS teams at Inis. He has conducted many Vantage Point surveys for bird species following best practice guidance at the proposed development and throughout Ireland.

He conducted surveys identifying potential nesting sites for peregrine falcon, kestrel and barn owl, surveys of breeding waders, wintering wildfowl and waders, transect surveys, breeding woodcock, hen harrier and merlin surveys. Darren is a competent habitat surveyor, experienced in using Fossitt and IVC classifications and identifying Annex 1 habitats.

1.1.2. Structure of Technical Appendix

This technical appendix has been set out as follows:

- **Section 2** sets out the approach and methodology used for obtaining the desk-study and survey data. The detail of the desk-study information acquired is presented in **Section 2.1**, whilst the field study methodology is presented in **Section 2.2**.
- **Section 3** provides the results of this data acquisition:
    - **Section 3.1** outlines the Designated Sites found within relevant ZoI of the Proposed Development.
        - **Section 3.1.1** provides the results of Designated Sites within the relevant Source-Pathway-Receptor (S-P-R) of the Wind Farm site.
        - **Section 3.1.2** provides the results of the Designated Sites within the relevant SPR of the TDR.
- **Section 4** outlines the summary of the baseline conditions of Designated Sites and their connectivity to the Proposed Development.

1.2. Legislation

The following legislation has been used and considered when developing the baseline for the Proposed Development:

- EU Habitats Directive (1992) Council Directive 92/43/EEC[1] ;
- EU Birds Directive (Council Directive 2009/147/EC[2];
- European Communities (Birds and Natural Habitats) Regulations 2011-2021 (as amended); Irish Wildlife Acts 1976 to 2023 ("Wildlife Acts")[3];
- 4th National Biodiversity Action Plan 2023 – 2030;
- Clare County Development Plan 2023 – 2029; and
- Clare Biodiversity Action Plan 2017-2023; Updated 2024-2030.

[1] *Directive - 92/43 - EN - Habitats Directive - EUR-Lex*
[2] *https://eur-lex.europa.eu/legal-content/EN/TXT/ 7*
[3] *Revised Acts*

1.3. Guidance and Best Practice

The following guidance has been used and considered when developing the baseline for the Proposed Development:

- Environmental Protection Agency (2022) Guidelines on the Information to be contained in EIA Reports, Draft;
- NPWS 'Ireland Red List No. 12: Terrestrial Mammals' (Marnell *et al.*, 2019);
- Communication from the Commission on the Precautionary Principle (European Commission, 2000);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (known as MN2000), Office for Official Publications of the European Communities, Luxembourg (European Commission, 2018);
- Assessment of plans and projects significantly affecting Natura 2000 sites: methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (European Commission, 2001);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (European Commission, 2007);
- Nature and biodiversity cases: Ruling of the European Court of Justice (European Commission, 2006);
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (European Commission, 2013);
- Article 6 of the Habitats Directive: Rulings of the European Court of Justice (Sundseth and Roth, 2014); and
- Practice Note PN02: Environmental Impact Assessment Screening Screening for Development Management. OPR (2021).
- NRA (2006) Guidelines for the Treatment of Otters during the Construction of National Road Schemes); and
- 'Irish Wildlife Manuals No. 76, National Otter Survey of Ireland 2010/12 (Reid *et al.*, 2013).

1.4. Relevant Designated Sites

The identification of relevant Designated Sites to be included in this report was based on the identification of the Zone of Influence (ZoI) of the Proposed Development, a source-pathway-receptor (S-P-R) model of effects, and the likely significance of any identified effects.

1.4.1. Source-Pathway-Receptor Model

Current guidance (OPR 2021) informing the approach to screening for Appropriate Assessment (AA) defines the zone of influence of a proposed development as the geographical area over which it could

affect the receiving environment in a way that could have significant effects on the Qualifying Interests (QIs) of a designated site. It is recommended that this is established on a case-by-case basis using the S-P-R model.

The likely effects of the Proposed Development on Designated Sites have been appraised using the S-P-R model, where:

1) A 'Source' is defined as the individual element (e.g. construction activity, noise, lighting, discharges) of the Proposed Development that has the potential to impact on a European site, its qualifying features and its conservation objectives;
2) A 'Pathway' is defined as the means or route by which a source can affect the ecological receptor; and
3) A 'Receptor' is defined as the Special Conservation Interests (SCIs) of the Special Protection Area (SPA) or Qualifying Interests (QIs) of a Special Area of Conservation (SAC) for which Conservation Objectives (COs) have been set for the Designated Sites being screened.

An S-P-R model is a standard tool used in environmental assessment. For an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur (OPR, 2021). The S-P-R model was used to identify a list of Designated Sites, and their QIs/SCIs, with potential links to Designated Sites. These are termed 'relevant' Designated Sites/QIs/SCIs throughout this report.

1.4.2. Zone of Influence

The proximity of the Proposed Development to Designated Sites, and more importantly QIs/SCIs of Designated Sites, is of importance when identifying potential likely significant effects. During the initial scoping of this report, a suitable ZoI based on potential receptors was applied for impact assessment.

A conservative approach has been used, which minimises the risk of overlooking distant or obscure effect pathways, while also avoiding reliance on buffer zones within which all Designated Sites should be considered. This approach assesses the complete list of all QIs/SCIs of Designated Sites in Ireland (i.e. potential receptors), instead of listing Designated Sites within buffer zones. This follows European Commission guidance.

In particular, it should identify:

- *"Any Natura 2000 sites geographically overlapping with any of the actions or aspects of the plan or project in any of its phases, or adjacent to them*;
- *Any Natura 2000 sites within the likely zone of influence of the plan or project. Natura 2000 sites located in the surroundings of the plan or project (or at some distance) that could still be indirectly affected by aspects of the project, including as regards the use of natural resources (e.g. water) and various types of waste, discharge or emissions of substances or energy*;
- *Natura 2000 sites in the surroundings of the plan or project (or at some distance) which host fauna that can move to the project area and then suffer mortality or other impacts (e.g. loss of feeding areas, reduction of home range);*
- *Natura 2000 sites whose connectivity or ecological continuity can be affected by the plan or project*" (European Commission, 2021, p.10).

Following the guidance set out by the National Roads Authority (NRA, 2009), the Proposed Development has been evaluated based on an identified ZoI with regard to the potential impact pathways to ecological features (e.g., static and mobile). The ZoI of the Proposed Development on mobile species (e.g., birds, mammals, and fish), and static species and habitats (e.g., saltmarshes, woodlands, and flora) is considered differently depending on the location. Mobile species have 'ranges' outside of the European site in which they are QI/SCI. The ranges of mobile QI/SCI species vary considerably, from several metres (e.g., in the case of whorl snails *Vertigo* spp.), to hundreds of kilometres (in the case of migratory wetland birds).

Whilst static species and habitats are generally considered to have ZoIs within close proximity of the Proposed Development, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source. Bird species disturbance distances were considered based on the most recent available evidence for wintering and breeding periods (SNH, 2016; Goodship and Furness, 2022).

Hydrological linkages between the Proposed Development and Designated Sites (and their QIs/SCIs) can occur over significant distances; however, any effect will be site specific depending on the receiving water environment and nature of the potential impact. A reasonable worst-case ZoI for water pollution from the Proposed Development is considered to be the surface water continuous pathway between the Proposed Development and the first Water Framework Directive (WFD) Coastal water body (**Section 4.1.3**).

1.5. Study Areas

This desktop survey focused on the receiving environment of the Proposed Development. The study area consisted of the two 10 km grid squares: R08, R18, within which the Proposed Development is located (NBDC, 2025).

1.6. Scoping of Important Ecological Features (IEF)

Species of varying ecological importance are expected to be present on site and within the receiving environment of the Proposed Development. Following the desk study and field surveys, an ecological value was assigned to each species recorded as present on site, with consideration given to their conservation and/or protected status. Reasoning and conclusions are provided in **Section 4** with a summary table of IEFs scoped in for subsequent impact assessment provided in **Section 4.1. Table 1.1** provides a summary of reasoning for determining importance at the varying levels (International, National, County, Local (High) Or Local (Low)) as set by NRA (2009) and in consideration of the more recent CIEEM guidance for Ecological Impact Assessment (EcIA) (CIEEM, 2024).

Species of varying ecological importance are expected to be present on site and within the receiving environment of the Proposed Development. Following the desk and field study efforts, ecological value was assigned to species present on site with consideration of their conservation and/or protected status. Reasoning are provided in **Section 4** with a summary table of IEFs scoped in also provided in **Section 4**, **Table 1.1** detailing their importance at the varying geographic levels (International, National, County, Local (Higher Value) or Local (Lower Value)) as set by NRA Guidance (2009).

Table 1.1: *Determining the importance of IEFs, as set out in NRA/CIEEM Guidance.*

Resource Evaluation	NRA Criteria
International Importance	• 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. • Proposed Special Protection Area (SPA) or Important Bird Area (IBA). Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). Features essential to maintaining the coherence of the Natura 2000 Network. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
National Importance	• Site designated or proposed as a Natural Heritage Area (NHA). • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Acts. • National Park.

Resource Evaluation	NRA Criteria
	• Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA). • Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list. Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.
County Importance	• Area of High Amenity, or equivalent, designated under the County Development Plan. • Resident or regularly occurring populations (assessed to be important at the County level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list. • County important populations of species, viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (Higher Value)	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared. • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list.
Local Importance (Lower Value)	• Sites or features containing non-native species that are of some importance in maintaining habitat links.

2. METHODOLOGY

2.1. Desk Study

A review of the National Park and Wildlife Service (NPWS) Protected Species Database and the National Biodiversity Data Centre (NBDC) website for the two 10 km grid squares that the proposed scheme overlaps: R08 and R18 10 km^2 Irish grid squares, was conducted to ascertain the presence or absence of mammal species.

Records of otter (*Lutra lutra*) from NPWS and NBDC datasets were reviewed to inform the broader Ecological Impact Assessment. However, for the purposes of AA, only SACs where otter is listed as a QI were considered, and only where a potential S-P-R link (e.g. hydrological connection or disturbance corridor) was identified.

2.1.1. Approach and Methodology

GIS spatial datasets for European Designated Sites and Nationally Designated Sites were downloaded from the National Parks and Wildlife Service (NPWS)[4]. All International, Ramsar and National Sites that could potentially be affected were identified within the relevant ZoI of the Proposed Development. The site synopses and conservation objectives of these sites, as per the NPWS, were consulted, reviewed, and outlined in **Table 3.1**, **Table 3.2** below. Site synopses and descriptions are only provided for those sites confirmed to have ecological connectivity to the Proposed Development, as determined in **Section 3**.

2.1.2. Examination of Connectivity

The International, Ramsar, National Sites and Important Bird Areas within the study area were initially screened for connectivity with the Project. Connectivity with a site is evaluated using a conceptual site model which identifies potential impact source-pathways between the project and the sites. The conceptual model (based on source-pathway-receptor connectivity) is a standard tool used in environmental assessment. For an effect to be likely, all three elements (source, pathway, and receptor) of this mechanism must be in place. All phases of the Proposed Development were considered, i.e., construction, operational and decommissioning phases.

The potential connectivity of the Proposed Development to International, Ramsar, IBAs and National Sites was examined using Conceptual Site Modelling described above. he identification of relevant designated sites was based on a precautionary ZoI, which was subsequently refined using a S-P-R approach. Sites were screened out where no viable pathway was identified, regardless of spatial proximity. This ensures consistency with best-practice guidance (OPR, 2021; EC, 2021), where the presence of a complete S-P-R linkage is required to conclude a LSE. SPAs and IBAs within a disturbance distance for their listed SCIs to interact with the Wind Farm project turbines were also considered to be within the ZoI.

The International, Ramsar, National Sites and IBAs which showed potential connectivity with the Proposed Development were the subject of a screening exercise in the main EIA.

This process allowed for a clear scoping in or out of Designated Sites for the Main EIA.

[4] *Available at https://www.npws.ie/protected-sites. Accessed in August 2023.*

3. RESULTS

3.1. Wind Farm Site

The nearest European site to the Proposed Development is the Inagh River Estuary SAC separated by a minimum distance of approximately 5.64 km (**Table 3.1**). The preliminary ZoI for the Wind Farm component was defined based on the potential for impact pathways to affect Designated Sites and their QIs or SCIs, where these features meet the criteria for Important Ecological Receptors. In total, the considered ZoI of the Proposed Development Wind Farm site element has connectivity to a total of three SAC sites, two Important Birds Areas and ten National sites (**Table 3.1**; **Figures 3.1** to **Figure 3.4**). Two SPA sites are in within 10km of the Proposed Development.

Potential pathways between the Proposed Development and Designated Sites are appraised in **Table 3.1**, including hydrological connectivity. The COs of the relevant sites are also presented and illustrated in **Table 3.1.**

Scoping in of the Designated Sites follows preliminary assessment of connectivity based on project details of the Proposed Development, considering worst-case scenario Source-Pathway-Receptor interactions with identification of likely significant effects reserved for the AA screening provided as part of the Proposed Development submission.

It should be noted, the IBA's have not in mapped in **Figure 3.1** and **Figure 3.2** below as the shapefile is not available.

Table 3.1: *Relevant Designated Sites, Conservation Objectives and connectivity to the Proposed Development (highlighted CO/Designated Sites are identified with potential pathways for effects with the Proposed Development). * Indicates a priority habitat under the Habitats Directive.*

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
Special Area of Conservation (SAC)				
Inagh River Estuary SAC (Site Code 000036)	5.64	Detailed conservation objectives for this Designated Site, (Version 1, 2017), were reviewed as part of the assessment and are available at www.npws.ie.	Salicornia and other annuals colonising mud and sand [1310]	**No.** The Wind Farm element of the Proposed Development does not cross or feed into any watercourse or river that flows into this site. While a drainage ditch near the site discharges into the Inagh (Ennistymon)_040 (IE_SH_28I010300) which this SAC is also present within, attenuation over 20 km before reaching the transitional Waterbody (Inagh Estuary, IE_SH_100_0100) and **dilution in downstream transitional waters mean that there is no plausible mechanism by which effects from the Proposed Development could alter the structure or function of the Qis (i.e. there is no likely pathway for impact sources to interact with these receptors).** **The SAC falls within the preliminary spatial scope of assessment; however, no S-P-R linkage has been identified, and therefore no connectivity exists. Therefore, no viable pathway for impact is present, and the QIs of this site are not considered further in the assessment**.
			Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	
			Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	
			Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	
			Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
Carrowmore Point To Spanish Point And Islands SAC (Site Code 001021)	6.36	Detailed conservation objectives for this Designated Site, (Version 1, 2014a), were reviewed as part of the assessment and are available at www.npws.ie.	Coastal lagoons [1150]	**No.** The Wind Farm element of the Proposed Development does not cross or feed into any watercourse or river that flows into this site. A drainage ditch adjacent to the Proposed Development does flow into the Ballinphonta_010 (IE_SH_28B030500) which flows South-West into the coastal waterbody (Shannon Plume (HAs 27;28), IE_SH_070_0000) which this SAC is also present within. As none of these QIs are mobile and the extent of downstream distance (6.5 km), there is no likely pathway for impact sources to interact with these receptors, combined with the dilution and dispersion within the large marine system of the Shannon Plume coastal waterbody. There is no plausible mechanism for the Proposed Development to alter the structure or function of these habitats at such a distance The SAC falls within the preliminary spatial scope of assessment; however, no S-P-R linkage has been identified, and therefore no connectivity exists. Therefore, no viable pathway for impact is present, and the QIs of this site are not considered further in the assessment.
			Reefs [1170]	
			Perennial vegetation of stony banks [1220]	
			Petrifying springs with tufa formation (Cratoneurion) [7220]	
	14.27	Detailed conservation	Reefs [1170]	**No.**

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
Carrowmore Dunes SAC (Site Code 002250)		objectives for this Designated Site, (Version 1, 2014b), were reviewed as part of the assessment and are available at www.npws.ie.	Embryonic shifting dunes [2110]	The Wind Farm element of the Proposed Development does not cross or feed into any watercourse or river that flows into this site. A drainage ditch adjacent to the Proposed Development does flow into the Ballinphonta_010 (IE_SH_28B030500) which flows South-West into the coastal waterbody (Shannon Plume (HAs 27;28), IE_SH_070_0000) which this SAC is also present within. As none of these QIs are mobile and the extent of downstream distance separation including a the Shannon Plume (HAs 27;28) Coastal waterbody, there is no likely pathway for impact sources to interact with these receptors. The Wind Farm element of the Proposed Development is located inland and at a substantial distance from the dune habitats and terrestrial ecological conditions that support the listed Qis (Embryonic shifting dunes [2110], Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] & Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]) of this SAC. There is no functional ecological or geomorphological link (e.g. sediment transport, salt spray, groundwater flow) to the coastal dune system. The terrestrial invertebrate (*Vertigo angustior*) [1014] is associated with humid dune slacks and wet grasslands in proximity to coastal systems. As the Proposed Development does not overlap or affect
			Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	
			Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	
			Vertigo angustior (Narrow-mouthed whorl snail) [1014]	

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
				such habitats and lies well beyond the species' typical dispersal range (which is <1 km), there is no plausible pathway for effect. The SAC falls within the preliminary spatial scope of assessment; however, no S-P-R linkage has been identified, and therefore no connectivity exists. Therefore, no viable pathway for impact is present, and the QIs of this site are not considered further in the assessment.
Special Protection Areas (SPA)				
Mid-Clare Coast SPA (Site Code 004182)	6.49	Detailed conservation objectives for this Designated Site, (Version 1, 2014c), were reviewed as part of the assessment and are available at www.npws.ie.	Cormorant (*Phalacrocorax carbo*) [A017]	**No.** All SCIs of the Mid-Clare Coast SPA were reviewed. The typical disturbance distances for these SCIs are up to 600 m (e.g. waders and waterbirds [REFERENCE]). The nearest element of the Proposed Development is over 1 km from the SPA boundary, with no habitat or hydrological connectivity. As such, there is no potential for direct or indirect interaction, and the SCIs are not considered Potential Ecological Receptors.
			Barnacle goose (*Branta leucopsis*) [A045]	
			Ringed plover (*Charadrius hiaticula*) [A137]	
			Sanderling (*Calidris alba*) [A144]	
			Purple sandpiper (*Calidris maritima*) [A148]	
			Dunlin (*Calidris alpina*) [A149]	
			Turnstone (*Arenaria interpres*) [A169]	
			Wetland and waterbirds [A999]	

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
Cliffs of Moher SPA (Site Code 004005)	9.82	Detailed conservation objectives for this Designated Site, (Version 1, 2022), were reviewed as part of the assessment and are available at www.npws.ie.	Fulmar (*Fulmarus glacialis*) [A009] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica*) [A204] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	**No.** These SCIs are primarily coastal breeding species. As such, it is unlikely for this site to disturb breeding territories given the distance from the nearest turbine location. These species can travel from wintering in mainland Europe along marine habitats these SCIs are unlikely to experience disturbance to their migration routes, as none were recorded flying through the receiving environment. The SPA falls within the preliminary spatial scope of assessment; however, no S-P-R linkage has been identified, and therefore no connectivity exists. Therefore, no viable pathway for impact is present, and the SCIs of this site are not considered further in the assessment.
Important Bird Areas (IBAs)				
West Clare Uplands IBA	3.5	Bird Life International, 2009	Hen harrier (*Circus cyaneus*)	**Yes.** Hen harrier range can be in up to 10km from roosting sites. Male Hen Harrier may feed as far as 10 km from the nest. Females were found to hunt mainly within 300–500 m of the nest (Arroyo et al., 2009). This confirms the 10 km occasional foraging distance, particularly for males. Caravaggi *et al.*; Irwin *et al.* 2012; Arroyo *et al.* 2014 and Wilson *et al.* 2009 . As such the Proposed Development is within the area for potential pathways to effect this receptor listed

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
				for this site due to suitable habitat for this species present within the Proposed Development boundary. Therefore, this site and its proposed Species of Conservation Interest pSCIs are considered as Potential Ecological Receptors.
Natural Heritage Areas (NHAs)				
Slievecallan Mountain Bog NHA	4.32	Detailed conservation objectives for this Designated Site, (Version 1, 2009a), were reviewed as part of the assessment and are available at www.npws.ie.	Peatlands [4]	**No.** This site has no hydrological or physical connection to the Proposed Development. This NHA falls within the preliminary spatial scope of assessment; however, no S-P-R linkage has been identified, and therefore no connectivity exists. Therefore, no viable pathway for impact is present, and the QIs of this site are not considered further in the assessment. Therefore, this site and its conservation interests are not considered as Potential Ecological Receptors.
Cragnashingaun Bogs NHA	9.57	Detailed conservation objectives for this Designated Site, (Version 1, 2004a), were reviewed as part of the assessment and are	Peatlands [4]	**No.** This site has no hydrological or physical connection to the Proposed Development. This NHA falls within the preliminary spatial scope of assessment; however, no S-P-R linkage has been identified, and therefore no connectivity exists. Therefore, no viable pathway for impact is present,

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
		available at www.npws.ie.		and the QIs of this site are not considered further in the assessment. Therefore, this site and its conservation interests are not considered as Potential Ecological Receptors.
Lough Acrow Bogs NHA	13.25	Detailed conservation objectives for this Designated Site, (Version 1, 2004b), were reviewed as part of the assessment and are available at www.npws.ie.	Peatlands [4]	**No.** This site has no hydrological or physical connection to the Proposed Development. This NHA falls within the preliminary spatial scope of assessment; however, no S-P-R linkage has been identified, and therefore no connectivity exists. Therefore, no viable pathway for impact is present, and the QIs of this site are not considered further in the assessment. Therefore, this site and its conservation interests are not considered as Potential Ecological Receptors. Therefore, this site and its conservation interests are not considered as Potential Ecological Receptors.
Lough Naminna Bog NHA	11.14	Detailed conservation objectives for this Designated Site, (Version 1, 2004c), were reviewed as part of the assessment and are available at www.npws.ie.	Peatlands [4]	**No.** This site has no hydrological or physical connection to the Proposed Development. This NHA falls within the preliminary spatial scope of assessment; however, no S-P-R linkage has been identified, and therefore no connectivity exists. Therefore, no viable pathway for impact is present, and the conservation interests of this site are not considered further in the assessment.

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
				Therefore, this site and its conservation interests are not considered as Potential Ecological Receptors.
Proposed Natural Heritage Areas (pNHAs)				
Inagh River Estuary pNHA	5.65	Site synopsis not available, see Inagh River Estuary SAC	See Inagh River Estuary	**No.** As this site shares conservation interests with its SAC namesake which is not considered to have connectivity with the site, it is also not considered to be a likely receptor for the Proposed Development.
Carrowmore Point to Spanish Point and Islands pNHA	6.35	See Carrowmore Point To Spanish Point And Islands SAC and Mid-Clare Coast SPA	See Carrowmore Point To Spanish Point And Islands SAC and Mid-Clare Coast SPA	**No.** As this site shares conservation interests with its SAC namesake which is not considered to have connectivity with the site, it is also not considered to be a likely receptor for the Proposed Development.
Cliffs Of Moher pNHA	10.5	See Cliffs Of Moher SPA	See Cliffs Of Moher SPA	**No.** As this site shares conservation interests with is SAC namesake which is not considered to have connectivity with the site, it is not considered a likely receptor for the Proposed Development.
White Strand/Carrowmore Marsh pNHA	12.27	See Carrowmore Point To Spanish Point And Islands SAC	See Carrowmore Point To Spanish Point And Islands SAC	**No.** As this site shares conservation interests with its SAC namesake which is not considered to have connectivity with the site, it is also not considered to be a likely receptor for the Proposed Development.
Caherkinallia Wood pNHA	12.31	Detailed conservation objectives for this Designated Site,		**No.** This site has no hydrological or physical connection to the Proposed Development.

Designated site	Distance to Proposed Development (km)	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
		(Version 1, 2009b), were reviewed as part of the assessment and are available at www.npws.ie.		Therefore, this site and its conservation interests are not considered as Potential Ecological Receptors.
Lough Goller pNHA	13.27	Detailed conservation objectives for this Designated Site, (Version 1, 2009c), were reviewed as part of the assessment and are available at www.npws.ie.		**No.** This site has no hydrological or physical connection to the Proposed Development. Therefore, this site and its conservation interests are not considered as Potential Ecological Receptors.

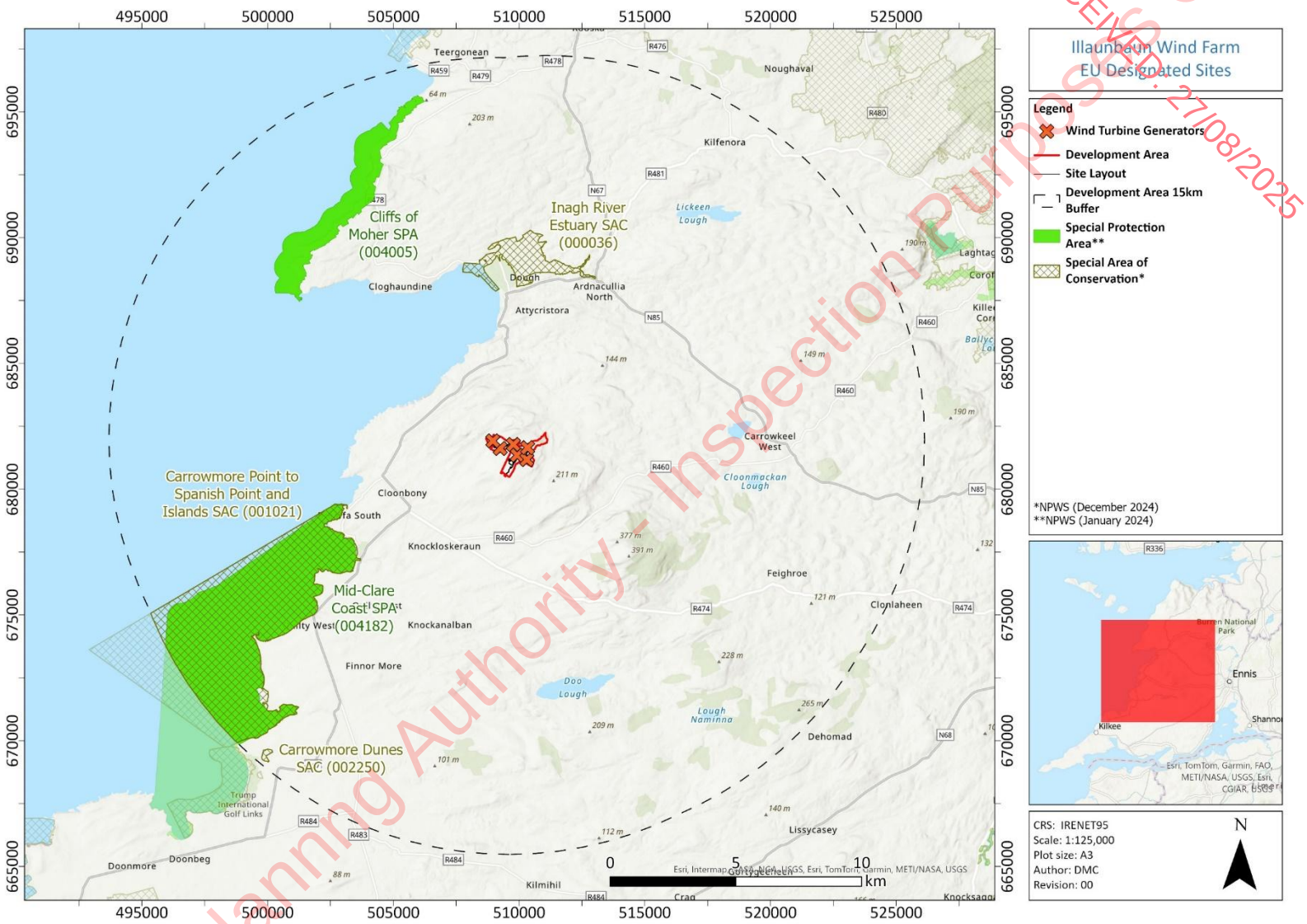

Figure 3.1: *European sites within 15 km of the Wind Farm element of the Proposed Development.*

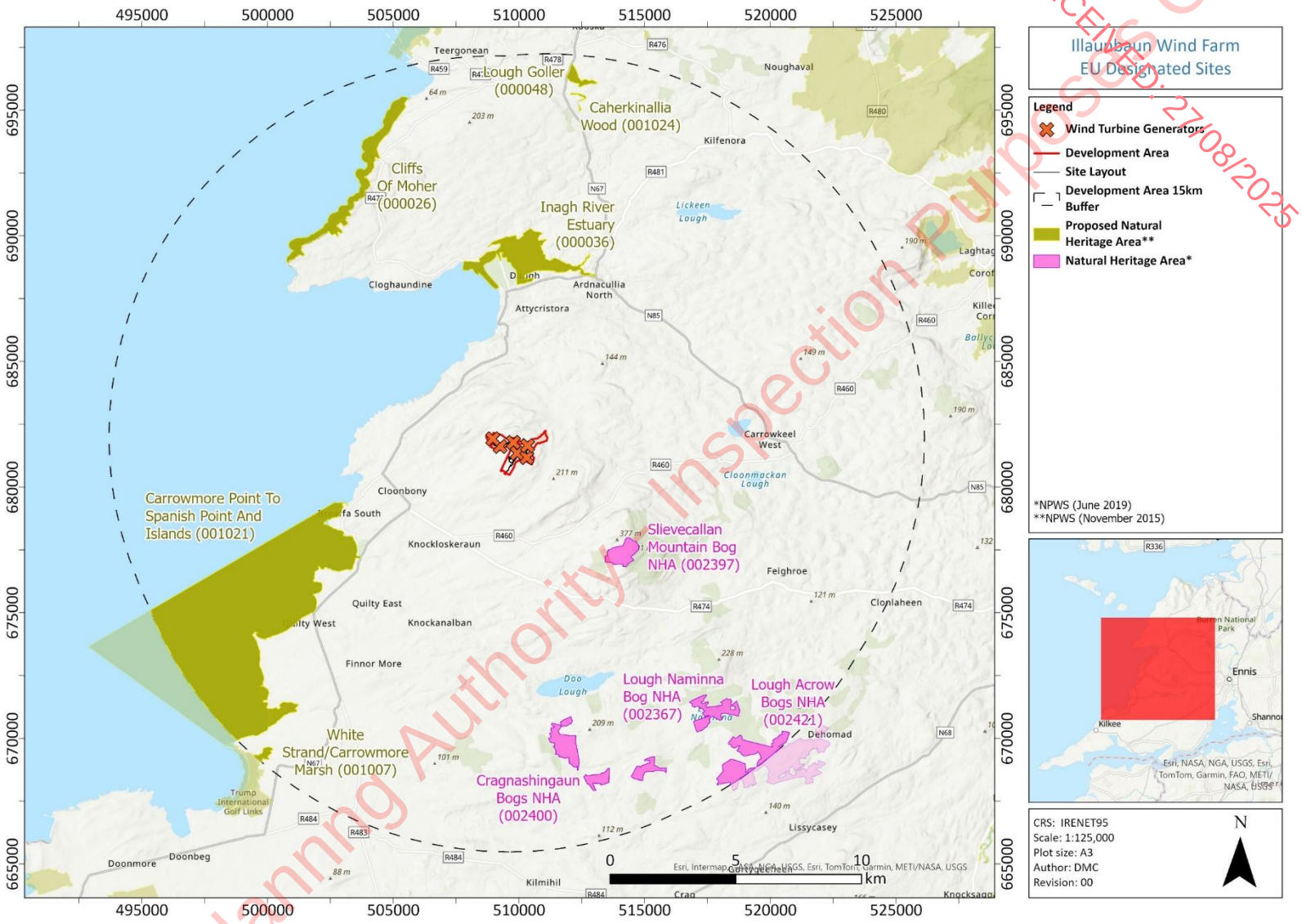

Figure 3.2: *National sites within 15 km of the Wind Farm element of the Proposed Development.*

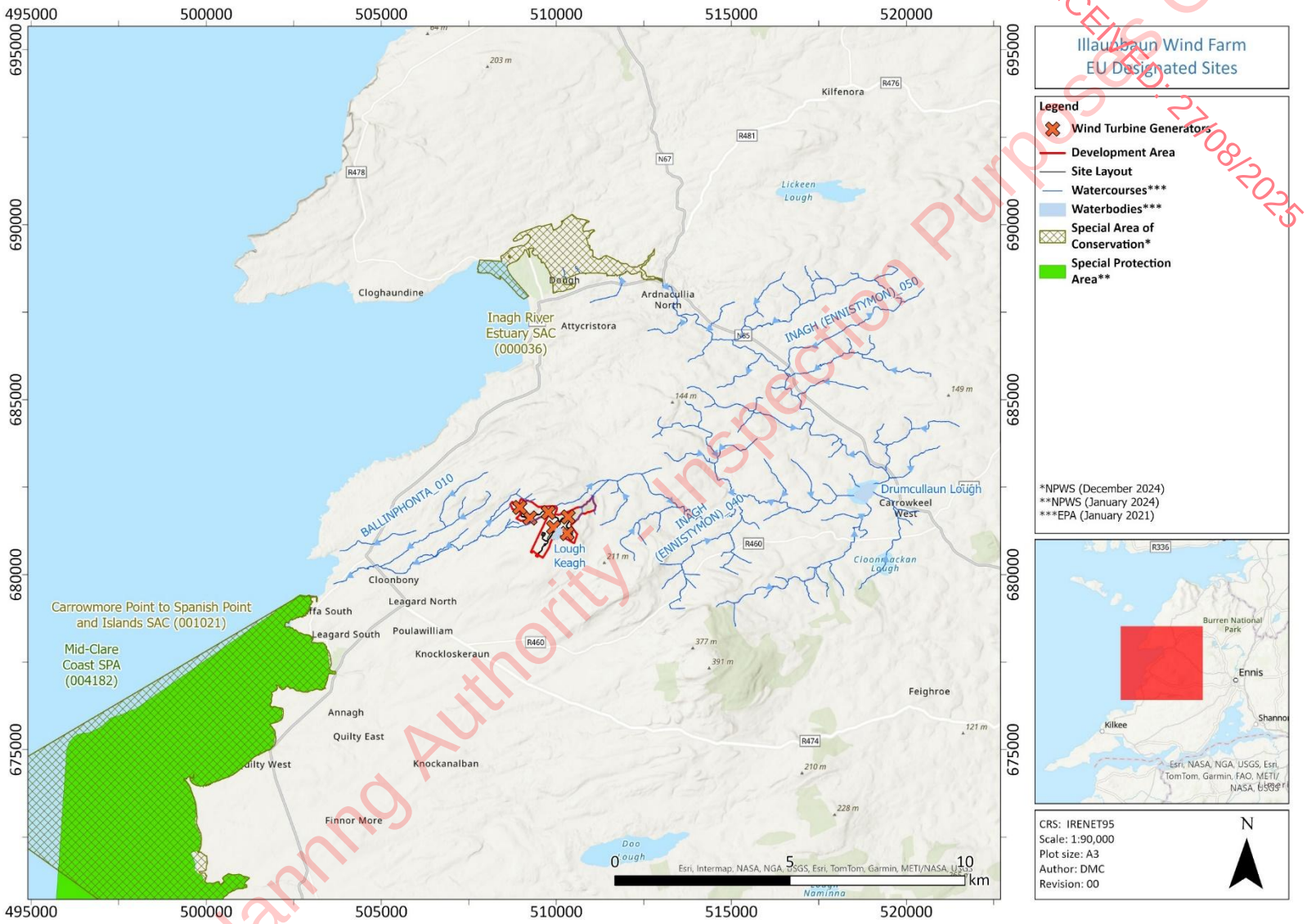

Figure 3.3: *European sites with hydrological connectivity to the Wind Farm element of the Proposed Development.*

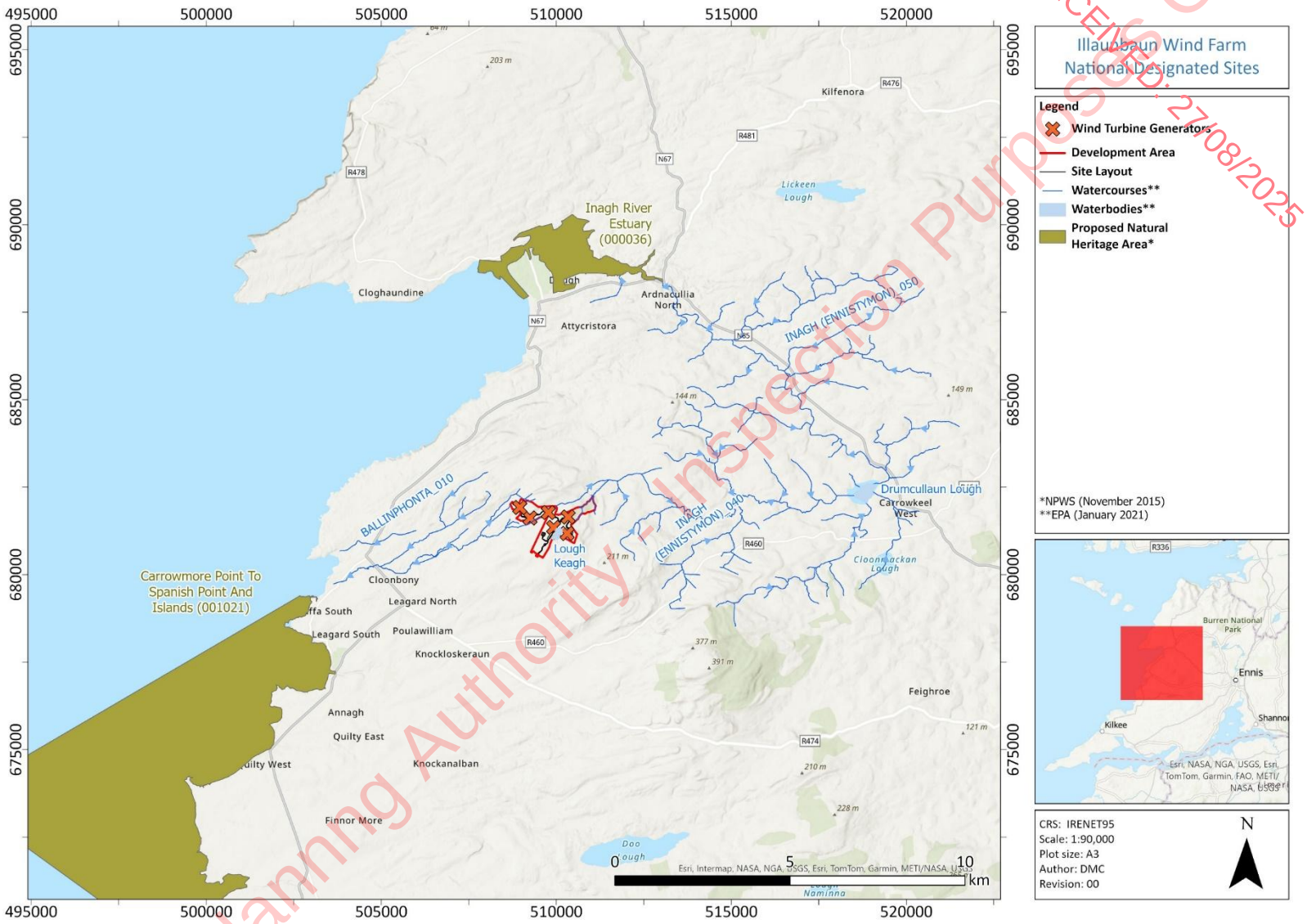

Figure 3.4: *National sites with hydrological connectivity to the Wind Farm element of the Proposed Development.*

3.2. Turbine Delivery Route (TDR)

The turbine delivery route involves two options, as detailed below.

3.2.1. Option 1: Delivery from Fermoy Port to Wind Farm site

A review of designated sites along the Fermoy Port TDR confirmed no SACs or SPAs lie within the likely ZoI. As works are restricted to temporary activities within the existing road corridor and no plausible pathways exist (e.g. hydrological, disturbance, pollution), this route does not present any likely significant effects on Designated Sites under the S-P-R model.

3.2.2. Option 2: Delivery from Galway Port to Wind Farm site.

Option 2 does involve potential pathways for contamination and disturbance-related effects for Designated Sites. The works and alterations to existing road infrastructure related to the TDR route located between the R458, the L-4162 and the L-4182 are in proximity to two SACs and one SPA (**Table 3.2 & Table 3.3**).

There are three European sites which are nearest to the Proposed Development; Two SAC's and one SPA. They are all 0 km from the works at one node, located at the junction between R458, L-4162 and L-4182 (Ballyallia Lake SAC/SPA and Lower River Shannon SAC (**Table 3.2**). The preliminary ZoI was identified following the S-P-R model (**Section 1.4.1** and **1.4.2**). In total, the considered ZoI of the Proposed Development intersects two SACs, one SPA and one National site (**Table 3.2**).

Table 3.2: *Distance from Designated Sites within ZoI and the Proposed Development.*

Site code	Site name	Distance to Proposed Development (km)
Special Area of Conservation (SAC)		
000014	Ballyallia Lake SAC	0.0 km
002165	Lower River Shannon SAC	0.0 km
Special Protection Area (SPA)		
004041	Ballyallia Lough SPA	0.0 km
Proposed Natural Heritage Area (pNHA)		
000014	Ballyallia Lake pNHA	0.0 km

Potential impact pathways between the Proposed Development and Designated Sites are appraised in **Table 3.3**, including hydrological connectivity. The COs of the relevant sites are also presented and illustrated in **Table 3.3.** The relevant nodes identified with potential for impact interaction on these sites are provided in **Figure 3.5.**

Table 3.3: *Relevant Designated Sites, Conservation Objectives and connectivity to the Proposed Development (highlighted CO/Designated Sites are identified with potential pathways for effects with the Proposed Development). * Indicates a priority habitat under the Habitats Directive.*

Designated site [code]	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
Special Area of Conservation (SCA)			
Ballyallia Lake SAC [000014]	Detailed conservation objectives for this Designated Site, (Version 1, 2012), were reviewed as part of the assessment and are available at www.npws.ie.	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation [3150]	**Yes.** This site is in direct proximity to works related to the TDR node along the Option 2 route. **Therefore, these QIs are considered further as Potential Ecological Receptors.**
Lower River Shannon SAC [002165]	Detailed conservation objectives for this Designated Site, (Version 1, 2012), were reviewed as part of the assessment and are available at www.npws.ie.	[1110] Sandbanks which are slightly covered by sea water all the time. [1130] Estuaries [1140] Mudflats and sandflats not covered by seawater at low tide. [1150] *Coastal lagoons [1160] Large shallow inlets and bays [1170] Reefs [1220] Perennial vegetation of stony banks [1230] Vegetated Sea cliffs of the Atlantic and Baltic coasts	**No.** The Annex I habitats listed as QIs for this SAC are coastal/marine habitats which are significantly removed from any likelihood of interactions with the Proposed Development's sources or pathways for significant effects to occur. As such, these QIs are not considered further due to the unlikelihood of them to be receptors to the Proposed Development works. **Therefore, these QIs are not considered further as Potential Ecological Receptors.**

Designated site [code]	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
		[1310] *Salicornia* and other annuals colonising mud and sand	
		[1330] Atlantic salt meadows (*Glauco-Puccinellietallia maritimae*)	
		[1410] Mediterranean salt meadows (*Juncetalia maritimi*)	
		[1349] Bottlenose Dolphin (*Tursiops truncatus)*	**No.** Although a mobile QI species, bottlenose dolphin are not known to swim significantly upstream of freshwater rivers. As such the nearest location for this receptor to be likely present is the mouth of the River Fergus into the Fergus Estuary. As such, it is unlikely to be present as a receptor for effects as a result of the Proposed Work. **Therefore, this QI is not considered further as Potential Ecological Receptors.**
		[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	**No.** The Lower River Shannon SAC conservation objectives document does not show mapping for any of these QIs within the immediate receiving environment of the Proposed Development for downstream of the River Fergus section of this designated site. As such it is unlikely these habitats are present to be receptors of any potential effects as a result of the Proposed Development. The Proposed Development will primarily be a source of disturbance with negligible sources for contamination. As such, these QIs are unlikely to experience any significant effects as a result of the Proposed Development even in a worst-case scenario. **Therefore, these QIs are not considered further as Potential Ecological Receptors.**
		[6410] *Molinia* meadows on calcareous, peaty or clayey-slit-laden soils (*Molinion caeruleae*)	
		[91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	

Designated site [code]	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
		[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera)*	**No.** The Proposed Development is located downstream of areas where this QI is mapped or likely to occur. As such, there is no upstream hydrological connectivity that would provide a pathway for significant effects. As such, this receptor has no likelihood of interacting with any pathway from the Proposed Development potential sources for effect. **Therefore, these QIs are not considered further as Potential Ecological Receptors.**
		[1355] Otter (*Lutra lutra*)	**Yes.** Otter is present within the receiving environment of the Proposed Development along the River Fergus (**Appendix 08-05**). Therefore, there is the possibility that it could be disturbed as a result of the Proposed Development and is considered for *ex-situ* disturbance effects and *in-situ* contamination effects. **Therefore, this QI is considered further as Potential Ecological Receptors.**
		[1095] Sea Lamprey (*Petromyzon marinus)*	**Yes.** These species have the potential to be within the river system directly adjacent to the TDR Development (NPWS, 2012). As such, there are potential pathways for contamination-related effects. **Therefore, these QIs are considered further as Potential Ecological Receptors**.
		[1096] Brook Lamprey (*Lampetra planeri)*	
		[1099] River Lamprey (*Lampetra fluvitalis)*	
		[1106] Atlantic Salmon (*Salmo salar)* (only in fresh water)	

Designated site [code]	Conservation Objectives	Qualifying Interests [QI]/Special Conservation Interests [SCI]	Connectivity with the Proposed Development
Special Protection Area (SPA)			
Ballyallia Lough SPA [004041]	Detailed conservation objectives for this Designated Site, (Version 1, 2025), were reviewed as part of the assessment and are available at www.npws.ie.	Wigeon (*Anas penelope*) [A050]	**Yes.** These species have the potential to be within the river system directly adjacent to the TDR works. As such, there are potential pathways for contamination and disturbance-related effects. **Therefore, these QIs are considered further as Potential Ecological Receptors.**
		Gadwall (*Anas strepera*) [A051]	
		Teal (*Anas crecca*) [A052]	
		Mallard (*Anas platyrhynchos*) [A053]	
		Shoveler (*Anas clypeata*) [A056]	
		Coot (*Fulica atra*) [A125]	
		Black-tailed godwit (*Limosa limosa*) [A156]	
		Wetland and Waterbirds [A999]	
Proposed Natural Heritage Area (pNHA)			
Ballyallia Lake pNHA [000014]	See Ballyallia Lake SAC and Ballyallia SPA	See Ballyallia Lake SAC and Ballyallia SPA	**Yes.** These species have the potential to be within the river system directly adjacent to the TDR works. As such, there are potential pathways for contamination and disturbance related effects. **Therefore, these QIs and SCIs are considered further as Potential Ecological Receptors.**

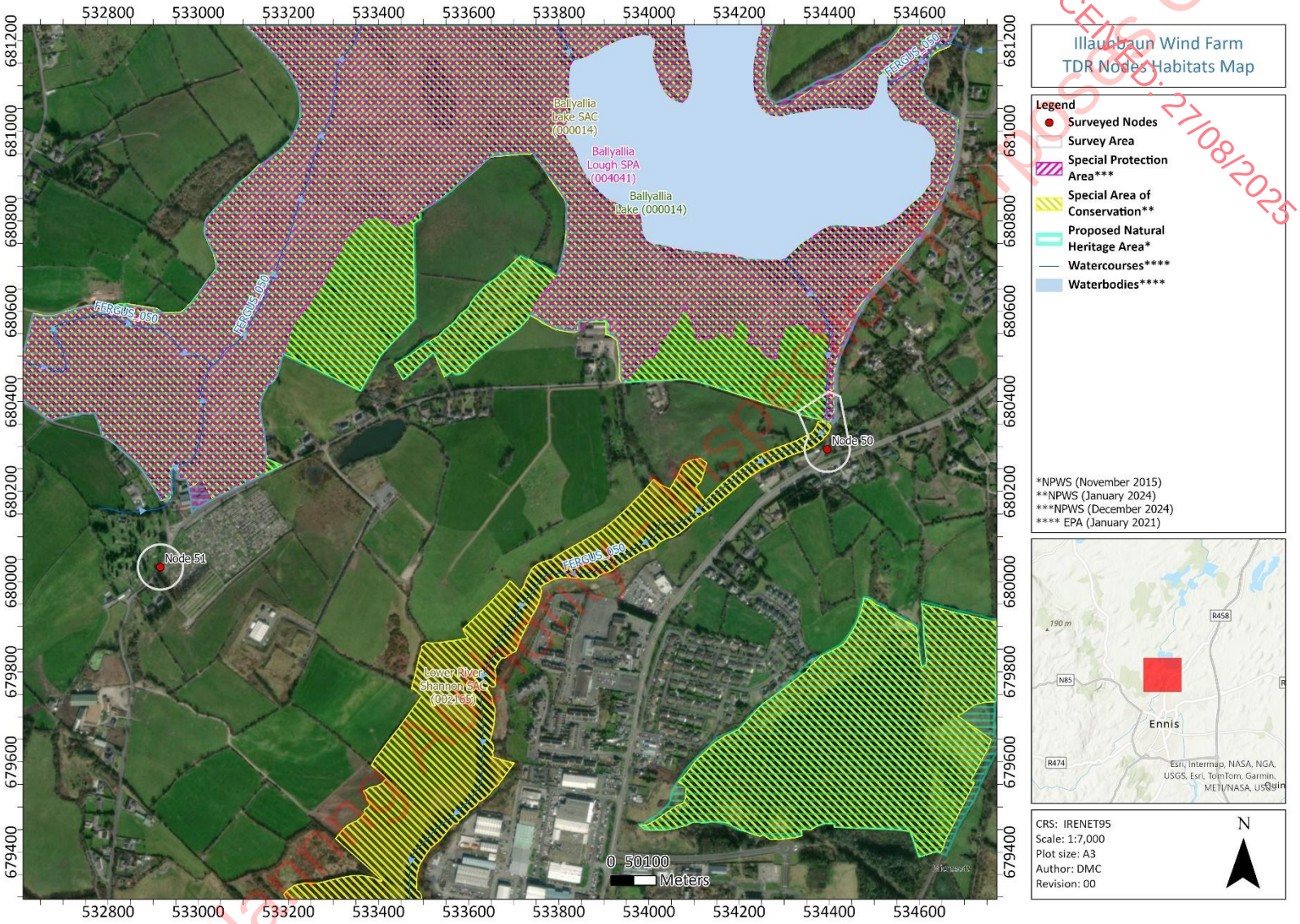

Figure 3.5: *S-P-R Mapping the Designated Sites within ZoI of Option 2 of the Proposed Development TDR.*

4. DESCRIPTION OF RELEVANT DESIGNATED SITES

This section describes the Designated Sites baseline and the connectivity of each site to the Proposed Development identified in the results section (**Table 3.1** and **Table 3.3)**. Maps of potential hydrological connection pathways are also shown in **Figure 3.3** and **Figure 3.4**.

Please note:

- For all SACs (**Table 3.1, Table 3.3**), the EU Habitats Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora formed a basis for the designation of SACs. SACs are referred to as Natura 2000 sites, or 'European' sites. For the purposes of this report, they are considered to be of **International Importance**.
- For all SPAs **(Table 3.1, Table 3.3),** the EU Birds Directive (2009/147/EC) on the Conservation of wild birds formed a basis for the designation of SPAs. SPAs are referred to as Natura 2000 sites, or 'European' sites. For the purposes of this report, they are considered to be of **International Importance**.
- For all IBAs (**Table 3.1, Table 3.3**), listed under Bird life International are also considered for **International Importance** based on directive from Commission vs Ireland (C 418/04) due to their eligibility to become proposed SPAs (pSPAs) in the future in with the Article 4 of the EU Birds Directive.
- For all NHAs **(Table 3.1, Table 3.3),** Wildlife (Amendment) Act 2000, which is transposed into Irish Law under the 1997 Natural Habitats Regulations (S.I No 94 of 1997) on the Conservation of plants, animals and wildlife habitats of Irish importance formed a basis for the designation of NHAs. NHAs are referred to as 'National' sites. For the purposes of this report, they are considered to be of **National Importance**.
- Proposed Natural Heritage Areas (pNHA) (**Table 3.1, Table 3.3**) were published on a non-Designated basis in 1995. They have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats. A process is underway to resurvey and formally designate some pNHAs as NHAs. For the purposes of this report, they are considered to be of **National Importance**.

A total of three SACs, two SPA's, four NHAs and six pNHAs do not have connectivity with the Project. The following nine Designated Sites do not have connectivity with the Project Development and as such are not scoped in for consideration of impacts in the EIA Biodiversity chapter:

- Carrowmore Dunes SAC: Site Code 002250;
- Carrowmore Point to Spanish Point and Islands SAC: Site Code 001021;
- Inagh River Estuary SAC: Site Code 000036;
- Mid-Clare Coast SPA: Site Code 004182;
- Cliffs of Moher SPA: Site Code 004005;
- Lough Namina Bog NHA: Site Code 002367;
- Cragnashingaun Bogs NHA: Cite Code 002400;
- Lough Acrow Bogs NHA: Site Code 002421;
- Slievecallan Mountain Bog NHA: Site Code 002397;

- Inagh River Estuary pNHA: Site Code 000036;
- Cliffs Of Moher pNHA: Site Code 000026;
- Carrowmore Point To Spanish Point And Islands pNHA: Site Code 001021;
- Lough Goller pNHA: Site Code 000048;
- Caherkinallia Wood pNHA: Site Code 001024; and
- White Strand/Carrowmore Marsh pNHA: Site Code 001007.

A total of two SACs, one SPA, one IBA, and one pNHA have connectivity with the Proposed Development. These Designated Sites are listed below and are scoped in for assessment in the EIAR based on their connectivity with the Proposed Development:

The site relevant to the Wind Farm element only is:

- **West Clare Uplands IBA**.

The sites relevant to the TDR only are as follows:

- **Lower River Shannon SAC: Site Code 002165;**
- **Ballyallia Lake SAC: Site Code 000014;**
- **Ballyallia Lough SPA: Site Code 004041; and**
- **Ballyallia Lake pNHA: Site Code 000014**.

In conclusion, A total of two SACs, one SPA, one IBA, and one pNHA have connectivity with the Proposed Development and have been scoped in for assessment in the EIAR based on their connectivity with the Proposed Development.

A single IBA site, detailed above, is scoped in for assessment in the EIAR Biodiversity chapter based on its connectivity to the Proposed Development or the potential for mobile SCIs to interact with the Wind Farm element of the Proposed Development.

An additional four sites are scoped in for assessment in the EIAR Biodiversity chapter based on their connectivity to the project or the potential for mobile QIs/SCIs that could interact with the TDR Option 2 of the Proposed Development.

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