OWENINNY WIND FARM PHASE 2

PLANNING ALTERATION APPLICATION

WESTERN WAY BRIDGE BYPASS

NATURA IMPACT STATEMENT

APRIL 2021

Prepared for

ESB Engineering & Major Projects,

by

BioSphere Environmental Services

29 La Touche Park, Greystones, Co. Wicklow

Tel: 01-2875249 / 087-2309906; E-mail: maddenbio20@gmail.com

TABLE OF CONTENTS

List of Tables

List of Figures

List of Plates

1. INTRODUCTION

1.1 Background

The Oweninny Wind Farm project at Bellacorick, Co. Mayo has previously been the subject of both EIA and AA by An Bord Pleanála (ABP Planning ref. PA0029) and Phases 1 and 2 were approved following these processes. The main construction of Phase 1 was completed in 2019. Phase 2 main construction commenced in February 2021.

It is proposed to install a temporary crossing over a tributary stream to the River Muing, approximately 1 km east of the village of Bellacorick, to provide a supplementary delivery route for abnormal loads to the nearby Oweninny Wind Farm Phase 2 development. The proposed temporary crossing would be located approximately 80 m downstream of the existing stone bridge on the N59 and would be at the same location where ground works associated with an apparent planned new bridge took place in the past (pre-1995). This supplementary route is intended purely for wind farm construction vehicles and will not be accessible to the public. Whilst OPDAC are in a position to reinstate this land, Mayo County Council has expressed an opinion that this route should remain in situ to facilitate future projects.

A Section 146B application for the proposed alteration to PA0029 was made to ABP in December 2020, this was accompanied by an Appropriate Assessment Screening Report. Following consideration of the application by ABP, they wrote to the applicant on 4th March 2021 requesting the submission of a Natura Impact Statement (NIS).

The purpose of the present report is to provide the information required to enable ABP, the competent authority, to complete the Appropriate Assessment process. This will determine the effects, if any, on European sites as a result of the proposed project.

The requirements for an Appropriate Assessment are set out *under Article 6 of the EU Habitats Directive (92/34/EEC)*, transposed into Irish law through the *European Union (Birds and Natural Habitats) Regulations 2011-2015* and the *Planning and Development Act, 2000* (as amended).

The NIS has been prepared by Dr Brian Madden of BioSphere Environmental Services, in association with ESB. The report is based on a site survey in September 2020, previous knowledge of site (BioSphere Environmental Services are project ecologists for the Oweninny Wind Farm project), and a critical review of supporting technical documents notably:

- ***Appendix 3*** *Oweninny Wind Farm Phase 2, Construction Methodology for Western Way Bridge Bypass, Document no. P000379-CE23-0006.* Prepared by ESB Engineering & Major Projects, November 2020.

For completeness, this NIS includes the original AA screening (dated December 2020) in Section 2, so that the full context for the Appropriate Assessment process is available in one document.

1.2 Regulatory Context

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna better known as "The Habitats Directive" provides the framework for legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC) (better known as "The Birds Directive").

Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (now termed Natura Impact Statement – see The Guidance for Planning Authorities issued by Department of Environment, Heritage and Local Government, December 2009):

> "*Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implication for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public"*

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First the project should aim to avoid any negative impacts on European sites by identifying possible impacts early in the planning stage and designing the project in order to avoid such impacts. Second, mitigation measures should be applied, if necessary, during the AA process to the point, where no adverse impacts on the site(s) remain. If the project is still likely to result in adverse effects, no further practicable mitigation is possible, and if no alternative solutions are identified then the project may only proceed if it is required for imperative reasons of overriding public interest (IROPI test). The criteria for this test are outlined under Article 6 (4) of the Habitats Directive. In this case, all compensation measures necessary are required for any remaining adverse effects.

1.3 Stages of the Appropriate Assessment (AA)

This Appropriate Assessment Screening Report has been prepared in accordance with the following guidance:

- *Appropriate Assessment of Plans and Projects in Ireland.* Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, 2009.

- *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. European Commission Environment DG, 2002.
- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC.* Guidance issued by European Commission (21st November 2018).

There are up to four successive stages involved in the Appropriate Assessment process (European Commission 2002). The outcome at each stage determines whether the next stage in the process is required.

1. Appropriate Assessment Screening
2. Appropriate Assessment – Natura Impact Statement
3. Assessment of Alternatives in cases where significant impact cannot be prevented
4. Where no alternatives exist, an assessment of compensatory issues in the case of projects or plans which can be considered to be necessary for imperative reasons of overriding public interest (IROPI)

2. SCREENING FOR APPROPRIATE ASSESSMENT

Screening determines whether appropriate assessment is necessary by examining:

1. Whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of a Natura 2000 site.

2. Whether the project will have a potentially significant effect on a Natura 2000 site, either alone or in combination with other projects or plans, in view of the site's conservation objectives.

Screening involves the following:

i. Description of plan or project

ii. Identification of relevant Natura 2000 sites, and compilation of information on their qualifying interests and conservation objectives

iii. Assessment of likely effects – direct, indirect and cumulative – undertaken on the basis of available information as a desk study or field survey or primary research as necessary

iv. Screening Statement with conclusions.

2.1 Description of the Project

2.1.1 Project Outline

Full outline technical details of the construction methodology, including the rationale for the project, are contained in the accompanying report prepared by ESB Engineering & Major Projects (***Appendix 3 Oweninny Wind Farm Phase 2, Western Way Bridge Bypass Construction Methodology***). There follows an overview of the construction method from an environmental perspective. The proposed location for the crossing is shown in **Figure 1** and a schematic representation of the layout is presented in **Figure 2**.

As noted, the Planning Alteration proposes the construction of a temporary bridge on a tributary stream of the River Muing to provide a supplementary delivery route for abnormal deliveries associated with the Phase 2 development. The location is approximately 80 m downstream of the existing bridge on a sharp bend on the N59.

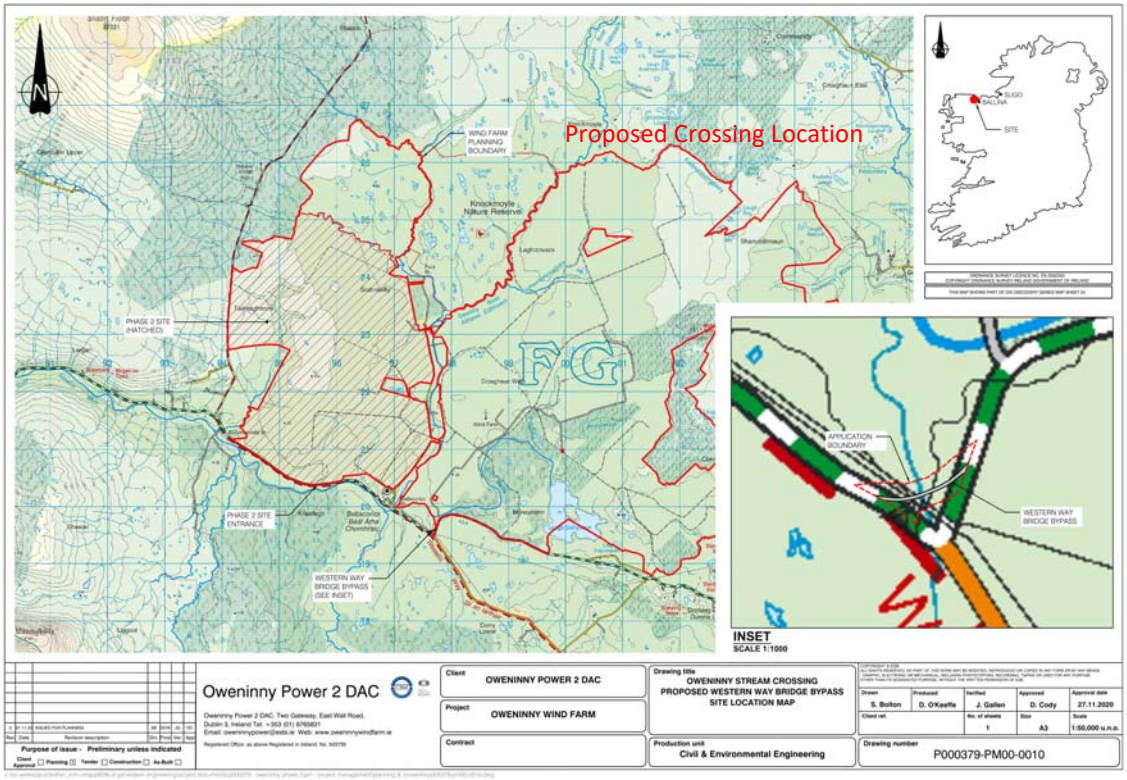

Figure 1 Proposed location for temporary alternative access.

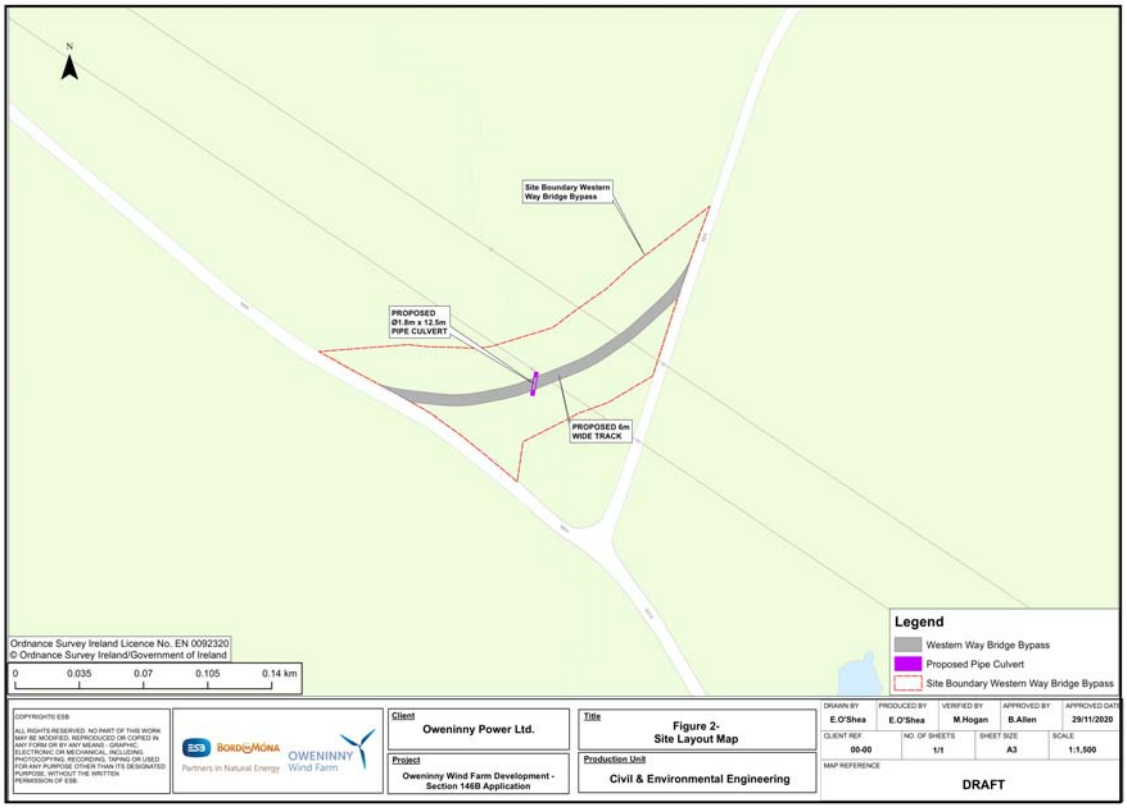

Figure 2 Schematic plan of the proposed crossing structure.

The proposed supplementary temporary access will consist of access tracks to and from the stream crossing and the N59 primarily to facilitate abnormal load deliveries associated with the Oweninny Wind Farm Phase 2.

Access tracks will be constructed from the N59 on the east side to the temporary crossing location and again from the temporary crossing to the N59 on the west side. These tracks will be constructed on the existing access tracks where appropriate using stone and geocomposites as required and capped with a layer of Cl804. In the event that ABP only grant a temporary permission for these works, the access tracks will be removed, and the location will be reinstated to its current condition upon completion.

The proposed stream crossing will be constructed using pipes. These pipes will be delivered to the site by lorry and lifted into place using certified lifting equipment, *e.g.* excavator. The stream will be dammed temporarily upstream of the crossing and the stream will be pumped downstream of the crossing to facilitate the construction. Construction works will be completed cognisant of the overhead 110kV line and appropriate precautions will be taken to ensure the works are completed safely.

The diameter of the pipes will be sized accordingly upon completion of hydrological and hydraulic assessments to a Q30 standard as agreed with the Office of Public Works (OPW). This will ensure no adverse effects to any third party will be caused further upstream of the proposed installation. To mitigate against a flood event in excess of the Q30, the crossing and access tracks will be designed and constructed to facilitate flood waters overtopping the structure without any impacts on the nearby N59.

The crossing system shall be suitable to carry the wind turbine abnormal component vehicle loads. An operational width of up to approximately 6m is envisaged. The width of the crossing as installed will be determined by combining multiples of concrete pipe standard units.

From survey in September 2020, it is considered unlikely that trimming of vegetation to achieve sightlines on the approaches to the new crossing structure would be necessary as the N59 at this location is edged by grassy banks and bog, with scrub largely absent and no trees present. An example of the vegetation which skirts the road leading to the eastern access track (and within Bellacorick Bog Complex SAC) is shown in **Plate 1**.

Plate 1 View of N59 roadside vegetation leading to the eastern access track for the new crossing structure (looking northwards from opposite the access track). The vegetation in the near side of the picture is within the Bellacorick Bog Complex SAC and is blanket bog with a grassy verge alongside the road – note absence of trees or scrub. (September 2020)

2.1.2 Environmental Controls

Full technical details of the proposed environmental controls are described in Section 6 of the accompanying **Appendix 3 "***Construction Methodology for Proposed Temporary Alternative Access*".

Rigorous controls will be applied to avoid impact on surface waters during the construction and removal of the temporary supplementary route (if ABP require removal of the structure). Control measures will be provided in two ways, namely mitigation by avoidance and mitigation by engineering design. The following general points are of particular relevance:

- Construction works will be supervised and monitored by a suitably qualified ecologist (Ecological Clerk of Works);
- Agreed drainage control measures will be put in place in advance of all other construction works;
- The access tracks to the temporary bridge will be profiled so that overtopping of the crossing may occur in the event of a flood event;
- Requirements as set out by Inland Fisheries Ireland (IFI) will be strictly adhered to.

There follows a summary of proposed mitigation and procedures to preserve water quality in local watercourses (with details in Section 6 of **Appendix 3, Construction Methodology**).

Prevention of siltation

Following detailed design, use of the following measures (whichever is considered most appropriate) will be available to control and manage the release of silt to the stream as a result of the works:

- Silt fences
- Silt traps
- Check dams

Prevention of hydrocarbon release

Standard precautionary measures which will be followed for the duration of the project to prevent the possible release of hydrocarbons from construction equipment to drains and the stream are detailed in Section 6.4 of **Appendix 3 Construction Methodology.**

As drainage of the project site area is direct to the stream, the entire plant refuelling procedure (when such is required) will be supervised by the project ecologist. A record will be kept of each refuelling event and this will be signed off by the site manager and the project ecologist.

Emergency procedures

It is noted that in the case of accidental release of pollutants to watercourses, the Contractor will immediately prevent any further silt or other contaminants entering the watercourse. Oil booms or equivalent will be used to contain spillage and a clean-up operation will be undertaken.

Prior to the commencement of works, the Contractor and project ecologist will review the physical characters of the watercourse downstream of the works area and will identify suitable locations to place physical barriers if need arises so as to contain the flow of pollutants.

Any incidents will be notified to the relevant statutory authorities at the earliest opportunity after the event.

2.2 Ecological Description of Proposed Project Site

The location of the proposed temporary bridge is on a tributary stream of the River Muing and is approximately 80 m downstream of the existing stone bridge over the stream.

Stream description
At the proposed crossing point, the stream is approximately 1.5 m in width and at time of survey had a depth of c.30 cm with good water clarity. The bed is of gravel. A general image of the stream is given in **Plate 2** and the exact location for the proposed crossing is shown in **Plate 3**.

This stream rises in bogland (Derry Lower) approximately 2.5 km south of the existing stone bridge at the N59. Commercial forestry has been planted in the area of the source of the stream but the remainder flows through blanket bog and flows close to the R312 road. After passing beneath the N59, the stream flows for a further 400 m approximately to join the River Muing. The Muing flows west for c.600 m and enters the Oweninny River at Bellacorick Bridge. The Oweninny merges with the Owenmore River just south of the bridge and then flows westwards towards Bangor (approximately 11 km distance). The Owenmore enters the sea at Tullaghan Bay, approximately 5 km west of Bangor. The various watercourses are shown in **Figure 3.**

Stream banks and adjoining areas
While surrounded by bog, the proposed access routes from both sides of the bridging point on the stream channel to the N59 have been previously disturbed and essentially comprise built and disturbed ground (BL3 & ED) from previous works (see **Plate 2**). From aerial imagery, it is apparent that these works took place prior to 1995. The ground here could now be described as a mix of Spoil and bare ground (ED2) and Recolonising bare ground (ED3). The previous works extended close to the stream banks (see **Plate 2**), with vegetation along the banks now dominated by rushes, bracken and species such as meadowsweet (*Filipendula ulmaria*). On the west side of the stream channel, the area extending to the N59 and the existing bridge is dominated by scrub, bracken and rank grasses. On the eastern side of the stream, the area extending to the N59 and the existing bridge is dominated by blanket bog that has been cut in the past (see **Figure 4** for overview of area).

Plate 2 View of tributary stream of River Muing c.5 m downstream of proposed crossing point. (September 2020)

Plate 3 View of location for proposed crossing over stream, looking eastwards from western side of stream (September 2020). Note existing built ground which extends to close to the stream banks.

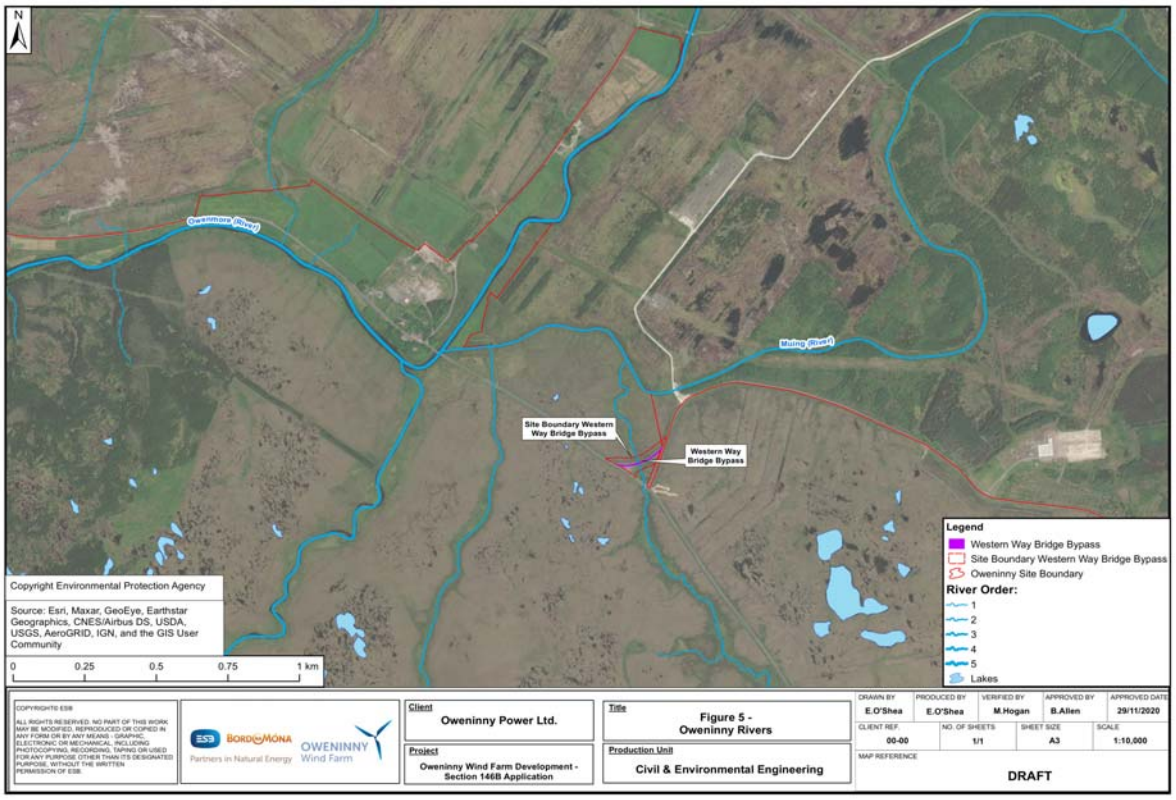

Figure 3 Drawing showing watercourses in vicinity of proposed crossing location.

Figure 4 Image showing proposed crossing location – note disturbed state of the bog at bridge location as a result of previous ground works and previous cutting.

2.3 European Sites Identification

In accordance with the European Commission Methodological Guidance (EC, 2002), consideration is given to European sites that could potentially be affected by the proposed project.

The "Guidance for Planning Authorities" (Department of Environment, Heritage and Local Government) notes the following in section 3.2.3 "Natura 2000 Sites":

"The second stage (of the AA Screening process) is an examination of what Natura 2000 sites might be affected. These sites should be identified and listed, bearing in mind the potential for a plan or project, whether it is within or outside a Natura 2000 site, to have direct, indirect or cumulative effects, and taking a precautionary approach so that a site is included if doubt exists".

The approach to screening is likely to differ somewhat between plans and projects, depending on scale and on the likely effects, but the following should be included:

a. *Any Natura 2000 sites within or adjacent to the plan or project area*
b. *Any Natura 2000 sites within the likely zone of impact of the plan or project. A distance of 15 km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al. 2006). For projects, the distance could be much less than 15 km, and in some cases less than 100 m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in-combination effects.*
c. *Natura 2000 sites that are more than 15 km from the plan or project area depending on the likely impacts and the sensitivities of the ecological receptors, bearing in mind the precautionary principle. In the case of sites with water dependent habitats or species, and a plan or project that could affect water quality of quantity, for example, it may be necessary to consider the full extent of the upstream and/or downstream catchment."*

While the proposed temporary Western Way bridge bypass application is a small scale development without the use of concrete etc., a precautionary approach is followed, with all Natura 2000 sites within an approximate 15km radius of the development site included in the assessment. In addition, the Blacksod Bay/Broadhaven Bay SPA is included as there is a theoretical hydrological linkage from the Muing tributary stream to Tullaghan Bay.

Sites identified are as follows (see **Figure 5**), with qualifying interests and linkages with the project site summarised in **Table 1**:

- Bellacorick Bog Complex Special Area of Conservation (code 01922)
- Bellacorick Iron Flush Special Area of Conservation (code 0466)
- Lough Dahybaun Special Area of Conservation (code 02177)
- River Moy Special Area of Conservation (code 02298)
- Carrowmore Lake Complex SAC (code 00476)

- Owenduff/Nephin SAC (00534)
- Glenamoy Bog Complex SAC (00500)
- Slieve Fyagh Bog SAC (00542)
- Newport River SAC (02144)
- Broadhaven Bay SAC (0472)
- Owenduff/Nephin Complex SPA (004098)
- Lough Carrowmore Lake SPA (004052)
- Blacksod Bay/Broadhaven Bay SPA (004057)
- Killala Bay/Moy Estuary SPA (004036)
- Lough Conn and Lough Cullin SPA (004228)

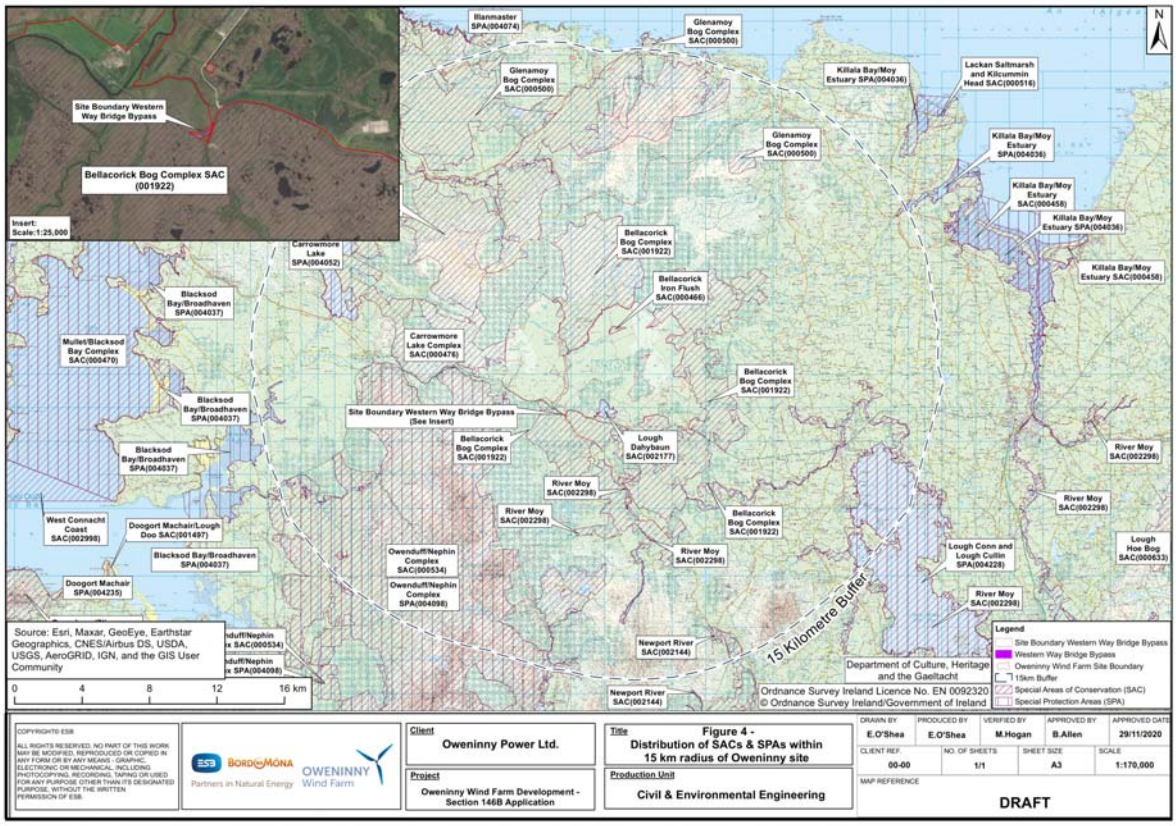

Figure 5 Map showing distribution of European sites within a 15 km distance of the Oweninny Wind Farm project site.

Table 1 Relevant European sites, reasons for designation, and summary of distances and linkages.

European Site	Reasons for designation (information correct as of April 2021 (*denotes a priority habitat)	Distance from temporary crossing location and summary of linkages
	SPECIAL AREAS OF CONSERVATION	
Bellacorick Bog Complex SAC (site code 001992)	*Vertigo geyeri* [1013] Marsh saxifrage (*Saxifraga hirculus*) [1528] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with *Erica tetralix* [4010] Blanket bog (*active only) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Alkaline fens [7230] According to this SAC's site Conservation Objectives document (Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, 2016), for each of the listed QIs, the Conservation Objective is to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	SAC occurs to east and south sides of N59 in the immediate vicinity of the location for proposed bridge. Project area hydrologically linked to SAC via Rivers Muing and Oweninny which flow into the Owenmore River at Bellacorick Bridge.
Bellacorick Iron Flush SAC (site code 000466)	Marsh saxifrage (*Saxifraga hirculus*) [1528] According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for Bellacorick Iron Flush SAC [00466]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs), for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	While SAC is within Phase 1 sector of Oweninny Wind Farm Site, project area is c.4 km southwest of the SAC and not connected hydrologically.
Lough Dahybaun SAC (site code 002177)	Slender Naiad *Najas flexilis* [1833] According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for Lough Dahybaun SAC [002177]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs), for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	Project area is 1.5 km west of Dahybaun, with no hydrological linkage
River Moy SAC (site code: 002298)	White-clawed crayfish (*Austropotamobius pallipes*) [1092] Sea lamprey (*Petromyzon marinus*) [1095] Brook lamprey (*Lampetra planeri*) [1096] Salmon (*Salmo salar*) [1106] Otter (*Lutra lutra*) [1355] Alkaline fens [7230] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	Project area is at least 10 km to the northwest of the River Moy SAC, with no hydrological linkage (i.e. different catchments)

European Site	Reasons for designation (information correct as of April 2021 (*denotes a priority habitat)	Distance from temporary crossing location and summary of linkages
	Depressions on peat substrates of the Rhynchosporion [7150] Old sessile oak woods with Ilex and Blechnum in British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for River Moy SAC [002298]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	
Carrowmore Lake Complex SAC (site code: 00476)	Shining sickle moss (*Drepanocladus vernicosus*) [1393] Marsh saxifrage (*Saxifraga hirculus*) [1528] Blanket bog (*active only) [7130] Depressions on peat substrates of the Rhynchosporion [7150 According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for Carrowmore Lake Complex SAC [00476]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	Project area is approximately 4 km east of Carrowmore SAC, with no hydrological linkage
Owenduff/Nephin SAC (site code: 00534)	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Natural dystrophic lakes and ponds [3160] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with Erica tetralix [4010] Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Drepanocladus vernicosus (Slender Green Feather-moss) [1393] Saxifraga hirculus (Marsh Saxifrage) [1528] According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for Owenduff/Nephin SAC [00534]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	SAC adjoins Owenmore River just south of N59 road, with a distance of approximately 5 km between the SAC and the bridge location. Project area hydrologically linked to SAC via Rivers Muing and Oweninny which flow into the Owenmore River at Bellacorick Bridge.

European Site	Reasons for designation (information correct as of April 2021 (*denotes a priority habitat)	Distance from temporary crossing location and summary of linkages
Glenamoy Bog Complex SAC (site code 00500)	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Machairs (* in Ireland) [21A0] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with Erica tetralix [4010] Juniperus communis formations on heaths or calcareous grasslands [5130] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Depressions on peat substrates of the Rhynchosporion [7150] Salmo salar (Salmon) [1106] Drepanocladus vernicosus (Slender Green Feather-moss) [1393] Petalophyllum ralfsii (Petalwort) [1395] Saxifraga hirculus (Marsh Saxifrage) [1528] According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for Glenamoy Bog Complex SAC [00500]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected	Project area is approximately 8 km from SAC, with no hydrological or other physical linkages.
Slieve Fyagh Bog SAC (site code 000542)	Blanket bogs (* if active bog) [7130] According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for Slieve Fyagh Bog SAC [00542]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	Project area is approximately 7 km to south east of SAC, with no hydrological or other physical linkages
Newport River SAC (site code: 002144)	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Salmo salar (Salmon) [1106] According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for Newport River SAC [002144]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	Project area is approximately 14 km from SAC, with no hydrological linkage
Broadhaven Bay SAC (site code: 472)	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Submerged or partially submerged sea caves [8330] According to this SAC's site Conservation Objectives document (NPWS 2016, Conservation objectives for Broadhaven Bay SAC [00472]. Generic Version 5.0.	Project area is approximately 14 km from SAC, with no hydrological or other physical linkages

European Site	Reasons for designation (information correct as of April 2021 (*denotes a priority habitat)	Distance from temporary crossing location and summary of linkages
	Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	
	SPECIAL PROTECTION AREAS	
Owenduff/Nephin Complex SPA (site code 004098)	A098 Merlin *Falco columbarius* A140 Golden Plover *Pluvialis apricaria* According to this SPA's site Conservation Objectives document (NPWS 2016, Conservation objectives for Owenduff/Nephin SPA 004098. Generic version 5.0, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.	SPA adjoins Owenmore River just south of N59 road, with a distance of approximately 5 km between the SPA and the bridge location. Project area linked to SPA via Rivers Muing and Oweninny River, which join the Owenmore River at Bellacorick Bridge.
Carrowmore Lake SPA (site code 004052)	Sandwich Tern (Sterna sandvicensis) [A191] According to this SPA's site Conservation Objectives document (NPWS 2016, Conservation objectives for Carrowmore Lake SPA 004052. Generic version 5.0, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected	Project area is approximately 4 km east of Carrowmore SAC, with no hydrological linkage. Project area does not have suitable habitat for Sandwich Tern.
Blacksod Bay/Broadhaven Bay SPA (site code: 004037)	Great Northern Diver (Gavia immer) [A003] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Common Scoter (Melanitta nigra) [A065] Red-breasted Merganser (Mergus serrator) [A069] Ringed Plover (Charadrius hiaticula) [A137] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Sandwich Tern (Sterna sandvicensis) [A191] Dunlin (Calidris alpina schinzii) [A466] Wetland and Waterbirds [A999] According to this SPA's site Conservation Objectives document (NPWS 2016, Conservation objectives for Blacksod Bay/Broadhaven Bay SPA 004057. Generic version 5.0, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.	While a hydrological linkage exists between the project area and the SPA, there is a distance of approximately 17 km between the two locations.

European Site	Reasons for designation (information correct as of April 2021 (*denotes a priority habitat)	Distance from temporary crossing location and summary of linkages
Killala Bay/Moy Estuary SPA (site code: 004036)	A137 Ringed Plover Charadrius hiaticula A140 Golden Plover Pluvialis apricaria A141 Grey Plover Pluvialis squatarola A144 Sanderling Calidris alba A149 Dunlin Calidris alpina alpina A157 Bar-tailed Godwit Limosa lapponica A160 Curlew Numenius arquata A162 Redshank Tringa totanus A999 Wetlands According to this SPA's site Conservation Objectives document (NPWS 2016, Conservation objectives for Killala Bay/Moy Estuary SPA 004036. Generic version 5.0, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.	Project area is more than 15 km southwest of the SPA and is not hydrologically linked.
Lough Conn & Lough Cullin SPA (site code 004228)	A061 Tufted Duck Aythya fuligula A065 Common Scoter Melanitta nigra A182 Common Gull Larus canus A395 Greenland White-fronted Goose Anser albifrons flavirostris Wetland and Waterbirds [A999] According to this SPA's site Conservation Objectives document (NPWS 2016, Conservation objectives for Lough Conn & Lough Cullin SPA 004228. Generic version 5.0, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.	Project area is more than 15 km northwest of Lough Conn and does not have any hydrological linkages.

2.4 Identification and Assessment of Potential Impacts in Absence of Mitigation

Impacts are considered in the context of the **Source-Pathway-Receptor** (S-P-R) conceptual model for environmental management risk assessment. This provides a systematic means of determining and evaluating the nature, effect and extent of exposure a vulnerable receptor may experience in relation to a particular hazard. For a risk to exist there must be a source (or hazard or pressure), a pathway, and a receptor (or target) (Daly, 2004). An environmental hazard is an event, or continuing process, which if realised will lead to circumstances having the potential to degrade, directly or indirectly, the quality of the

environment (Royal Society, 1992). A pathway is a route by which a particle of water, substance or contaminant moves through the environment and comes into contact with, or otherwise, affects a receptor (Environment Agency, 2001).

From the perspective of Appropriate Assessment, the following are important attributes of the proposed project:

(i) the location of the proposed project outside of a designated site but hydrologically linked to several European sites,

(ii) the relatively small-scale nature of the proposed project, i.e. a temporary bridge crossing over a tributary stream,

(iii) the linkage of the project to the Oweninny Wind Farm development which operates under rigorous planning conditions relating to the environment.

Taking the above into account, and considering the linkages between the project area and the identified European sites (see **Table 1**), it can be demonstrated with full scientific certainty that there is no Pathway (hydrological or otherwise) between the Source (i.e. bridge project area) and Receptor (European site) for the following sites:

- Bellacorick Iron Flush Special Area of Conservation (code 0466)
- Lough Dahybaun Special Area of Conservation (code 02177)
- River Moy Special Area of Conservation (code 02298)
- Carrowmore Lake Complex SAC (code 00476)
- Glenamoy Bog Complex SAC (00500)
- Slieve Fyagh Bog SAC (00542)
- Newport River SAC (02144)
- Broadhaven Bay SAC (0472)
- Lough Carrowmore Lake SPA (004052)
- Killala Bay/Moy Estuary SPA (004036)
- Lough Conn and Lough Cullin SPA (004228)

For these 11 sites, it can be concluded with scientific certainty that the proposed project could not have impacts, direct or indirect, on the qualifying interests and the conservation objectives of any of these sites even in the absence of mitigation measures to minimise or remove the risk of water pollution which could arise as a result of the proposed works. **Hence, it is considered with full scientific certainty that the above 11 sites can be Screened Out at this stage.**

For each the remaining four sites (listed below), a hydrological linkage (Pathway) exists between the project location (Source) and the European site (Receptor). Hence, in the absence of mitigation there is potential for contaminated water emanating from the development site to have impacts on the qualifying interests and general environmental quality of these four sites. The significance of any subsequent effect on the qualifying interests/special conservation interests of the European sites would vary depending on the type of pollutant, as well as the magnitude and duration of the event. As the conservation

objectives of these European sites could potentially be affected adversely, measures are required to avoid or reduce harmful effects of the proposed project (i.e. mitigation measures). Therefore, as the risk of potential significant effects on these 4 No. European sites cannot be ruled out, Section 3 of this report provides information to allow the competent authority to carry out a Stage 2 Appropriate Assessment in respect of the proposed development.

- Bellacorick Bog Complex SAC (code 01922)
- Owenduff/Nephin SAC (00534)
- Owenduff/Nephin Complex SPA (004098)
- Blacksod Bay/Broadhaven Bay SPA (004037)

3. INFORMATION FOR STAGE 2 – APPROPRIATE ASSESSMENT

The screening report for Appropriate Assessment presented in Section 2 of this NIS report concludes that in absence of mitigation potential impacts on four identified European sites may arise as a result of the proposed development during the construction phase.

The four sites are:

1. Bellacorick Bog Complex SAC (code 01922)
2. Owenduff/Nephin SAC (00534)
3. Owenduff/Nephin Complex SPA (004098)
4. Blacksod Bay/Broadhaven Bay SPA (004037)

A range of mitigation measures will therefore be implemented during the construction phase of the development to avoid or reduce potential harmful effects of the proposed development on the relevant qualifying interests of these four European sites.

It is noted that potential impacts on these sites during the operation phase of the proposed bridge project have not been identified.

As the sites are spread over a large geographical area and have varying qualifying interests, each site is considered separately in the following assessment.

Site synopses for these sites are given in **Annex 1.**

3.1 Assessment of potential impacts on identified European sites

3.1.1 Bellacorick Bog Complex SAC

While the work area for the proposed temporary crossing is not within the designated site, the SAC includes the lands to the east and south of the N59 road.

> **Note re. SAC boundary and N59 road**
> The boundary of the Bellacorick Bog Complex SAC extends into the road carriageway along the road stretch to the east of the stream, i.e. section running south towards N59/R312 junction (see http://webgis.npws.ie/npwsviewer/). From the NPWS website, it is apparent that the boundary coincides with the edge of the road as shown on the (now dated) Ordnance Survey 6 inch map and thus the SAC includes modern upgrades to the road.

Direct impacts on the SAC are not anticipated as all works will be confined to the specific works area, with construction traffic arriving and departing from the site strictly at the dedicated location along the N59. It is noted that there are no entry points to the SAC from the N59 in this area.

A hydrological linkage exists between the works area and the Owenmore River below Bellacorick Bridge via the River Muing and River Oweninny, with a distance of approximately

1 km from proposed crossing point to the Owenmore. With the requirement for instream works during the culverting process and with construction of two sections of access road, there is potential for contaminants, mainly suspended solids, to enter the local watercourses and ultimately the Owenmore River. The Owenmore River forms the boundary to the SAC along the 1 km section (approximately) west of Bellacorick bridge. Such contaminants could affect aquatic life of the watercourses.

However, the potential for material to enter the local rivers is negligible as environmental controls will be strictly applied to the temporary bridge crossing project. These controls are summarised herein Section 2.1.2 'Environmental Controls' of the present report and are described in full in **Section 6** of the accompanying **Appendix 3 Construction Methodology**

Also, as already noted, the construction will be supervised and monitored by a suitably qualified ecologist (Ecological Clerk of Works), and all works will be carried out following best practices and requirements of Inland Fisheries Ireland.

It is noted that even if some material was to enter the local watercourses and the Owenmore River, the actual qualifying interests of the SAC, as listed below, would not be affected as these are not associated directly with the river system.

Vertigo geyeri [1013]

Marsh saxifrage (*Saxifraga hirculus*) [1528]

Natural dystrophic lakes and ponds [3160]

Northern Atlantic wet heaths with *Erica tetralix* [4010]

Blanket bog (*active only) [7130]

Depressions on peat substrates of the Rhynchosporion [7150]

Alkaline fens [7230]

From the above, it can be concluded that with best practice methods adhered to during the construction of the temporary crossing, the potential for the project to impact upon the Bellacorick Bog Complex SAC and to have effects on the qualifying interests of the site is not significant.

3.1.2 Owenduff/Nephin SAC

The Owenmore River, which is linked to the temporary bridge site via the Rivers Muing and Oweninny, skirts parts of the northern boundary of the Owenduff/Nephin SAC and for a short stretch the SAC overlaps with the river channel. With the requirement for instream works during the culverting process and with construction of two sections of access road, there is potential for contaminants, mainly suspended solids, to enter the local watercourses and ultimately the Owenmore River. The section of the Owenmore River which skirts the SAC is at a closest distance of approximately 5 km from the temporary bridge site. The entry of contaminants to the Owenmore River could potentially affect the following qualifying interests of the SAC:

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]

Salmo salar (Salmon) [1106]

Lutra lutra (Otter) [1355]

However, the potential for material to enter the local rivers is negligible as environmental controls will be strictly applied to the temporary bridge crossing project. These controls are summarised herein Section 2.1.2 'Environmental Controls' of the present report and are described in full in **Section 6** of the accompanying **Appendix 3 Construction Methodology**

Also, as already noted, the construction will be supervised and monitored by a suitably qualified ecologist (Ecological Clerk of Works), and all works will be carried out following best practices and requirements of Inland Fisheries Ireland.

From the above, and taking into account that there is a 5 km distance between the works area and the SAC, it can be concluded that with best practice methods adhered to during the construction of the temporary crossing, the potential for the project to impact upon the Owenduff/Nephin SAC and to have effects on the relevant qualifying interests of the site is not significant.

3.1.3 Owenduff/Nephin SPA

The Owenmore River, which is linked to the temporary bridge site via the Rivers Muing and Oweninny, skirts parts of the northern boundary of the Owenduff/Nephin SPA and for a short stretch the SAC overlaps with the river channel. With the requirement for instream works during the culverting process and with construction of two sections of access road, there is potential for contaminants, mainly suspended solids, to enter the local watercourses and ultimately the Owenmore River. The section of the Owenmore River which skirts the SAC is at a closest distance of approximately 5 km from the temporary bridge site. The entry of contaminants to the local watercourses could potentially affect the aquatic life of the rivers, including the section of the Owenmore alongside the Owenduff/Nephin SPA.

However, the potential for material to enter the local rivers is negligible as environmental controls will be strictly applied to the temporary bridge crossing project. These controls are summarised in Section 2.1.2 'Environmental Controls' of the present report and are described in full in **Section 6** of the accompanying **Appendix 3 Construction Methodology.**

Also, as already noted, the construction will be supervised and monitored by a suitably qualified ecologist (Ecological Clerk of Works), and all works will be carried out following best practices and requirements of Inland Fisheries Ireland.

It is noted that even if some material was to enter the local watercourses and the Owenmore River, the actual Special Conservation Interests of the SPA, as listed below, would not be affected as these two species are not associated with watercourses

A098 Merlin *Falco columbarius*
A140 Golden Plover *Pluvialis apricaria*

From the above, it can be concluded that with best practice methods adhered to during the construction of the temporary crossing, the potential for the project to impact upon the Owenduff/Nephin SPA and to have effects on the Special Conservation Interests of the site is not significant.

3.1.4 Blacksod Bay/Broadhaven Bay SPA

The Owenmore River, which is linked to the temporary bridge site via the Rivers Muing and Oweninny, reaches the sea at Tullaghan Bay, which is within the Blacksod Bay/Broadhaven Bay SPA. With the requirement for instream works during the culverting process and with construction of two sections of access road, there is potential for contaminants, mainly suspended solids, to enter the local watercourses and ultimately Tullaghan Bay. The entry of contaminants to the local watercourses could potentially affect the estuarine life of Tullaghan Bay, which provides habitat for the various Special Conservation Interests of the SPA (see **Table 1**).

However, the potential for material to enter the local rivers is negligible as environmental controls will be strictly applied to the temporary bridge crossing project. These controls are summarised in Section 2.1.2 'Environmental Controls' of the present report and are described in full in **Section 6** of the accompanying **Appendix 3 Construction Methodology**

Also, as already noted, the construction will be supervised and monitored by a suitably qualified ecologist (Ecological Clerk of Works), and all works will be carried out following best practices and requirements of Inland Fisheries Ireland.

It is considered that even if some material was to enter the local watercourses from the works area, the amount that would enter the Tullaghan Bay system would be negligible due to the distance (c.17 km) between the two locations.

From the above, it can be concluded that with best practice methods adhered to during the construction of the temporary crossing, and taking into account the substantial distance between the temporary bridge location and the SPA, the potential for the project to impact upon the SPA and to have effects on the Special Conservation Interests of the site is not significant.

3.2 Analysis of "In-Combination" Effects

The Habitats Directive requires competent authorities to make an appropriate assessment of any plan or project which is likely to have a significant effect alone or in-combination with other plans and projects.

The principal other project that is relevant to the temporary bridge project is the actual parent Oweninny Wind Farm project, of which the present application is an alteration to planning. It is noted that the entire Phase 1 Wind Farm has been constructed and is operational, while the Phase 2 component is presently under construction.

It is noted further that the Oweninny Wind Farm, which has been approved by An Bord Pleanála, includes detailed mitigation measures as required to preserve water quality of the local rivers and streams and ultimately the interests of the various designated European sites within the vicinity. The mitigation measures were implemented successfully throughout the construction of Phase 1 and are currently in force for the Phase 2 build.

The present AA report has considered the proposed temporary bridge project in the context of relevant European sites within a 15 km radius of the bridge crossing location and

concluded that the project would not have adverse effects on the conservation objectives of any of these sites.

Taking all the above into account, it can be demonstrated objectively that when other projects are considered along with the proposed Western Way Bridge Bypass project there will not be any in-combination effect on the European sites as discussed.

4. CONCLUSION

This Natura Impact Statement has considered the potential impacts of a proposed project involving a temporary bridge crossing of a tributary stream of the River Muing, at Bellacorick, Co. Mayo.

This report concludes on the best scientific evidence that it can be demonstrated objectively that no element of the project (subject to appropriate mitigation measures) will result in any effect on the integrity or Qualifying Interests/Special Conservation Interests of any relevant European site, either on their own or in-combination with other plans or projects, in light of their conservation objectives.

It is considered that this Natura Impact Statement provides sufficient relevant information to allow the Competent Authority (An Bord Pleanála) to carry out a Stage 1 AA Screening and a Stage 2 Appropriate Assessment, and to reach a determination that the proposed development will not affect the integrity of any of the relevant European sites under Article 6 of the Habitats Directive (92/43/EEC) in light of their conservation objectives.

5. REFERENCES

Daly, D. (2004), Groundwater at Risk in Ireland - Putting Geoscientific Information and Maps at the Core of Land Use and Environmental Decision-making, John Jackson Memorial Lecture, Royal Dublin Society, November 2004

Department of the Housing, Local Government and Heritage (2021). Protected sites - listings and maps. See www.npws.ie

Department of Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. See www.npws.ie

Environment Agency (2001). Guide to Good Practice for the Development of Conceptual Models and the Selection and Application of Mathematical Models of Contaminant Transport Processes in the Subsurface. Environment Agency National Groundwater and Contaminated Land Centre Report, Solihull, UK.

European Commission (1996). *Interpretation Manual of European Union Habitats*. Version Eur 15. European Commission, DG XI.

Royal Society (1992) Risk: Analysis, Perception and Management. The Royal Society, London (ISBN -85403-467-6)

ANNEX 1

SITE SYNOPSES

Site Name: Bellacorick Bog Complex SAC

Site Code: 001922

Bellacorick Bog Complex is a large peatland site in Co. Mayo, situated on a low-lying undulating plain and consisting of two large areas separated by an area of forestry. The larger of the two areas extends from south of Bellacorick eastwards, southeastwards and then north to Doobehy. The smaller area is situated 6 km south-east of Glenamoy and extends south to 3 km north of Bellacorick and east towards Doobehy. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[3160] Dystrophic Lakes

[4010] Wet Heath

[7130] Blanket Bogs (Active)*

[7150] Rhynchosporion Vegetation

[7230] Alkaline Fens

[1013] Geyer's Whorl Snail (Vertigo geyeri)

[1528] Marsh Saxifrage (Saxifraga hirculus)

This site contains some of the most extensive areas of lowland blanket bog remaining in Ireland, with outstanding pool development. As well as typical lowland blanket bog vegetation, areas with intermediate bog characteristics are particularly well represented. These areas are typified by domes with raised bog species such as the bog mosses Sphagnum imbricatum, S. magellanicum and S. fuscum, and without Purple Moor-grass (Molinia caerulea). Excellent examples of transitions to minerotrophic flushes and fens are also a feature of the site. The site includes some excellent examples of dystrophic lakes. Included here are the numerous sizeable lakes and large inter-connecting pool systems which characterise the blanket bog plateaux. This habitat type is particularly well represented at this site, with some the finest remaining examples in the country. They are typically species-poor, and many are completely devoid of macrophyte vegetation. Those with vegetation contain species such as Bog-sedge (Carex limosa), Bogbean, Many-stalked Spike-rush (Eleocharis multicaulis) and bladderworts (Utricularia spp.). Pool size and pattern is diverse, ranging from concentric strings of pools to large, irregularly shaped lakes with eroding peaty margins. Many contain vegetated and ungrazed islands.

Rhynchosporion vegetation is a feature of many of the pool areas at the site and also of areas of wet, quaking peat where White Beak-sedge (Rhynchospora alba) is typically dominant. In such areas there is often a luxuriant growth of the bog mosses Sphagnum cuspidatum and/or S. auriculatum. Other characteristic species of the pools and moss lawns include Bogbean (Menyanthes trifoliata), Common Cottongrass (Eriophorum angustifolium) and sundews (Drosera anglica and D. intermedia).

Spring-fed species-rich flushes are a significant feature of this site and occur throughout the bog complex. Many of these flushes are very large. Some of these are iron- flushed, notably those at Brackloon Lough on the eastern margin of the site. The vegetation supported by these flushes include poor fen, rich fen and swamp carr communities. The site contains the largest assemblage of intact fen vegetation in Ireland. Some of the flushes are dominated by sedges (Carex spp.), with Common Reed (Phragmites australis) and Great Fen-sedge (Cladium mariscus) or Soft Rush (Juncus effusus) with a thick Sphagnum layer underneath. Black Bog-rush (Schoenus nigricans) and Purple Moor-grass have been recorded from the iron-rich flushes. Occasional clumps of willow (Salix spp.) also occur. The flushes are also notable for the presence of several boreal relict mosses and liverworts, particularly Homalothecium nitens, Leicolea rutheana and Paludella squarrosa. The moss Sphagnum warnstorfii has been reported from a fen south-west of Brackloon Lough.

A rare vascular plant species, Marsh Saxifrage (Saxifraga hirculus), occurs here at one of only very few known locations in Ireland. This species is listed on Annex II of the E.U. Habitats Directive, as well as on the Flora (Protection) Order, 1999.

Many of the bogland areas are traversed by river and stream channels with diverse associated vegetation. An extensive collapsed swallow-hole system is found at Shralahy with mature Rusty Willow (Salix cinerea subsp. oleifolia) and Rowan (Sorbus aucuparia) occurring.

The site also contains rushy fields, cut-away bog and small areas of scrub and wet woodland. Good examples of wet heath vegetation occur occasionally on sloping ground and on elevated mounds of mineral soil that are scattered throughout the lowland blanket bog-covered plains. These are particularly evident in the Owenboy Nature Reserve and along some of the steeper stream valley sides. These areas are typically dominated by Heather (Calluna vulgaris), with Cross-leaved Heath (Erica tetralix) and the bog moss Sphagnum capillifolium also present.

The site supports a population of the rare snail, Vertigo geyeri, a species that is listed on Annex II of the E.U. Habitats Directive.

The main threats to the integrity of the site are turf- cutting and afforestation. Overgrazing has impacted negatively on the quality of the site in some places. The site includes several well-documented sites of considerable conservation significance, e.g. Formoyle, Brackloon and Cloonoragh flushes and the Owenboy and Knockmoyle-Sheskin Nature Reserves. These areas are still intact and remain of unique scientific and conservation interest. The site complex also includes important peatland sites: Tawnaghs Bog, Eskeragh Bog, Sranacally Bog, Derry Upper Bog, Derry Lower Bog, Bellacorick Bog and Dooleeg Beg Bog. Some recent afforestation has occurred on Eskeragh and Sranacally Bogs. In general, these bogs have a good range of blanket bog habitats and occasional rare plant species.

The site is one of the largest tracts of lowland blanket bog in the country, with the finest examples of intact pool systems. It is considered to be of international importance due to the extent of the individual areas of bog and the wide variety of habitats present and because of the presence of a number of rare and threatened plant and animal species.

Site Name: Owenduff/Nephin Complex SAC

Site Code: 000534

This large area of relatively intact blanket bog and mountains incorporates the catchment of the Owenduff River and much of the Nephin Beg Mountain range, and is situated in Co. Mayo. Lough Feeagh, which is located approximately 5 km northwest of Newport Town, lies in the south-east corner of the site. From here, the site extends northwards to the Owenmore River and almost to the town of Bangor Erris, and westwards to the townland of Ballycroy. Within the site, the terrain varies enormously from the peaks of the Nephin Beg Mountains, which reach a maximum altitude of 717 m, to areas where the land slopes westwards to the floodplain of the Owenduff River. The upper slopes of the mountains in the Owenduff/Nephin complex carry wet heath and cliff vegetation, and patches of upland grassland are frequent. The presence of small corrie lakes and rock basin lakes adds to the habitat diversity of the mountains. Along its southern and eastern limits the site is bounded by coniferous plantations and/or the high mountain slopes of the Nephin Begs. Along its northern and western margins the site is fringed by agricultural land reclaimed from bog or from wet floodplain vegetation.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[3110] Oligotrophic Waters containing very few minerals

[3160] Dystrophic Lakes

[3260] Floating River Vegetation

[4010] Wet Heath

[4060] Alpine and Subalpine Heaths

[5130] Juniper Scrub

[7130] Blanket Bogs (Active)*

[7140] Transition Mires

[1106] Atlantic Salmon (Salmo salar)

[1355] Otter (Lutra lutra)

[1393] Slender Green Feather-moss (Drepanocladus vernicosus)

[1528] Marsh Saxifrage (Saxifraga hirculus)

The lower mountain slopes of this site are covered with blanket bog, with a broad representation of good quality bog habitats occurring. There are continuous tracts of vegetation dominated by Purple Moor-grass (Molinia caerulea), Black Bog-rush (Schoenus nigricans) and Deergrass (Scirpus cespitosus). In places, the flat surface is differentiated into an undulating micro-topography of hummocks and wet hollows, formed by a variety of bog moss species, including Sphagnum imbricatum and S. fuscum. Extensive pool systems occur, where large peaty ponds are scattered over the bog. Typically, Bogbean (Menyanthes trifoliata) and spike-rush (Eleocharis sp.) colonise the

pools, and frequently also Water Lobelia (Lobelia dortmanna), Pipewort (Eriocaulon aquaticum) and Yellow Water-lily (Nuphar lutea). Large hummocks lie between the pools, colonised by Heather (Calluna vulgaris), Hare's-tail Cottongrass (Eriophorum vaginatum), and occasionally, Crowberry (Empetrum nigrum).

Around the many small streams and flushes which cross the bog, the vegetation is quite different. There is frequently a wet quaking mat of Sphagnum moss (including S. recurvum var. tenue), which is colonised by a range of higher plants, including Bogsedge (Carex limosa), Marsh Cinquefoil (Potentilla palustris), Ragged-Robin (Lychnis flos-cuculi) and Cranberry (Vaccinium oxycoccos). These minerotrophic flushes also contain a rich and varied moss and liverwort flora. The rare moss Tomentypnum nitens has been recorded in two flushes on this site. Areas such as these, some of which can be classified as transition mire (a habitat listed on Annex I of the E.U. Habitats Directive), occur in several parts of the site.

The remote upland areas along the eastern and southern fringes of this site contain approximately 15 oligotrophic lakes, many of which are fine examples of corrie lakes, backed by precipitous mountain cliffs (for example, Lough Anaffrin, Lough Adanacleeveen and Corryloughnaphuil Lough). The lakes vary greatly in size, ranging from a couple of hectares to approximately 25 ha. Most of these lakes are base-poor, and have little emergent vegetation. It is sometimes difficult to distinguish between small examples of oligotrophic lakes and dystrophic lakes, which by their nature are generally smaller, do not have a rocky bottom and have more sparse marginal flora. Typical plant species of oligotrophic lakes are Water Lobelia, Pipewort, Shoreweed (Littorella uniflora), spike-rush and Bulbous Rush (Juncus bulbosus).

Dystrophic lakes of various sizes are found in areas of low-lying blanket bog. These are extremely base-poor, have a peaty bottom and as a result, the water is often highly coloured by humic acids. A feature of these lakes is that there is usually an abrupt transition from blanket bog to open water, with little in the way of shallow lake margin present. The vegetation of these nutrient-poor lakes is typically limited and sparse. Marginal vegetation may include narrow floating rafts of Bulbous Rush, White Beak-sedge (Rhynchospora alba) and Sphagnum cuspidatum. Small peaty islands in these lakes may support Crowberry and Juniper (Juniperus communis), both species which are generally uncommon in lowland blanket bogs. The Juniper often forms scrub, but this is relatively rare, and is confined to the larger and ungrazed islands.

The Owenduff River and its tributaries flow through this site, and this system is one of the best examples in the country of a large, base-poor river catchment which is largely intact (i.e. not afforested). The vegetation of the river itself is quite limited in most places, with Bulbous Rush being the dominant vascular plant, with some Broad-leaved Pondweed (Potamogeton natans) present also. Riverbank and streamside flora often consists of acid wet grassland. Common species here include Bog Pimpernel (Anagallis tenella), Self-heal (Prunella vulgaris) and Common Sedge (Carex nigra). Ivy-leaved Bellflower (Wahlenbergia hederacea) occurs along the banks of the Owenduff River. This species is scarce in Ireland and mostly found in south-eastern and south-western counties.

Wet heath is likely to be widespread throughout this site, and is found in mosaic and transition with the lowland blanket bog. It is mainly found were peat is shallower, and Cross-leaved Heath (Erica tetralix) is characteristic.

The mountain tops, cliffs and crags support a high-level rocky vegetation. Quartzites prevail and typically support species-poor vegetation communities. Where outcrops of mica schist occur, a more diverse flora is found. The following arctic-alpine plant species have been recorded from the site: Starry Saxifrage (Saxifraga stellaris), Roseroot (Rhodiola rosea), Mountain Sorrel (Oxyria digyna), Brittle Bladder-fern (Cystopteris fragilis), Purple Saxifrage (Saxifraga oppositifolia), Alpine Meadow-rue (Thalictrum alpinum), Alpine Saw-wort (Saussurea alpina), Bearberry (Arctostaphylos uva-ursi)

and Dwarf Willow (Salix herbacea). Alpine and subalpine heath typically occurs at high altitudes on thin, peaty soils with bare rock often evident. As well as the specialist species listed above, typical dominant species are Heather, Bilberry (Vaccinium myrtillus), Heath Rush (Juncus squarrosus), Crowberry, Tormentil (Potentilla erecta) and the moss Racomitrium lanuginosum.

Marsh Saxifrage (Saxifraga hirculus) has been recorded in two flushes on this site. This species is legally protected under the Flora (Protection) Order, 1999, and is one of the rarest flowering plants in Ireland. It is listed in Annexes II and IV of the E.U. Habitats Directive. Its decline in Ireland is due to the drainage and exploitation of its peatland habitat. Two other legally protected species have been recorded at the site: Bog Orchid (Hammarbya paludosa) and Marsh Clubmoss (Lycopodiella inundata). Slender Green Feather-moss (Drepanocladus vernicosus), a rare moss listed on Annex II of the E.U. Habitats Directive, also occurs on the site (last recorded in 1995).

Greenland White-fronted Goose regularly visit this site in winter. Up until 1990/91 numbers of around 50 geese were recorded. Since that time the flock has been partially displaced to an adjacent sub-flock's range (on the Mullet Peninsula), largely due to winter shooting and increased human disturbance. Currently numbers of 12- 17 birds are recorded, mostly confined to the area of Lough Feeagh and neighbouring Altaconey Bog. Golden Plover breed here in summer, and the area is used as feeding grounds by Merlin which nest in the nearby conifer plantations. These three species are listed in the Red Data Book and are included on Annex I of the E.U. Birds Directive.

The site provides extensive areas of habitat for Otter, a species that is listed on Annexes II and IV of the E.U. Habitats Directive. The Owenduff River system holds an important population of Atlantic Salmon, another species listed on Annex II. Spawning occurs on the Owenduff, the Tarsaghaun River to the east, the Glenadeeghan and the Baunduff/Scardaun, mainly in the upper reaches.

The site is heavily stocked with sheep. Cattle graze the riversides, but sheep penetrate into the uninhabited valleys and mountain slopes. Blanket bogs are sensitive to damage from over-grazing - the cover of Sphagnum mosses can be depleted and peat erosion can occur. Damage is currently severe on the slopes west of Lough Feeagh, where it has contributed to a recent decline in the numbers of Greenland White-fronted Goose which feed there. Peat erosion also threatens water quality in the rivers, which may in turn affect the fish population. Currently, fishing (Brown Trout and Atlantic Salmon) is a popular activity on the site and, together with game-shooting, attracts significant numbers of tourists to the region.

The Owenduff/Nephin Complex is one of the best and largest examples of intact blanket bog in the country. The range and quality of habitats present here is excellent, and a number of rare and protected plant and animal species occur. The Owenduff River system is the largest in the country which remains virtually free of conifer plantations. The site is a striking wilderness of bog and mountain, a unique landscape which is of international ecological importance.

Version date: 02.12.2015 4 of 4 000534_Rev15.Docx

SITE NAME: BLACKSOD BAY/BROAD HAVEN SPA

SITE CODE: 004037

Situated in the extreme north-west of Co. Mayo, this site comprises a number of bays and inlets including Sruwaddacon Bay, Moyrahan Bay, Traw-Kirtaun, Blind Harbour, Tullaghan Bay, and the various sheltered bays and inlets in Blacksod Bay, including Trawmore Bay, Feorinyeeo Bay, Saleen Harbour, Elly Bay and Elly Harbour. At low tide extensive areas of intertidal sand and mudflats are exposed. These support a well-developed macro-invertebrate fauna. Talitrid amphipods occur in decomposing seaweed on the strand line, whilst polychaete worms (Arenicola marina), bivalves (Cerastoderma edule) and crustaceans, such as Urothoe brevicornis, Ampelisca brevicornis and Bathyporeia pilosa, are common in the middle shore. Eelgrass (Zostera marina) occurs at several localities. Salt marshes, which are often on a peat substrate, fringe parts of the site and provide useful roosts for the wintering waterfowl. Also included within the site are two small lakes on the Mullet Peninsula, Cross Lough and Leam Lough, and some areas of machair at Fahy, Doolough, Dooyork and Srah.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Great Northern Diver, Light-bellied Brent Goose, Common Scoter, Red-breasted Merganser, Ringed Plover, Sanderling, breeding Dunlin (subsp. schinzii), Dunlin, Bar-tailed Godwit, Curlew and Sandwich Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. The site supports an excellent diversity of wintering waterfowl species and is one of the most important wetland complexes in the west. It has internationally important populations of Great Northern Diver (67) and Light-bellied Brent Goose (279) – all figures are five year mean peaks for the period 1999/2000 to 2003/04. The site also supports nationally important populations of Common Scoter (510), Red-breasted Merganser (83), Ringed Plover (590), Sanderling (171), Dunlin (1,255), Bar-tailed Godwit (664) and Curlew (567). Other species which occur include Shelduck (30), Mallard (84), Red-throated Diver (12), Oystercatcher (471), Golden Plover (947), Grey Plover (50), Knot (160), Redshank (161), Turnstone (62), Black-headed Gull (220) and Common Gull (355).

A number of wader species breed within the areas of machair in the SPA, including a nationally important population of Dunlin (subsp. schinzii) – 24 pairs (3 survey mean, 1985-2009). Inishderry Island has a nationally important breeding colony of Sandwich Tern, with 114 pairs present in 1994 and 81 pairs in 1995. The terns at this site are considered to be the same population that nested at Carrowmore Lake in the past. It also has nesting Common Tern and Arctic Tern (total for the two species of 42 pairs in 1995), and a colony of Black-headed Gull (100 individuals in 1995). Little Tern has also bred in small numbers in the past (6 pairs in 1984).

Blacksod Bay/Broad Haven SPA is of high ornithological importance for its excellent diversity of wintering waterbirds, including internationally important populations of Great Northern Diver and Light-bellied Brent Goose, and nationally important populations of seven other species. Of particular note is the usage of the site by over 4% of the all-Ireland population of Ringed Plover. It is also a nationally important breeding site for Sandwich Tern and Dunlin (subsp. schinzii). It is of note that eight of the species that occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Great Northern Diver, Red-throated Diver, Golden Plover, Dunlin (subsp. schinzii), Bar-tailed Godwit, Sandwich Tern, Common Tern and Arctic Tern. Blacksod Bay and Broad Haven is a Ramsar Convention site.

SITE NAME: OWENDUFF/NEPHIN COMPLEX SPA

SITE CODE: 004098

This large area of relatively intact blanket bog and mountains incorporates the catchment of the Owenduff River and much of the Nephin Beg Mountain range in Co. Mayo. Lough Feeagh, which is located approximately 5 km north-northwest of Newport, lies at the south-east corner of the site. From here, the site extends northwards to the Owenmore River and almost to the town of Bangor Erris, and westwards to the townland of Ballycroy. Within the site the terrain varies enormously, from the peaks of the Nephin Beg Mountains, which reach a maximum altitude of 717 m, to the low-lying floodplain of the Owenduff River in the western sector. Along its southern and easterly limits, the site is bounded by coniferous plantations and/or the high mountain slopes of the Nephin Begs. Along its northern and western margins, the site is fringed by agricultural land reclaimed from bog or from wet floodplain vegetation. The upper slopes of the mountains support wet heath, upland grassland and cliff vegetation. The lower mountain slopes are covered with blanket bog, with a broad representation of good quality bog habitats occurring.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Merlin and Golden Plover. The Owenduff/Nephin Complex SPA supports an excellent diversity of bird species characteristic of blanket bog and mountain habitats. Merlin nests within the site (population conservatively estimated at between 4 and 8 pairs). This small falcon has a preference for heather bog areas, particularly marginal zones between blanket bog and heath/upland grassland. The Merlins hunt small birds, especially Meadow Pipits. A nationally important population of Golden Plover also breeds within the site (15 pairs in 2004). The high cliffs and crags provide good nesting sites for Peregrine (3 known breeding territories) whilst the extensive boglands provide foraging terrain.

Greenland White-fronted Goose also utilises the site in winter. The population is a sub-flock of the main Bog of Erris population (4 other sub-flocks). Eighteen bogland feeding areas, scattered over 200 km2 , are known as well as some wet grassland and lake sites. The birds utilise the many small lakes and the open bogland for roosting. Red Grouse occurs on the bogs throughout the site, particularly where there is a good cover of Heather (Calluna vulgaris), which provides the principal food for the bird. A recent study showed that the species occurs at low densities, with 149-220 birds estimated to occur within the site. Red Grouse is considered to be a declining species in Ireland and is a Red List species. Widespread bird species which occur within the site include Meadow Pipit, Skylark, Wheatear, Raven, Hooded Crow and Kestrel.

The Owenduff/Nephin Complex SPA provides one of the best examples of blanket bog and upland bird communities in the country. Of particular importance is that there are four regularly-occurring species that are listed on Annex I of the E.U. Birds Directive (Greenland White-fronted Goose, Merlin, Peregrine and Golden Plover), as well as a good population of Red Grouse. Much of the site is a National Park and the Owenduff catchment is a Ramsar Convention site.