An Bord Pleanála

Inspector's Report

Development:	Wind farm of 112 no. turbines (370MW output) at Oweninny, Bellacorick, Co. Mayo.

Application under Section 37E of Planning & Development Act 2000 (as amended)

Planning Authority:	Mayo County Council
Applicant:	Oweninny Power Limited
Type of Application:	Strategic Infrastructure Development
Submissions & observations:	Yes
Prescribed Bodies:	5
Observers:	18
Dates of site inspection:	3rd March 2014, 7th March 2014,10th 11th March 2014 and 7th April
Dates of Oral Hearing:	8th to 11th, 15th to 17th and 23rd April 2014
Inspector:	Dolores McCague

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1. The application

The application was lodged on the 4th July 2014 and was accompanied by

- A Planning Report.
- An Environmental Impact Statement (including Appendices and Non-Technical Summary).
- A Natura Impact Statement.
- Accompanying drawings.

An oral hearing was held between the dates of the 8th April 2014 and 23rd April 2013. A record of the oral hearing is attached to this report.

Pre-Planning Consultations with An Bord Pleanála

As provided for under the provisions of Section 37b of the Planning and Development Act 2000 Oweninny Power Limited entered into discussions with An Bord Pleanála in relation to the proposed development (Reg. Ref. 16PC0135). A total of three meetings were held between the Board and the prospective applicants on the 23rd March 2012, the 18th October 2012, 21st December 2012. In addition, the Board also held a separate meeting with Mayo County Council on the the 6th March 2012. The Inspector's Report prepared on foot of the pre-application consultation meetings concluded that the proposal involving the development of 112 wind turbines with a maximum blade height of 185 metres met the criteria set out in the Seventh Schedule (as amended) of the Strategic Infrastructure Act 2006 and section 37A(2)(a) and (b) of the Planning Act.

The Board in its decision dated 7th February 2013 confirmed this conclusion. The current application to the Board was made on foot of this decision.

2. The Site

The proposed wind farm site is located at Bellacorrick in north-west Mayo, some 30km west of Ballina on the N59 Ballina-Belmullet road, approximately 8.9 km west of Crossmolina and 7.3 km east of Bangor Erris. The site is on the north side of the N59 in an area with a low density of settlement.

There are a number of existing, permitted and proposed windfarms in the vicinity as follows:

- Bellacorrick Wind Farm, (21 turbines), existing, at the centre of the subject site which has been operating since 1992.
- Cluddaun, (48 turbines), proposed, to the NE (PA0031)
- Corvoderry, (10 turbines) permitted, at the centre of the eastern part of the site
- Dooleeg, 1 turbine permitted, on the southern side of the N59

The site comprises some 5,000 hectares (50km^2) and lies at an altitude of between 80 and 140 m OD. A higher ridge of ground occurs at Furnought within the site, rising to 151 m (where there is a Megalithic tomb). The site is irregular in shape and extends in an east west axis for approximately 11km and in a north south axis for some 7.4km. A third class road leading northwards from the N59 to Sheskin Lodge and beyond, skirts part of the western boundary. This road continues northwards as a walking route, which is part of the Western Way. Near the former electricity generating plant, private land along a public road running, in a north-south direction, parallel to the Oweninny River, divide the site into two parts. A bridge over the river is located within the site boundary. To the east another local road extends northwards through the site from the N59 to the townlands of Shanvolohan and Formoyle.

The site is encircled by protected Natura sites. Large parts of the northern, eastern and southern site boundaries abut the Bellacorick Bog Complex SAC (which includes the Knockmoyle Nature Reserve). Carrowmore Lake Complex adjoins to the west and Owneduff/ Nephin extends to the south-west. Coillte forest plantations lie to the north-west and north-east of the site, and there are small areas of farmland to the south-west and south-east, and between the two parts of the site.

The site is divided almost entirely into two distinct areas by a narrow strip of private land holdings but linked by an internal bridge, over the Oweninny River, in the ownership of Bord na Móna.

The site, which is owned by Bord na Móna, largely comprises cutover and cutaway bog land which was harvested commercially between the 1950s and the early 2000s. An IPPC License for the peat harvesting (Number 505) was issued by the EPA. The harvested peat fuelled the Bellacorick peat fired power station, which has now been decommissioned. A bog rehabilitation programme was implemented between 2001 and 2012 to enhance rehabilitation of parts of the site. This largely involved blocking drains and sculpting the peat surface to re-wet the peatland area in order to stabilise the peat and encourage the development of peat-forming vegetation.

In addition to the cutover bog there are a large number of remnant bog areas located throughout the site. The site includes blanket bog remnants, areas of dry heath and wet

heath and patches of rich fen and flush. There are also a number of lakes and ponds across the site. There are areas of Coillte commercial forest plantation mainly around and to the northwest of Lough Dahybaun (352ha): Sitka Spruce and Lodgepole pine, and a private plantation at Corvoderry (192ha). This area received planning permission for a wind farm development in 2012 (Planning File Reference 11838) and has a right of way through the Bord na Móna lands.

Despite its basin shape, the site is divided into three separate river catchments, via numerous large and small tributaries. The majority of the site drains south-westwards via the Owneninny, the largest river rising within the site, to the Owenmore which discharges to Tullaghan Bay, south east of Gweesalia; the north eastern part of the site is drained via another river named Owenmore to the Clonaghmore which flows north into Rathfran Bay, part of Killala Bay; and the south-eastern part of the site is drained via tributaries of the Deel to the River Moy which enters the sea at Killala Bay.

Two Special Areas of Conservation (SAC[1]) occur within the perimeter of the Bord na Móna lands: Lough Dahybaun (code 02177) to the south and the Bellacorick Iron Flush (code 0466) towards the north. The iron flush is owned in part by An Taisce and in part by the National Parks and Wildlife Service of the Department of the Arts, Heritage and the Gaeltacht, and has been excluded from the site. A large area, approximately 3.6km^2, known as O'Boyles Bog, is located within the north-western portion of the site and although within Bord na Móna ownership no development will take place there. Part of O'Boyles Bog is within the Bellacorick Bog Complex SAC (code 0922).

There are a number of other European Sites in the immediate vicinity of the site including:

SACs

- Owenduff/Nephin Complex Special Area of Conservation (code 0534) to the south-west and including the Nephin Beg mountain range
- River Moy Special Area of Conservation (code 02298), including Loughs Conn and Cullen
- Carrowmore Lake Special Area of Conservation (code 0476), a shallow oligotrophic/mesotrophic lake and adjoining blanket bog, which extends to the western boundary of the site.
- Slieve Fyagh Bog Special Area of Conservation (code 0542), a large area of mountain blanket bog
- Glenamoy Bog Complex Special Area of Conservation (code 0500), a large area of undisturbed blanket bog.

[1] All the SAC's are cSAC's

SPAs

- Owenduff/Nephin Complex SPA (code 004098)
- Lough Conn and Lough Cullin SPA (code 004228)
- Carrowmore Lake SPA (code 004052)

There are many more protected sites in north west Mayo.

The N59 (Ballina to Belmullet) National Primary Road runs immediately adjacent to part of the southern site boundary. Bellacorick village is located on the N59 towards the south centre of the site and a local road, which serves a number of dwellings and farms, runs north through the site in parallel to the Oweninny River. To the west a local road runs north from the N59 near Ballymonnelly Bridge for a short distance to Tawnaghmore townland becoming the Western Way, passing Sheskin Lodge and veering north by northeast, this road also serves dwellings and farms north of the N59. To the east a local road runs northwards from the N59 to the townlands of Shanvolahan and Formolye, serving a number of dwellings and farms.

The Coillte land to the north-east is subject to a proposed wind farm development, Cluddaun wind farm, comprising 48 wind turbines (PA0031). Access to the Cluddaun site is shown off the N59 and through the internal Oweninny access track network to the boundary of the Coillte lands.

There are three existing site access locations off the N59: an existing access to the Bord na Mona maintenance facilities at Bellacorick, the existing Bellacorick Wind Farm access and an existing access to the Bord na Móna lands at the western part of the site.

There is a network of existing tracks within the site, comprising an existing access track to the existing Bellacorick wind farm, access track to former farm buildings within the site and access track ways formerly used as railway beds in the peat operations which took place on site. All railway track was removed from the railway beds as part of the rehabilitation process.

3. Proposed Development

3.1. The Proposed Development

Planning permission is sought for an 370 Mega Watt (MW) wind farm. The application is accompanied by an Environmental Impact Statement (EIS) and a Natura Impact Statement (NIS).

The development will comprise:

- 112 x 2.5-3.5MW wind turbines
- Visitors center (north of Entrance 1)
- 4 no. electrical substations
- Underground cables from the wind turbines to the substations
- 85 kilometres of access tracks (c.6km of upgraded existing track, remainder new)
- 1 no. operation and maintenance building (centre of site, adjacent to T68)
- 2 no. 110 kV overhead lines comprising angle masts and twin wooden pole sets connecting to the existing Bellacorick substation by underground electricity cables
- 8 no. permanent wind measurement anemometer stations.

Temporary works will include:

- 1 no. borrow pit to provide material for access track construction (NE corner, adjacent T37)
- 1 no. concrete batching plant with associated materials storage (centre of site, adjacent T68)
- Contractor(s) construction lay down areas and materials storage areas.

The wind turbines will be located at elevations in the approximate range 80 – 140 mOD.

All wind turbines are located a minimum of 1000m from the nearest dwelling, 100m from the site boundary, 200m from designated areas and 50m from major rivers and their primary tributaries, except at crossing points.

The project will be developed in the following 3 phases which are determined by grid access availability and construction scheduling:

- **Phase 1** comprises the construction of 70 - 90 MW of wind energy via the proposed turbines in the central section of the site, including associated access tracks, substation, overhead lines and cables. The Visitor Centre and Operation and Maintenance Building will also be constructed during this phase. This phase will connect to the existing 110 kV substation at Bellacorick. Construction is expected to commence in 2015 with completion of Phase 1 by 2017.
- **Phase 2** comprises the construction of a further 70 - 90 MW of wind energy via the turbines at the western part of the site, and associated development. This phase will also connect to the upgraded, existing 110 kV substation at Bellacorick. Construction is expected to commence in 2016 with completion of Phase 2 by 2018.

- **Phase 3** comprises the construction of the remaining 190 – 230 MW of wind energy via the wind turbines in the southern, eastern and north-eastern parts of the site, and associated development. Although a grid offer has been received, this phase is dependent on the implementation of Grid West by EirGrid and the provision of a new 400 kV substation and transmission system in the general Mayo area. Construction of Phase 3 is expected to commence post 2018 with completion around 2022.

It is envisaged that the wind farm will remain in operation for about 30 years, although it may continue to be viable thereafter. Options for decommissioning are set out in the EIS.

3.1.1. Wind Turbines

The turbines will have a maximum base to blade tip dimension of 176 m. Within this maximum height it is considered that the likely tower height will be in the range 100 - 120 m, with three blades, each with a blade rotor diameter in the range 90 - 120 m. The choice of the make and model has not yet been finalised.

The turbine towers will be either of tubular steel design or hybrid concrete/steel tapering from about 4.5 m diameter at the base to about 3.2 m diameter at the top. A three blade rotor will be attached to the nacelle. The blades will be made of fibreglass-reinforced epoxy material. The nacelle will contain the generator and computer control unit which will monitor all major functions of the turbine. Two types of wind turbine foundation are envisaged depending on the results of future geotechnical investigations. On good ground a concrete foundation with diameter of approximately 22m (circular or hexagonal shape) will be used. On difficult ground or close to sensitive areas with high dependence on groundwater, reinforced concrete piles will be used. Each pile will be approximately 900mm diameter and with an average length of 17m.

The turbine blades will rotate at about one revolution every 3 – 5 seconds, depending on wind speed. The turbines will commence operation at a wind speed of 4 m/s, will attain maximum output at 15 m/s and will shut down when the wind speed reaches a 10-minute average of 25 m/s.

A separate transformer will be associated with each wind turbine so that the electricity generated can connect to the substation at a higher voltage. Transformers are most commonly integrated into the nacelle or turbine tower, but may be located outside of the tower depending on the turbine manufacturer. Separate transformers would be encased within a 2.5m x 2.5m x 2.2m (h) glass-reinforced plastic or steel enclosure.

The equipment will be protected from lightning strike by deep earthing.

3.1.2. Site entrance

Access to the site will be off the N59 Ballina to Belmullet road. There will be three site entrances as follows:

- Entrance 1: Existing Bellacorick wind farm entrance (main entrance)
- Entrance 2: Existing access to the western part of the site
- Entrance 3: Existing Bord na Móna workshop entrance

3.1.3. Access tracks

Approximately 85 km of access tracks will be required in total, all but 6km of which will be new track. Tracks will be approximately 5.5m wide with passing bays provided at appropriate locations. Peat probing along the proposed access routes to turbine locations was undertaken to identify the optimum route along corridors of minimal peat depth. Approximately 70km of access track will be constructed on shallow peat areas with a dimension 5.5m x 0.8m, built on the bearing stratum. The remaining 15km of road will be constructed over deeper areas of peat. These will be constructed either as floating access tracks or by excavating and backfilling. Construction of the access tracks in these areas will require excavation to an average depth to bearing stratum of 2.0m. The layout of the additional access tracks has been developed to follow the natural contours of the site, to avoid areas of deep peat and very wet areas and to minimize their overall length and achieve acceptable gradients: expected to be a maximum of 8° (14%) longitudinally and 2° (3%) laterally.

The development of the access track network will require the upgrading of existing river crossings and the construction of new crossing locations over streams. The existing Bord na Móna machine bridge across the Oweninny river will be upgraded to carry electricity cables. A number of existing culverts will be replaced with box culverts or clear span bridges at the Muing river, its tributary the Muingamolt, the Sruffaunnamuingabatia stream, small streams near the headwaters of the Owenmore/Cloonaghnore river (the Fiddauntura and the Fiddaunnagosty streams), and the headwaters of the small river flowing beneath the Ballymonnelly Bridge into the Owenmore.

3.1.4. Crane stands

A triangular hardstanding crane pad will be provided adjacent to each wind turbine to facilitate construction, accommodate the main crane, assist crane and tower and nacelle components. The dimensions of the cranepads are 96 m x 76 m x 130m,

equating to 3,600m^2. They will be retained for the lifetime of the wind farm to facilitate any large scale maintenance. The exact location of the crane pads relative to the position of the turbine will depend on the suppliers specifications.

3.1.5. Blade laydown area.

Adjacent to the crane pad a blade laydown area of 16m x 33m will be provided on either bogmats or hardstanding.

3.1.6. Electrical Substations

Four 110 kV Electrical Substations are proposed at different locations on the site, one the western side of the Oweninny River, and the remaining three on the eastern side. Each substation occupies an L shaped hard-standing area of approximately 2,350m^2. The compounds accommodate outdoor switchgear, transformers and two Control Buildings. Each Grid Transformer will be located within an impermeable bund to retain any oil spills or leaks from the transformer.

The substations will be monitored off site. The control buildings will be single storey, approximately 25 m x 9 m in plan and have rough-cast walls and a pitched roof with tiles or slates. The Control Buildings will be unmanned, but will include sanitary facilities comprising a single toilet and wash hand basin.

Each substation will be surrounded by a 2.6 m high palisade fence.

3.1.7. Meteorological masts

Eight meteorological masts with a height equal to that of the turbine hubs are proposed (max 120m). There are currently 4 lower masts (50m and 80m) in the vicinity that will be replaced by the proposed new masts. Each mast comprises a lattice steel tower with anemometers and wind vanes attached.

3.1.8. Overhead transmission lines and underground cables

Within the wind farm, clusters of wind turbines will be connected via underground cables to the four 110 kV substations. Connection of the substations to the National Grid will be phased. Substation 1 and 2 will connect to the existing Bellacorrick 110 kV substation via two new 110 kV lines under Phase 1 and Phase 2 of the project. These overhead lines will comprise double wood pole portal structures with average height of 18 m (maximum height 22m), average distance apart 180m. Where the line changes direction a steel lattice angle tower, 24.5m high, with a base area of 5m x 5m will be used. At approaches to the Bellacorick substation site, lines will be undergrounded for a distance of c. 1km.

Cables routes from the eastern part of the site will be ducted across the existing Bord na Móna bridge across the Oweninny river which will be fitted with a new deck.

Substations 3 and 4 will be developed under Phase 3 of the project and will connect to a new EirGrid 400 kV substation. The location of this substation and route of overhead lines or underground cables is not known.

3.1.9. Visitor centre

Located to the west of the main entrance roadway, the visitor centre will relate to the socio-economic and ecological history of the site and area in general covering subjects such as the socio economic impacts of electricity generation and provision in the area; the role of the Bord na Móna peat production and the ESB peat burning power station at Bellacorick; and the move towards more sustainable energy production. It is envisaged that the ecological history and status of the bog will be explained referring to the bog remnants, bog rehabilitation areas and protected areas and the variety of habitats and species that they support.

The visitor centre will have a full café facility, toilets and other sanitary facilities.

3.1.10. Temporary site compound

Temporary site compounds will be established throughout the site for the duration of the construction phases. These will comprise temporary construction buildings, materials and equipment storage. It is stated that the decision regarding the location of the compounds will be left to the construction contractor; although areas adjacent to substation 2 and substation 4, an area at the western entrance (Site Entrance 2), and an area behind the existing Bord na Móna workshops, have been identified as potentially suitable site compounds.

3.1.11. Batching plant

A temporary batching plant for concrete production will be provided adjacent to electrical substation 2. This will include storage areas, hoppers and silos, a control cabin and power house, a mobile plant refuelling area, bunded gas oil tank, site office, laboratory, canteen, welfare facilities and parking.

The batching plant will be capable of producing 50m^3 of concrete per day with a requirement of 10 m^3 of water, 20 tons of aggregate and 5 tons of cement. Water will be sourced from local ponds or tankered to the location for storage and use as required.

The compound will be fenced with chain-link fence.

3.1.12. Wastewater treatment facilities

Sanitary facilities will be provided at all substation locations and the operation and maintenance building, in addition to the visitor centre. Following the carrying out of site assessments, effluent will discharge to ground, after treatment by septic tank, Puraflo system and polishing filter.

3.1.13. Borrow pit

To reduce the requirement for import of access track construction material, a borrow pit is proposed in the NE area of the site, adjacent to T37; with a footprint of approximately 17 ha; to be excavated to a depth of c. 2m. The total amount of material to be extracted is estimated as 340,000m^3, which is sufficient to construct c. 70km of access track.

3.1.14. Services

Potable water will be provided either through a connection to the water supply scheme operated by Mayo County Council, to which both Bord na Móna and ESB have existing connections, or alternatively through bored wells with subsequent treatment and storage.

A bored well, if a suitably source is identified, and/or rainwater harvesting will also be used to supplement the water demand at the substations and proposed visitor centre.

Electricity supply for the visitor centre, substations, batching plant and O&M building will be provided through the existing overhead line crossing the site or from power generated on site.

3.1.15. Capacity

The proposed windfarm has an estimated capacity of 33%. It is expected that the wind farm will be capable of operation for 98% of the time. Actual operation will be determined by the wind conditions experienced. On average, turbines produce electricity for about 80 - 85% of the time. A capacity factor of 33% means that over the course of a year each turbine should produce 33% of the amount it could theoretically produce if it was working at maximum output at all times throughout the year.

4. Planning History

4.1. Planning History

4.1.1. Subject Site

P12/944 **-** Planning Permission granted for retention of 4 no. wind monitoring masts.

PL16. 131260; P01/2542 - Change of use of 5,011 hectares (12,377 acres) of land from industrial peat production to use as a windfarm, 180 turbines (reduced from 210 turbines) with maximum height to blade tip of 100 metres and a generating capacity of 320Mw, 2 meteorological masts, access tracks, crane hardstandings, 4no. 100 kV substations and control buildings, septic tanks and transformers and 14 km of 100 kV transmission lines, site construction compounds, use of sand and gravel from existing exposures for some on-site construction works and re-use of the existing Bord na Móna offices, workshops and maintenance areas as part of the development. Permission granted 19/12/2003. Permission was due to expire 18/12/2013 but has been extended to 18th December 2018.

P90/1077 – Planning Permission granted for Bellacorrick Windfarm 21 turbines.

P92/355 - Planning Permission granted for windfarm control building.

P01/1975 - Planning Permission granted to Bord Gáis Eireann for temporary site compound associated with the construction of the Galway – Mayo gas pipeline.

P01/2826 - Planning Permission granted for 3no. x 50m high wind measuring masts.

P12/544 – Planning Permission granted for retention of 4 temporary meteorological masts.

4.1.2. Related Extant Planning Permissions

Within the site but separate and not related to the proposed development are two significant planning applications.

P11/838 – Planning Permission granted 15/10/2012 for Corvoderry Wind Farm Ltd. 10 turbines with an overall height of up to 100 metres. Permission expires after 14/10/2022. Not implemented to date.

P09/1086 – Planning Permission granted to constant Energy Ltd. for a 200 megawatt natural gas fired peaking power plant including an above ground natural gas installation, electrical switchyard and associated infrastructure. Located between the eastern and western parts of the subject site. Date of grant 16/11/201, expires after 15/11/2016.

Surrounding Area (relevant history)

P10/24 – Lupset Investments Ltd. A 94 Mw open cycle gas turbine peaking power plant, including a 110kv ESB substation and associated infrastructure at Bellacorrick (west of former power plant). Further information requested.

PL16.236402; P09/259 – Planning Permission granted 1 No. 2 Mw wind turbine, control house and ancillary associated works Dooleeg More, Bellacorrick, Ballina, 03/08/2010. Not implemented to date.

P00/2822 (same site as PL16.236402) Planning Permission granted to erect two no. one-mw wind turbines, service roadways and control house, 20/06/2001, not implemented.

PL16.226433; P07/2392 – TOH Tawnaghmore Windfarm Ltd. 3 turbines, 38kv sub-station and associated infrastructure (Windfarm). Site located to west of subject site. (in the townland of Sheskin approximately 4.5km to the east of Bangor, Co. Mayo. The site is located to the north of the N59 approximately 2.5km north west of Ballymonelly Bridge). Planning permission refused:

> *Reason: The site of the proposed development immediately adjoins the Carrowmore Lake Complex candidate Special Area of Conservation and is located in an upland area of blanket bog, on a sloping site with an extensive complex of bog holes and where peat depths are in excess of two metres. The proposed development, which would involve the construction of an additional road system through the bog, requiring heavy machinery for the construction process and large foundations for the base of the wind turbines, would seriously injure the amenities of the area and adversely affect the adjoining Carrowmore Lake Complex candidate Special Area of Conservation. The proposed development would contravene the current Mayo County Development Plan objective to protect, enhance and conserve such designated areas. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.*

P06/1332 – Planning permission refused for TOH Tawnaghmore Windfarm Ltd. 3 no. turbines 38kv sub-station and associated infrastructure (as per 07/2392).

PL 16.215432; P05/1638 – Atlanticwest Energy Ltd. 32 turbines,110kv substation and associated infrastructure. Site located to the southwest (south of the N59) 4km south-east of the village of Bangor and c.6km west of the settlement and power station at Bellacorick. It lies in a narrow mountain range that runs north-south, separating the lowland coastal area beyond Bangor from the flat bogs and heath that run inland from Bellacorick. Planning permission refused:

> *1 The site is located in a narrow mountain range that runs north-south separating the lowland coastal area from the inland bays and heath. The proposed development at this location would interfere with views from a public road towards ridgelines, which are designated as vulnerable skyline features in Appendix 10 of the Mayo County Development Plan, 2003–2009, in a manner which would seriously injure the visual amenities of the area and materially contravene objective EH-LC1 of the said development plan, which seeks to*

ensure that development will not have a disproportionate effect on the landscape. It is considered that the proposed development would interfere with the character of the landscape, which it is necessary to preserve, and would, therefore, be contrary to the proper planning and sustainable development of the area.

2 The proposed development would be located on lands in and around the candidate Special Area of Conservation and Special Protection Area at the Owenduff/Nephin complex and in close proximity to the Owenmore River which are host to habitats and species listed in Annexes 1 and 2 of the EC Habitats Directive and Annex 1 of the EC Birds Directive. The Board is not satisfied, on the basis of the information submitted with the planning application and the appeal, that the construction and operation of the windfarm, as proposed, would not adversely affect the habitats and species which form the basis of the conservation objectives of the candidate Special Area of Conservation and Special Protection Area and that the development would not adversely affect the integrity of these designated European sites. The proposed development would, therefore, materially contravene objective EH-NH 1 of the Mayo County Development Plan, 2003-2009, which seeks to protect, enhance and conserve such areas, and would be contrary to the proper planning and sustainable development of the area.

PL 16. 206378; P03/1298 – Airtricity Developments ltd & Coillte Teoranta. 31 wind turbines 110 kv sub station and associated infrastructure. (c3km south east of Glenamoy, c5km north west of Bellacorick, c7km north east of Bangor and c11km south west of Belderg). Planning permission refused:

1 Having regard to the accumulation of development at this location together with the permitted development in the area, it is considered that the proposed development would be premature pending the preparation of a Wind Energy Strategy for County Mayo in accordance with objective TI-RE 3 of the Mayo County Development Plan 2003-2009. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.

2 Having regard to the location of the site adjacent to an environmentally sensitive area in proximity to a number of designated conservation areas and on the basis of submissions made in connection with the planning application and the appeal, the Board is not satisfied that the proposed development, including the construction of turbine foundations, provision of extensive access roads and

implementation of measures to prevent slope failure, would not give rise to contamination of water quality in the area and would not adversely impact on the peatland environment and the natural habitats of the area. The proposed development would, therefore, be likely to have a significant adverse environmental impact on the natural habitats of the area and would be contrary to the proper planning and sustainable development of the area.

Inspector's report includes: The overall visual impact of the development is considered low to the west and moderate to the northeast and south and in most of these areas there are very few receptors with only a few roads and sparse populations.

5. Submissions

5.1. Local Authority

Appropriate Assessment

Further information is recommended in respect of the following:

- A more detailed description of habitat categories including data on water quality/aquatic ecology within the subject site
- Clear and specific mitigation measures by avoidance and for conservation of lowland blanket bog within the Oweninny site(with potential for Annex I priority habitat [7130]) and petrifying spring with tufa formation [7220], also an Annex I priority habitat.
- Mitigation to protect water quality as a consequence of the replacement/upgrading of culverts
- Mitigation measures should hydrological impacts on the Bellacorrick Iron Flush SAC be detected during and after the operation of the borrow pit
- A diagram/drawing indicating peat stability risk.
- More in-depth analysis of possible impacts on the Knockmoyle/Sheskin Nature Reserve and Owenboy Nature Reserve adjacent to the subject site.
- More in depth analysis is required to establish whether there is a likelihood of any indirect significant effects as a result of the proposed clear-felling of forestry.
- Mitigation measures are required for Annex I bird species outside of the SPAs but within the subject site, including golden plover, hen harrier and merlin.
- Potential impact arising from the introduction of invasive alien species to cleared areas and the loss of indigenous floral species such as Calluna vulgaris. Mitigation measures for construction works should include clear reference to control and management of invasive species.

EIS

- The Council is satisfied that the E.I.S. complies with the Guidelines on Information to be Contained In Environmental Impact Statements (EPA, 2002), complies with the Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003), and is satisfied with the content and quality of the EIS as presented and that there are no important omissions.

Overall recommendation is to grant permission

Schedule of conditions is attached

Separate report is attached to the planning authority's report from Cllr Gerry Murphy.

5.2. Prescribed Bodies

5.2.1. Department of Arts, Heritage and the Gaeltacht

Ecology

- Impact on Bellacorrick Iron Flush SAC, particularly from the proposed borrow pit.
- Impacts on other flushes, their water supply and qualifying interests in the Bellacorrick Bog Complex.
- Interaction with, and impacts on, the rehabilitation plan for the site and the rewetting of worked bog areas.
- Cumulative/ in combination effects on birds, particularly flightlines and migratory routes across the site and across adjoining windfarm sites. Birds most likely to be at risk of collision are the Birds Directive Annex 1 species,

NIS

- The NIS is not sufficiently detailed or specific in relation to the process by which it determines what conservation objectives, if any, are at risk from this project. It also does not adequately present the scientific assessments of those risks.
- The assessment of cumulative effects does not take account of all of the relevant plans and projects (specific details provided), including the Bog Rehabilitation Plan.
- The interpretation of the findings in Chapter 18 of the EIS: Hydrology of Iron Flush Areas should form part of the NIS to show the scientific and ecological basis on which it is concluded that there are no risks of adverse effects on the integrity of the two SACs.
- In Sections 3.3.1 of the NIS the Annex II species and their habitats that are potentially at risk are not identified.
- The EIS and NIS do not represent the true extent of the Bellacorrick Iron Flush, and differ from the extent shown in earlier drawings. The full extent of the flush is

8.5ha. The various plant communities that make up the flush and the SAC should be mapped accurately.

- Continuous ground water level monitoring should be available for a complete year. Evidence should be presented that the data is representative of a typical year.
- The scale of the flush is not adequately represented and the depiction of the groundwater catchment in not adequate. Further scientific evidence is required to demonstrate that the adverse effects of the integrity of the SAC are not likely to arise.

Peat Stability

- The peat stability risk factor should be reduced to Significant or less over the entire site by doing the site investigations prior to granting permission and assessing the results or removing the relevant turbines from the substantial risk areas.

Birds

- There is insufficient consideration of the potential effects on birds, their flight paths and migration routes arising from the scale of the development and from the cumulative effects with powerlines and other windfarms.
- There should be further consideration of collision risks, notably for the larger Birds Directive Annex 1 species which occur in the area, Whooper Swan and Greenland White-fronted Goose.
- The applicant was advised that bird survey data for the current proposal should be compared with previous bird survey data for the site to enable trends to be examined in light of the change in site usage i.e. cessation of commercial peat extraction and restoration and rewetting of bogs.
- All new power lines should be placed underground to help reduce the impact on birds using the area. This would reduce the aerial obstructions for birds.
- The conservation status of the records bird species on the site (20 Amber and 2 Red, 4 Annex 1 species) should not be allowed to deteriorate during construction or operation of the windfarm.
- It is probable that the usage of the site by the hen harrier is far more than recorded as recording days only give the picture of what was present. Recommend that T103, T108 and T109 be removed further away from their present proposed positions.

Bellacorrick Iron Flush SAC

- Borrow Pit: The location of the borrow pit poses a significant and unacceptable risk to the functioning and biodiversity of the Iron Flush. The EIS fails to provide evidence or data to substantiate the claim that the groundwater flow regime does not feed the flush. There remains significant uncertainty regarding the groundwater and surface water catchment feeding the iron flush.
- Much of the peat in the flush area rests on relatively permeable sands and gravels, although there are lenses of much lower permeability material at the base of the peat which is likely to be a contributory cause of the groundwater rising to the bog surface to form the flush. Consequently, the groundwater level in the recharge area supplying the flush is a critical control on the functioning of the flush. No groundwater levels are provided for the borrow pit.
- Even if the borrow pit is not dewatered the excavation of the material would in itself result in a local lowering of the watertable which would alter hydraulic gradients in the vicinity and potentially change groundwater flow velocities and discharges towards the flush.
- The area in the vicinity of the flush is interlaced with lenses of gravel/sand of differing permeability which would facilitate the local movement of groundwater is directions significantly different to the regional direction, and potentially therefore to the flush.
- No log data is provided for any of the boreholes. There are no boreholes is locations that would inform the evaluation of the potential effect of the borrow pit on the iron flush.
- The disposition of wind-borne dust from the excavated material on the flush has the potential over time to interfere with the level/type of materials present and cause damage to this sensitive site. There is also a risk of muddied waters reaching the flush by lateral movement of the water table.
- There is insufficient information regarding the volumes and likely sources and nature of fill material required for the construction of the road network other than the material to be quarried on site.

- Turbines: Recommended that T13, T14, T24, T29 and T30 are relocated further away from the flush. This would help ensure that the water table is not interfered with, especially during construction. The turbines were located further from the flush in the previous application.

- Batching Plant: The batching plant lies southeast of the iron flush, in line with prevailing winds. There is the potential for cement dust to become wind borne and to reach the flush. The batching plant should be relocated.

Archaeology

- The site is located in an area rich in archaeology from the Neolithic to the post-medieval periods.
- The proposed development is large in scale with the potential to impact on previously undiscovered archaeological remains.
- It is noted that the final siting of the turbines and roads will be finalized at construction stage (micro-siting), providing some flexibility for the precise location. All geotechnical investigations should be subject to archaeological supervision.
- The finalized location of the elements should be subject to detailed archaeological survey.
- Change in groundwater levels as a result of the proposed development could have implications for archaeology.
- Changes to the water levels in the lakes across the site could expose archaeological features.
- Adequate time should be provided in the construction schedule to allow for archaeological assessment and any remedial works required.
- Conditions recommended: pre-development archaeological walk over of the areas of development activity; preservation of any archaeological material; assessment of water levels in Lough Derrybaun and associated lakes to be carried out; temporary buffer area of 50m around CH-2 and CH3 during construction.

5.2.2. An Taisce

- An Taisce holds on behalf of the people of Ireland the legal title of the Bellacorrick Iron Flush SAC. A copy of the Conservation Statement for the Flush is submitted.
- An Taisce has liaised with the applicant and NPWS during the preparation of the application.
- Clarity is required in respect of the grid connection.
- Peatlands act as a carbon store. Any loss of peatland must be mitigated with carbon management to maintain stored carbon and restore the carbon sink function.
- Action plan required to monitor and take remedial action on invasive species, particularly the spread of lodge pole pine and rhododendron ponticum.
- Bog complexes are extremely sensitive to changes in land use practices. Excavation of the proposed depth and scale so close to the boundary of various SACs could have a negative impact on the hydrology and integrity of these sites.
- Lough Dahybaun SAC is identified as being threatened by peat cutting and afforestation. Further disturbance to the hydrology could further negatively affect.
- The rehabilitation programme carried out by Bord na Mona has facilitated the development of vegetation on the cutover blanket bog which links the various

other bog SACs on the area. The proposed development could act to refragment the surrounding bog land including the Owenduff/Nephin Complex SAC and the Bellacorrick Bog Complex SAC.

- Birds: The hen harrier population in the area has declined from 45 pairs in 2005 to 36 pairs in 2010 and is under enormous cumulative pressure through land use changes. This proposed development is likely to have negative effects on the hen harrier. A proper monitoring programme is required to understand the impacts of wind farms on hen harrier population before permission is granted. The cumulative effect of the proposed development with the existing Coilte forestry and other wind farm developments in the area should also be considered. Other Annex 1 bird species have been identified on the site by the EIA, many of which are also on the red or amber list. More definitive research is needed to determine the cumulative effects on these species, including the potential impacts on hunting and foraging species whose prey is displaced, and collision risk for all bird species. Mitigation measures should be put in place to eliminate the production of thermals associated with hardstanding areas in order to minimize the risk of collision to raptor species that occur on the Owenduff/ Nephin Complex SPA. Continues monitoring should be carried out over the lifetime of the wind farm.
- Badgers: Badger setts have been observed near to the conifer planations on the site. The proposal involves the removal of nearly 10% of the total conifer planation on the site, requiring the thorough investigation of the potential impact on badgers. Appropriate conditions should be attached.
- Bats: Studies have found that wind farm developments could adversely affect bats through collision with turbines, drop in air pressure (causing the lungs to burst) and electromagnetic radiation and use of red lights which could deter the bats from the area. The implications of the ECJ Case C183-05 in relation to the assessment of the impact of development on bats needs to be addressed.
- Landscape: The visual impact on the Ballycroy National Park needs to be addressed.
- Post-consent monitoring: Corpse searches should be carried out for both bats and birds by an ecological consultant, and the results made available to the NPWS and the public.

5.2.3. NRA

- Access to the windfarm development is via three existing private access points directly onto the N59, national secondary road, at locations where a 100km speed limit applies.
- DoECLG Spatial Planning and National Roads Guidelines (2012) sets out the policy to restrict access and intensification of direct access to national roads at locations outside towns and villages.

- The Authority is not aware of any exceptional provisions relating to wind farm development, nor has the NRA agreed any exceptions.
- It is not clear from the traffic and transport analysis that accompanies the EIS that the proposed development does not result in intensification of the existing access points to the N59. Having regard to predicted traffic movements it would appear inevitable.
- The Board is requested to consider that provision of official policy regarding access to national roads as outlined in the DoECLG Guidelines.
- Should the Board be minded to positively consider the application it is requested that conditions be attached requiring
    - implementation of the recommendations of the Road Safety Audit submitted with the application
    - implementation of the mitigation measures outlined in Section 14.7 of the EIS
    - the private access points to the N59 should be used as temporary access during the construction phase only
    - all access during the operational phases, including the visitor centre, to be obtained via the existing local road network in the area in the interests of road safety and adherence to the provisions of official policy.

5.2.4. Inland Fisheries Ireland

- The site drains to three river catchments: the Owenmore, Moy (via the Deel river), and Cloonaghmore. All three rivers and their tributaries are important in terms of salmon and trout. Salmon fishing in the Deel and Clooghmore has been restricted as a conservation measure to protect stocks due to a decline in numbers. The Dee l River contains populations of fresh water pearl mussel, which is highly sensitive to silt discharges.
- Wastewater treatment: The installation, maintenance and servicing of the proposed waste percolation should be controlled. A visual/ audible alarm should be fitted to the treatment unit and pumping chamber.
- Peat stability: Development should avoid areas classified as at substantial peat stability risk unless mitigation measures are put in place.
- Cement batching plant: Cement is directly toxic to aquatic life even in small quantities. Surface water must be strictly controlled on the site and internal drainage and storage facilities designs must take into account severe rainfall and flood events. Maintenances of surface water control systems must be carried out on a regular basis.
- Separation distance to rivers: Turbines should be kept a minimum of 100m from all watercourses.
- Culverts: IFI should be consulted where existing culverts are to be altered or new culverts installed. Any in-stream works should be carried out between May and October during dry weather conditions.

- Felling: A section of the Sheskin River catchment has been identified as 'at risk from forestry siltation and eutrophication' in the Western River Basin Management Plane. The Forestry and Water Quality Guidelines must be strictly adhered to and felling should not be carried out during wet weather conditions.
- Invasive Species: Measures should be put in place to prevent the spread of invasive species as a result of works being carried out.
- The Emergency Response Plan should include the IFI as a notifiable body in the event of a major spill or other significant discharge of polluting matter to surface waters.

5.2.5. HSE

- Human beings: The specified mitigation measures in relation to health and safety, electromagnetic radiation, structural integrity or turbines and hazards from falling ice (EIS, Section 6.5) should be implemented.
- Noise: If the turbine specification is different to the ones used for noise prediction modeling in the EIS the applicant should be required to demonstrate that the modeling results are representative of the noise characteristics of the turbines selected.
- The mitigation measures specified at Section 7.6 of the EIS to minimize the impacts of noise and vibration at the construction, operations and decommissioned phases should be implemented.
- Shadow Flicker: The applicant should communicate with the householder of H19 to establish the use of the rooms likely to be affected.
- A procedure for recording, reporting and handling complaints relating to shadow flicker should be put in place.
- The mitigation measures outlined in Section 8.5 of the EIS should be implemented.
- Air Quality: The dust mitigation measures outlined in Section 12.3 of the EIS should be implemented.
- Peat Stability: The peat stability mitigation measures outlined in Sections 9.5.7, 9.5.7.1, 9.5.7.2, 9.5.7.3 and 9.5.7.4 of the EIS should be implemented.
- Water: The applicant should be required to submit water sampling results to demonstrate compliance with the Drinking Water Regulations 2007. Mitigation measures set out in Section 9.5.5, 9.5.6 and 10.5 of the EIS to prevent water pollution should be implemented.
- Waste Water: Annual maintenance contact for the WWT system should be required. Appropriate bunding should be provided for all foul water holding tanks to prevent leakage to groundwater.
- Management Plans: Waste Management Plan, Traffic Management Plan and Environmental Management Plans should be prepared.
- The applicant will be required to register the proposed catering facilities with the HSE.

5.3. Observers

5.3.1. Corvoderra Group

- Main concern is grazing rights.
- The documentation registered with the Land Registry Office shows the grazing rights belonging to the landowners over the past 100 years is correct.

5.3.2. Corvoderry Wind Farm Limited

- Corvoderry wind farm, Jennings O'Donovan & Partners Ltd, Consulting Envineers
- Planning permission for the Corvoderry Wind Farm (which is totally encompassed within the proposed Oweninny Wind farm) was granted under 11/838.

Adverse impact on wind production at Corvoderry:

- 12 of the proposed turbines are within 600m of a permitted Corvoderry Wind turbine. Three turbines are less than 400m from Corvoderry turbines (T60, T73, T104)

- The scale of the proposed development will be such as to adversely affect the consented Corvoderry Wind Farm (MCC p11/838) and in changing the scale of their proposed windfarm the developers refuse to grant a wayleave to Corvoderry Wind Farm Ltd for an underground cable.

- Turbine spacings for wind farms is generally a minimum of five rotor diameters in the upwind east-west direction.

- The Corvoderry wind farm was designed to take account of the current consented layout of Oweninny based on turbines with hub heights of 65m and blade lengths of 35m (blade diameter 70m). The spacing in the consented Oweninny wind farm was 425m east-west and 375m north-south.

- Distances to the nearest Corvoderry consented wind farm, based on co-ordinates in table 2.3 of the EIS are given as:

Proposed Oweninny	Nearest Turbine Corvoderry		
T no	T no.	Distance (m)	
T48	T1	429	

T60	T2	362	
T61	T1	470	
T73	T3	395	
T74	T4	439	
T75	T3/T2	725	743
T84	T4	481	
T85	T6	441	
T96	T7/T8	572	547
T100	T9	437	
T101	T10/T8	687	500
T104	T10	362	
T105	T9/T10	510	674

- The proposed Oweninny would require separation distances of approx. 600m between turbines to ensure a uniform wind regime and avoid wake effects, eddies and turbulence.

- It is considered that the distances will adversely affect wind production at Corvoderry. A wind study would be required so as to address the full economic extent of such a reduction in revenue.
- Grid Connection: It is anticipated that the Corvoderry Wid Farm will connect to either the existing Bellacorick 110kv substation or the planned Bellacorick 400/220 kV substation via the planned Doolbeg More 38kV substation. It is anticipated that the 38kV connection will be underground. Corvoderry Wind farm have the benefit of a Right of Way for access to the wind farm. It is intended that the underground cable to the substation would be parallel to the right of way (along its edge) or within the Right of Way. A wayleave agreement will be required in both cases.
- Bord na Mona (letter dated 22/09/2013 submitted) have stated that they do not wish to grant a wayleave to Corvoderry Wind farm on the basis that they do not know where the electrical infrastructure will run. However, Corvoderry will connect to the grid at 38kV and such a connection will have to be independent of Oweninny which will connect at 110kV. The proposed development therefore affects the material assets of Corvoderry and will seriously injure the ability to develop Corvoderry Wind farm.

5.3.3. Dara Calleary TD

- It is vital that the commercial gains are fully shared with the people in the communities in which this resource lies.
- The proposed level of community gain would only amount to €370,00 or 0.06% of the total project. This is completely unacceptable in the context of the overall investment and the community contribution that has been given to the project promoters both the past and the future.
- Visitor centre should be separately funded.
- The EIS refers to a "support fund". It is not clear if this will be a separate fund from the Community Benefit Scheme.
- The Board should require the developer to use some of the associations that are based in the catchment area of the project to manage the body to regulate and distribute the funds.
- There is no commitment to jobs based in the catchment area or the use of local employment and suppliers. The Board should be prescriptive in terms of percentage local employment and use of local services and sub-contractors.
- A commitment to long term economic and social sustainability of the area through investments in specific courses at local secondary schools and PLC venues on the skills required in renewable energy sector and through apprenticeships programs.

5.3.4. Dermot McDonnell, Castlebar

The planning matters raised can be summarized as follows:

- The developer has an interest in downplaying the Capacity Factor value in order to reduce the amount payable in community contributions.
- Mayo has the highest mean wind speeds in the country and thus the highest capacity factor and energy yield.
- A study by the UK Department of Trade and Industry between 1998-2004 found that the average capacity factor for NI was 36%, the lowest being 32% and the highest 40%. This relates to older turbines which are smaller and lower turbines. This would indicate the factor capacity for Oweninny is much higher than the 33% declared by the applicant.
- Based on the available mean wind speed data for Oweninny, the predicted capacity factor range for the proposed turbines is calculated as 53% to 37% depending on the type of machine. The developer is likely to choose the most productive turbine so that the capacity factor is likely to be at the upper end of that range.
- The declared capacity factor of 33% represents a long succession of very bad wind years at Oweninny, which has a small probability of occurring and cannot be described as 'expected'.

- Using the developers stated capacity factor, and assuming that all of the 370MW were in production 24hrs a day, 365 days a year, it is calculated that the energy extract over the lifetime of the wind farm would be worth well in excess of €5bn. Applying the higher capacity factor the value could be €2bn higher.
- The contribution proposed by the developers of €1000/MW is one sixth of the level that applies in the UK.
- The public is entitled to transparency in the division of the wealth to be generated from the natural resources especially in northwest Mayo given the Corrib Gas project.
- If the Board is minded to grant permission, a Community Gain Contribution should be imposed equal to 10% of all revenues for the first 10 years and 20% thereafter.

5.3.5. Dermot O'Donnell, Dooleeg

- Visual Amenity: The size and scale of the turbine and meteorological masts are not in keeping with the landscape characteristics and will be an eyesore.
- The existing 21 turbines do not cut through the horizon and are more suitable in height.
- The cumulative effect of the existing and proposed turbines, together with the kV lines and substation will contribute to turning this scenic rural landscape into an industrial zone.
- 7 of the proposed turbines are just over 1000m from the observer's dwelling. No turbine should be less than 2km from a dwelling.
- Insufficient notification was given of the planning application.
- If the IAA require aeronautical lighting and positional data to be put on each turbine the area will have 120 flashing lights at night. This is not set out in the planning application.
- Inadequate proposals to prevent interference with communication lines such as phone and internet.
- Community: A condition should be attached to guarantee that a percentage of local people will be employed during construction.
- No proper decommissioning plan including a budget to be set aside for such purpose.
- Construction noise.
- Aggregate operational noise from existing and proposed turbines – restrictions on noise levels are required and turbines should be automatically shut down if these limits are exceeded. Independent noise monitoring should be carried out.
- No turbines should be close enough to any dwelling to cause shadow flicker. Should shadow flicker occur turbines should be automatically shut down.
- Traffic: N59 not capable of accommodating additional construction traffic. Disturbance to local people due to road closures and congestion over the 7 year construction period. The N59 from Carrowkilleen to Bellacorick needs to be

upgraded. The level, intensity and duration of the construction traffic cannot be described as minor and temporary.

- The traffic will make it impossible for local people walking and cycling along the N59.
- Dust, noise and air emissions and increase in traffic will have a major impact on local residents.
- The number of industrial vehicles using the N59 per day, and times of use, should be restricted by condition.
- Health and safety: Dust and air emission during construction. Health impacts of ultra sound and low frequency noise from turbines. A complaints procedure should be put in place for local residents.
- Ecology: Construction of roads and tree felling will have an adverse impact on local wildlife. The development will impact on five European sites. It is hard to understand the conclusion that a project of this size will have no significant adverse impacts on the conservation objectives of these European sites.
- The site has the best lowland blanket bog in the country with well developed pool systems. The area is famous for its fishing rivers which will be adversely affected.
- Granting planning permission would go against the EU Directive.

5.3.6. Eirgrid

- Eirgrid is currently undertaking an evaluation of potential options in respect of the grid West project, which is primarily intended to facilitate the transmission of renewable generation on the North mayo area of the National grid.
- Both the generation and transmission of renewable energy in the North Mayo area is in accordance with the current Government policy for achieving 40% of electricity from renewables by 2020.

5.3.7. Gerard Gallagher, Shanvolahan

- The observer lives c.1.3km from the nearest turbine. His mother also lives in the vicinity.
- Scale: The proposed turbines are c.30m higher than the old cooling tower, which was clearly visible from the observer's property 7km away. This is unacceptable. The observer's property and that of his mother would be completely overwhelmed.
- Requirements for a planning application for single dwelling are more onerous than for a development of this scale.
- A computer generated 3D animation of the turbines should be provided.
- The EIS does not allay the fears of local residents in relation to the impact of wind farms on human health.
- Turbine noise.

- Shadow flicker. The observer's property is to the east of the development and will be impacted at sunset. The promise to turn off the problem turbines does not relieve the observer's concern in this respect.
- Safety: part of a blade was thrown 1.3km in Germany. These were smaller turbines.
- Property value can decrease by up to 80% in previous smaller developments. The applicant plans to pass sites for development to his two sons. The proposed development will dictate and negate his right to use his holding as he wishes. This breeches his constitutional right.
- The development should have been put on hold until the new departmental guidelines on Wind Energy were published.

5.3.8. John G. Moyles Snr. and Others, Formoyle

- The observer's property is 1095m from T78 (not 1286m from T77 as shown in the submitted plans).
- Health problems have been widely reported from people living close to wind farms of a much smaller scale.
- Three of the observer's children are visually impaired due to albinism and are sensitive to sudden flashes of bright light. Concerns regarding shadow flicker and strobing effects.
- Albinism also results in super sensitive hearing. Noise levels from the turbines will almost certainly cause sleep disturbance for the children.
- Negative impact on the Formoyle flush, particularly for birds and bats. Negative impact on unspolit views and natural landscape.
- Devaluation of property
- Interference with tv and radio signals.
- Turbines T77 and T78 should be omitted due to the impact on the Formoyle flush and the proximity to the observer's home and the negative health effects for the residents. A buffer of 2km should be provided.

5.3.9. Jon Freestone and Nuala O'Malley, Shanvolahan

- Inadequate photomontages and noise maps.
- Closest photomontage to the village of Shanvolahan is taken 3km away (Photo 2).
- The topography of the land means that the turbines will be 30m higher than the ground level in the village.
- Video presentation is required.
- A timber structure should be erected to assess the impact of the turbines on the surrounding landscape.

- Noise: The observers have visited many wind farms internationally. One in Eastern Washington State was similar in scale. It was very noisy with different sounds from low range to higher range making a very unpleasant mix.
- No one knows what the real effects will be on health.
- A 2-3km buffer should be provided.
- The visitor centre is likely to be closed due to lack of interest.
- The community has been badly affected in the last 10 years since the closure of the Bellacorick peat extraction and power station. The local school is closing.
- The only community benefit will be serving breakfast rolls during construction.
- Disruption of local residents during construction.
- Devaluation of property in the vicinity.

5.3.10. Mary McLoughlin, Shanvolahan

- Height of turbines will overwhelm the observer's property.
- Health risk including operation of turbines, noise, shadow flicker, magnetic fields.
- Property devaluation.

5.3.11. Michael Gillespie, Derra Upper

- No objection in principle to the wind farm but concerns as set out below.
- Proximity to the high pressure gas main on the site which is in close proximity to turbine sites and is crossed by access routes.
- Impact of construction and noise on wildlife and protected areas. These issues have not been adequately addressed by the environmental assessments.
- Risk to watercourse has not been properly appraised.
- The visual impact is not adequately represented by the submitted photomontages.
- The noise data submitted is deliberately misleading. The sound level is given in Hz not dB. Wind speeds of 9.5-10m/s should be used (not 8m/s). Table 7.15 shows dB will exceed limits imposed on ABP PL16.131260.
- The Board granted planning permission with a minimum of 1km from the nearest dwelling for 65m high turbines. The current proposal is twice as high.
- Negative impacts on tourism and property values. It is imperative that any grant of permission should provide adequate community funding and local employment.
- The accuracy of the figures provided for power generation are questioned.

5.3.12. Michelle Mulherin TD

- Support for the community in seeking a fair deal from the project.

- The developers should engage in consultation directly with representative of the various community groups representing the people of Keenagh, Crossmolina and the Bellacorrick areas.
- There should be a transparent Community Fund in which local people set priorities for improvements in the communities. No less that €2,500 per megawatt should be required as set out in the Mayo County Council draft guidelines, or an agreed benefit in kind.
- There should be local employment during construction and operation where possible.

5.3.13. Mollie Gallagher, Shanvolahan

- The observer is 82 years old and has lived in her property for over 50 years. She suffers from sleep apnea and vertigo and is concerned that the turbine noise and shadow flicker will negatively affect her conditions.
- Property devaluation.

5.3.14. Residents of Shanavolahan

- Compensation for property devaluation.
- Compensation for disruption due to noise, visual disturbance, flicker and in terms of health and safety.
- The applicants should meet with local residents.
- Decision should be delayed until the new departmental guidelines are published which would provide the most up to date information on issues such as shadow flicker and noise.

5.3.15. Ronan O'Donnell, Dooleeg

- Traffic during 7 year construction period.
- Visual amenity.
- No firm commitment to providing employment for local people.
- The proposed level of Community Contribution is not acceptable.
- Noise during construction.
- Turbine noise due to high wind speeds in the area.
- Turbine location is unacceptably close to the observer's land. A 2km buffer for land and residences should be provided.
- Construction impacts in terms dust and silt.
- Health effects of turbines, overhead power lines and substations.
- Turbine size and number is too large.

5.3.16. Scoil Neifinn, Keenagh

- Local community has been decimated through the closure of large employers such as Bellacorrick Power Station and all of the dependent industries. With no job opportunities and great difficulty attaining planning permission even those families willing to commute have been thwarted at every turn.
- The school has been forced to amalgamate with another community.
- The scale and number of the turbines will result in a visual impact that will destroy any touristic value not just locally but in the region.
- Reduction in property values.
- Development will discourage potential purchasers from even considering property in the region.
- No jobs will be created by the development to negate the obvious loss of potential local employment through tourism.

5.3.17. The Glenalt Syndicate c/o JBR Hewat

- The Glenalt Syndicate are the owners of angling rights on parts of the Owenmore/ Owneninny rivers. Fishing in the Owenmore and on Carrowmore lake attracts a large number of tourists to the area with considerable spin off benefits (B&Bs etc), particularly in the Bellacorrick/ Bangor Erris area.
- Currently salmon and sea trout stocks are under severe pressure from a variety of causes. The quality of the head waters of the Oweninny are hugely important to sustaining stocks into the future.
- The terrain of the proposed site is largely bogland with many drains, gullies, ditches, streams etc, most of which end up flowing into the river. The area is also susceptible to flash flooding.
- Bord na Mona and ESB have been helpful, and for the most part responsive, to concerns regarding pollution. There have, however, been several incidences such as oil escaping from bunds in the ESB works and flowing into the river, adequate silt ponds not being built, ponds not being cleaned out or maintained, trenches flowing directly into the river, etc.
- The development has the potential to reduce water quality: borrow pit, concrete batching plant, contractors construction lay down areas and materials storage areas including holding tanks, ponds, bunds etc, workshop areas, sewage treatment plants. The adequacy and effectiveness of the proposed ante pollution plans might be reviewed by an independent expert group/ committee which would include a representative from IFI. This group could also monitor the situation as the development progresses and ensure that any adverse incidents/escapes are reported to them immediately.

5.3.18. Townagh Group, Townaghmore and Townaghbeg

- The group represents farmers in the Townaghmore and Townbeg areas.
- Documentation has been requested from Bord na Móna confirming their ownership of the Right to Graze on the land which the farmers and their families have grazed for in excess of 100 years.
- This matter should be resolved before planning permission is granted.

6. Planning Policy

6.1. National Energy Policy

Energy Sources

Delivering a Sustainable Energy Future for Ireland – The Energy Policy Framework 2007-2020

This is a Government White Paper. The overriding objective is to ensure that energy is consistently available at competitive prices with minimal risk of supply disruption. In this respect, a requirement for flexible plant and significantly higher standards of generating plant and more interconnection between generating stations are identified.

Without policy intervention, dependence on natural gas for power generation would be 70% by 2020, and while natural gas will continue to be of importance as a fuel, reduction in over-reliance on natural gas in the power generation will be pursued through promotion of realistic alternatives. The growth in energy demand and closure of older plants will be addressed by new investment in conventional power generation. Gas fired power stations will continue to play a key role.

Strategic Goal 2: Accelerating the Growth of Renewable Energy Sources, identifies a growth in Combined Heat and Power deployment as an important objective to 2020. It is stated that CHP investment yields a relatively low return at high risk, so barriers need to be addressed and supports maintained in order to realise the deployment potential, not just in community and buildings, but also in large scale plants. It is an objective to achieve at least 400MW from Combined Heat and Power by 2010 with particular emphasis on biomass fuelled CHP, and at least 800MW by 2020.

'Strategic Goal 3: Enhancing the Diversity of Fuels for Power Generation' seeks to limit Ireland's relative dependence on natural gas for power generation to approximately 50% by 2020.

It is also an objective to achieve 15% of electricity consumption on a national basis from renewable energy sources by 2010 and 33% by 2020.

The National Climate Strategy 2007-2012

Generation of electricity from renewables will result in substantial annual emissions savings. Targets of 15% electricity from renewable sources by 2010 and 33% by 2020 are set.

It is stated that the most effective way of reducing Ireland's greenhouse gas emissions caused by power generation is through the development of renewable sources of electricity.

National Renewable Energy Action Plan 2010

This plan implements the EU Directive 2009/28/EC on the promotion of the use of energy from renewable sources which sets out agreed new climate and energy targets- 20-20-20 by 2020 which means a 20% reduction in greenhouse gas emissions; 20% energy efficiency and 20% of the EU's energy consumption to be from renewable sources, by 2020.

In relation to the electricity sector, the plan has set a target of 40% electricity consumption from renewable sources by 2020.

Strategy for Renewable Energy, 2012–2020

The Strategy for Renewable Energy, 2012–2020 is the most recent policy statement on renewable energy. It reiterates the Government's view that the development of sources of renewable energy is critical to reducing dependency on fossil fuel imports, securing sustainable and competitive energy supplies and underpinning the move towards a low carbon economy.

Renewable Energy is one of Ireland's strengths which it can use to leverage employment opportunities. The EU publication 'Energy 2050' makes it clear that there will be a significant increase required in renewable energy deployment in Europe well over and above the 2020 target levels. In the EUs public consultation on renewable energy policy post 2020, the scenarios outlined show electricity as a growing sector in energy usage as it continues to be used more in the heating/cooling and transport sectors over time; and renewable electricity's increased contribution to overall electricity usage.

Ireland's renewable energy resources have potential (subject to an economically viable market being in place) for the development of an export industry to UK in the first instance and to North West Europe over time. Our renewable energy

resources, both onshore and offshore, are significantly greater than the national energy requirement. The development of commercial large scale electricity storage to deliver on such an export opportunity will require attention. There are significant technological, logistical and environmental challenges to be met in electricity storage on the scale envisaged.

The Strategy sets out specific actions the Government will take to accelerate the development of wind, ocean and bio energy, R&D, sustainable transport energy, and the supporting energy infrastructure.

Strategic Goal 1 aims to achieve progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets

Energy Transmission

Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure, July 2012

This statement reaffirms the need for development and renewal of energy networks in order to meet both economic and social goals. The consideration of specific technologies and mitigation measures, as well as early consultation and engagement with local communities is advocated.

Grid 25 A Strategy for the Development of Ireland's Electricity Grid for a Sustainable and Competitive Future.

Mayo forms part of the North-West Region in Grid 25. This area is identified as having the largest (35%) expected regional distribution of the renewable generation capacity, as the area is particularly rich in wind and ocean renewable energy resources. Grid 25 recognises that the development of renewable energy in the North West is dependent on significant upgrading of the national grid in the area.

National Economic Policy

National Development Plan 2007 – 2013

The overall objective of the energy programme of the NDP is to ensure security of supply that is competitively priced and can be secured for the long term while meeting a high level of environmental standards. The need to lessen dependence on any one source of energy or fuel type is identified as a key challenge. Infrastructure investments in the energy sector are considered to be of critical national strategic importance.

The *Sustainable Energy Sub-Programme* of the NDP allocates €276 million to fund the "large scale deployment of wind energy" and the development of alternative sources of energy such as bio-mass and bio-fuels, ocean energy and solar and geothermal technologies.

Delivering our Green Potential, Government Policy Statement on Growth and Employment in the Green Economy 2012

The policy statement "Delivering our Green Potential" affirms the Government's commitment to developing the green economy to a much greater extent than currently exists. One of the sectors for significant expansion, as set out in the policy statement, is that of renewable energy. It is an objective of this policy to ensure that, on average, at least 200MW of new renewable generation is being connected per annum to the grid.

National Planning Policy

National Spatial Strategy 2002-2020

The NSS states that rural areas have a vital contribution to make to the achievement of balanced regional development by utilising and developing the economic resources of rural areas.

Renewable energy is identified as one resource that could support the economic growth and revitalisation of areas in the West Region. Map 10 in the NSS shows the area in which the subject site is located as a "Rural Area with Strong Potential for Diversification". Such areas were previously centred on agriculture but have the potential to diversify into alternative economies based on the sustainable use of natural resources, including renewable energy.

National Planning Guidance

Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009

This was prepared by the NPWS of DEHLG. It provides guidance in relation to the Birds and Habitats Directives which obligations obligations on member states in relation to nature conservation management. The key requirement is consideration of the nature conservation implications prior to authorisation of development consent.

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, 2013

This document provides guidance in respect of the implementation of the EU EIA Directive. It deals specially with procedural issues and the EIA process.

6.2. Regional Policy

Regional Planning Guidelines for the West Region 2010-2022

The Regional Planning Guidelines for the West Region 2010-2022 (RPG's) identify the support of renewable energy, and the upgrading of the energy supply and energy network infrastructure, as two of the key investment priorities required to support the sustainable development of the West Region. The RPG's also identify the Region's natural assets for renewable energy production as one of the strengths of the Region.

The following policies and objectives are also relevant:

Inter-regional:

CO14	To support the identification of suitable wind energy development locations having regard to landscape and habitat considerations.
CO15	To initiate a Regional Energy Strategy for the West Region in order to identify suitable and unsuitable locations for new energy projects including networks. The strategy will be informed by Habitats Directive Assessment, landscape character assessments (or landscape management strategy) and other environmental assessment and will include consideration of potential cumulative and in combination environmental impacts.

Economic Development Strategy:

EDP20	To support the region as a leader in research and development of sustainable renewable energy.
EDP21	To support the development of the electricity grid network to facilitate the roll out of renewable energy infrastructure.

Infrastructure Strategy:

IO53:	To support the use of the existing and necessary upgrades of the electricity grid to facilitate the production of electricity in the region from renewable sources. In particular the grid extending to

the areas with high potential for wind energy, should be sufficient to cater for consumer demand and the supply of renewable energy to the national grid.

IO54: To support the sustainable development of wind energy developments through the initiation of a Regional policy on windfarm location. The policy will be informed by Habitats Directive Assessment and by other environmental assessment including landscape character assessment and will follow DoEHLG's Wind Energy Development Guidelines (2006) in identifying areas suitable for wind energy developments. Natura 2000 sites, and other ecological sites, should be placed in the 'not normally permissible' category unless project level HDA and/ or other relevant environmental assessment determines otherwise.

Areas identified for wind farms must have regard to the level of the resource, the nature of the landscape, the status of surrounding lands and the DoEHLG Wind Energy Development Guidelines, 2006.

The RPGs also refer to the need for proper assessments (both environmental and ecological) where windfarm development is located in or proximate to Natura 2000 sites.

6.3. Development Plan Policy

6.3.1. Mayo County Development Plan 2014-2020.

The statutory development plan governing the site is Mayo County Development Plan 2014-2020. A Renewable Energy Strategy for County Mayo 2011-2020 was adopted by Mayo County Council on 9th May 2011, and continues to be a supporting document for the County Development Plan. All relevant policies and objectives in the county development plan also, however, apply when assessing planning applications for renewable energy developments. There are no Local Area Plans affecting the site.

Economic development Strategy - Renewable Energy

RE-01 It is an objective of the Council to implement the Renewable Energy Strategy for County Mayo 2011-2020 or any amendment to the same.

RE-02 It is an objective of the Council to identify at least one renewable energy hub in the County which will allow for the development of renewable energy

devices and associated infrastructure/vessels/equipment and deployment of the same having regard to the needs of the industry while ensuring no adverse impact on the environment including Natura 2000 sites.

RE-03 It is an objective of the Council that proposals for wind farms shall demonstrate consistency with the *Landscape Appraisal of County Mayo* with reference to the four Principal Policy Areas shown on Map 3A Landscape Protection Policy Areas and the Landscape Sensitivity Matrix (Figure 3), and the Wind Energy – Guidelines for Planning Authorities (2006).

Infrastructure Strategy - Energy

Priority Infrastructure Projects for Co. Mayo 2014-2020

Energy Infrastructure - 400kV line and associated upgrades to the existing transmission lines.

EY-01 It is an objective of the Council to support and facilitate the provision of a reliable energy supply in the County, with emphasis on increasing energy supplies derived from renewable resources whilst seeking to protect and maintain bio-diversity, wildlife habitats, the landscape, nature conservation, and residential amenity.

EY-02 It is an objective of the Council to implement the Renewable Energy Strategy for Co. Mayo 2011-2020.

Landscape Protection

LP-01 It is an objective of the Council, through the *Landscape Appraisal of County Mayo*, to recognise and facilitate appropriate development in a manner that has regard to the character and sensitivity of the landscape and to ensure that development will not have a disproportionate effect on the existing or future character of a landscape in terms of location, design and visual prominence.
LP-02 It is an objective of the Council that all proposed development shall be considered in the context of the *Landscape Appraisal of County Mayo* with reference to the four Principal Policy Areas shown on Map 3A Landscape Protection Policy Areas and the Landscape Sensitivity Matrix (Figure 3), provided such policies do not conflict with any specific objectives of this Plan.

6.3.2. Renewable Energy Strategy for Co. Mayo 2011 – 2020

The policies and objectives of the Renewable Energy Strategy for Co. Mayo relevant to the subject site and surrounding area are:-

POLICY 1 - Climate Change

It is the policy of the Council to support the National Climate Change Strategy 2007-2012. The following objectives apply:

Objective 1.1 to achieve national targets for reducing greenhouse gases associated with energy production by encouraging renewable energy developments at appropriate locations within the County.

Objective 1.2 to encourage renewable energy production in the County, particularly at locations set out in the Maps accompanying this Strategy.

Objective 1.3 to achieve the target of 16% of the County's overall energy requirements and 42.5% of the County's electricity requirements to be provided from renewable sources by 2020.

POLICY 2 - The Natural and Built Environment

It is the policy of the Council to ensure that a balance between the provision of renewable energy developments and the preservation and conservation of the natural and built environment is maintained, subject to compliance with the requirements of the Habitats and Birds Directives. The following objectives apply:

Objective 2.1 to comply with European and National legislation.

Objective 2.2 to promote a sustainable plan led approach to renewable energy development within County Mayo.

Objective 2.3 assessessment of all proposed renewable developments will be on the principles of proper planning and sustainable development.

Objective 2.4 protection of visual amenity, existing rights of way, public walking and cycling routes, scenic routes and scenic views, architectural heritage including protected structures and Architectural Conservation Areas, archaeological heritage including recorded monuments, Ballycroy National Park and vulnerable or sensitive landscapes in the County.

POLICY 3 - Strategic Infrastructure

It is the policy of the Council to encourage and assist in the provision of strategic infrastructure at appropriate locations to facilitate the provision and exporting of renewable energy. The following objectives apply:

Objective 3.1 It is an objective of the Council to actively pursue the upgrading of the national grid and for the provision of a 400kV line in Mayo.

Objective 3.2 Routing of any new 110/220 or 400 kV transmission lines in line with best International Practice. The existing transmission corridors for the 110kV and 38kV circuits shall be followed as far as technically and environmentally practicable.

POLICY 4 - Community Benefit

It is the policy of the Council to require that renewable energy developments are carried out in a manner that promotes economic and social benefits for the community of Mayo as a whole. The following objectives apply:

Objective 4.1 To ensure that the advantages of renewable energy development outweigh the disadvantages for the majority of the community residing in the area and for the wider environment.

Objective 4.3 Developers are required to incorporate the concept of community benefit into any renewable energy development proposal. Details should be submitted at planning application stage.

Wind Energy (6.4.1)

Refers to 4 classifications for potential onshore wind energy development: priority areas, Tier 1 – preferred (large wind farms), tier 1 preferred (cluster of turbines), tier 2 – open for consideration.

Map 1 Map 1 titled: Wind Energy and Map 8 titled: Renewable Energy Potential and Existing Infrastructure in County Mayo identify the site as a priority area for windfarms.

6.3.1. Landscape Appraisal of County Mayo

This document continues to be a supporting document for the County Development Plan. 16 Landscape Character units were identified through the mapping and integration of; physical units, appearance and characterisation. The subject site is in character area F: North Mayo Inland Bog Basin. Units with similar landscape types have been grouped into 4 Principle Policy Areas.

The description of character area F: North Mayo Inland Bog Basin includes:

This is a large bog area of some 300 square kilometres surrounded to the north, west and south by mountains giving it the appearance of a lowland basin. It is, however, at an altitude of about 100m a.s.l. It is an exposed plain with little settled agriculture or other human activity, covered predominantly by bog grass

types. It does however, include intermittent areas of production forestry, and north of the N59 much of the bog has been cut away to fuel the visually prominent Bellacorrick power station. Wind farms also occupy the northern vista.

Landscape Character Units with similar landscape types have been grouped into 4 Principle Policy Areas. Character area F is within policy area in policy area 3, to which policies 12 to 17 refer.

Policy 12 Recognise the occurrence of areas of highly valued scenic vistas, uninterrupted by shelter vegetation or undulating topography, which can cover vast areas and are abundant.

Policy 13 Encourage development that will not have a disproportionate visual impact (due to excessive bulk, scale or inappropriate siting) and will not significantly interfere or detract from scenic upland vistas, as identified in the Development Plan, when viewed from areas of the public realm.

Policy 14 Encourage development that will not interrupt or penetrate distinct linear sections of primary ridge lines when viewed from areas of the public realm.

Policy 15 Facilitate developments that have a locational requirement to be situated on elevated sites (e.g. telecommunications and wind energy structures). It is necessary however to ensure that adverse visual impacts are avoided or mitigated wherever possible.

Policy 16 Preserve from development any areas that have not already been subject to development, which have retained a dominantly undisturbed upland/moorland character.

Policy 17 Consider development on steep slopes, ensuring that it will not have a disproportionate or dominating visual impact on the surrounding environment as seen from areas of the public realm.

7. Oral Hearing

An joint oral hearing in relation to this application together with the proposed Cluddaun windfarm which site adjoins the site to the north (PA 0031) commenced on the 8th April and closed on the 22nd May, 2014. The hearing is referred to throughout this report and a brief account is attached to this report as 4. A full recording of the hearing is attached.

8. Assessment

It is considered that the issues which arise in relation to this application can be dealt with under the headings: appropriate assessment, the EIS, need and planning/policy context, community gain and legal issues and the assessment which follows is set out under those headings.

9. Appropriate Assessment

In accordance with obligations under the Habitats Directives and implementing legislation, to take into consideration the possible effects a project may have, either on its own or in combination with other plans and projects, on a Natura 2000 site; there is a requirement on the Board, as the competent authority, to consider the possible nature conservation implications of the proposed development on the Natura 2000 network, before making a decision on the proposed development. The process is known as appropriate assessment. In this regard a guidance document 'Appropriate Assessment of Plans and Projects in Ireland' was published by the DoEH&LG on the 10 December 2009.

9.1. NIS

To facilitate the Board in carrying out this function the applicant has submitted a Natura Impact Statement. This is provided as a document which is separate to the EIS, prepared by Biosphere Environmental Consultants.

It includes a section titled 'screening', documented at pages 7 – 37, and a section titled 'appropriate assessment' documented at pages 38 – 60.

The screening section describes the proposed development and the site, and identifies Natura sites within 15km of the site:

SAC's (all are candidate SACs):

Bellacorick Iron Flush SAC (site code 0466)
Laugh Dahybaun SAC (site code 02177)
Bellacorick Bog Complex SAC (site code 0922)
Owenduff/Nephin SAC (site code 0534)
River Moy SAC (site code 02298)
Carrowmore Lake SAC (site code 0476)
Broadhaven Bay SAC (site code 0472)

Slieve Fyagh Bog SAC (site code 0542)
Glenamoy Bog Complex SAC (site code 0500)

SPA's:

Owenduff/Nephin SPA (site code 004098)
Lough Conn & Lough Cullin SPA (site code 004228)
Carrowmore Lake SPA (site code 004052)
Blacksod Bay / Broadhaven Bay SPA (site code 004037)

A short description of each site is given in the NIS.

Potential Impacts are identified as:

Loss of, or physical disturbance to, habitats
Potential effects on peat stability
Potential impairment of water quality due to construction works
Potential impairment of water quality during operation phase
Potential impacts on hydrological functioning of flush habitats
Potential impacts on bird species

A short description of each potential impact is given.

A screening exercise was carried out for the 4 SPAs and 9 SACs:

Owenduff/Nephin SPA extends from the south-west of the subject site from which it is separated by the Owenmore river, and includes the entire Nephin Beg range. The NIS' assessment is that there could not be impacts on the conservation objectives of the protected site as the nearest part of the construction works is 750m from the SPA and none of the selected bird species of the SPA have regular flight paths over the subject site.

Lough Conn & Lough Cullin SPA is to the south-east and separated from the subject site by a distance of 10km. The NIS' assessment is that there could not be impacts on the conservation objectives of the protected site because of distance and as none of the selected bird species of the protected site have regular flight paths over the subject site.

Carrowmore Lake SPA is to the west, north-west and separated from the subject site by a distance of 9km. The NIS' assessment is that there could not be impacts on the conservation objectives of the protected site because of distance and as none of the selected bird species of the protected site have regular flight paths over the subject site.

Blacksod Bay / Broadhaven Bay SPA is to the north-west and separated from the subject site by a distance of 13km. The NIS' assessment is that there could not be impacts on the conservation objectives of the protected site because of distance and as none of the selected bird species of the protected site have regular flight paths over the subject site.

For the four SPAs, the NIS concludes that the development could not have any direct or indirect impacts on the conservation objectives, either during the construction or operational phase; with reference to distance from the protected sites, or the birds of conservation interest in those sites. In relation to Greenland White-fronted Geese the absence of regular flightlines between feeding and roost areas over the subject site are cited as reasons why impact can be discounted.

Bellacorick Bog Complex SAC site adjoins the subject site along substantial parts of its northern, eastern and southern boundaries. In addition there is a small area of overlap between the two sites in the eastern part of O'Boyle's Bog but this part of the SAC would not be affected in any way as there will be no development works within O'Boyle's Bog. It is noted that much of the drainage in the eastern part of the subject site is to watercourses which flow through the SAC site. The NIS' assessment is that, in the absence of mitigation, some of the qualifying interests could be affected by peat slippage due to construction works in parts of the eastern sector of the site. A substantial slip could flow along the watercourses and spill out over the following habitats for which the site is selected: natural dystrophic lakes and ponds, Northern Atlantic wet heaths with Erica Tetralix, Blanket bog (*active only), depressions on peat substrates of the Rhynchosporion and Alkaline fens.

The subject site is upstream of the Deel River which is within the River Moy SAC. The Shanvolahan River, a tributary of the Deel, drains the south-east of the site. This river is not within the SAC. The NIS' assessment is that in the absence of mitigation, some of the qualifying interests of the protected site could be affected by peat slippage, due to construction works in parts of the south - eastern sector of the site; and could be affected by water pollution, due to construction works in the same sector; and could be affected by water pollution due to runoff to local streams of suspended solids from bare surface areas, following the construction works. The species which could potentially be affected are: Annex II species white-clawed crayfish, Sea lamprey, Brook lamprey, Salmon and Otter. It is also notes that an important population of Freshwater Pearl

Mussel, is supported by the river Deel as far as the confluence with the Shanvolahan River. Freshwater Pearl Mussel is a protected species, but is not a qualifying interest species for this protected site.

The Bellacorick Iron Flush SAC is surrounded by the subject site. Because all of the proposed development areas in the vicinity of the protected site are significantly outside the groundwater and surface water catchments, the assessment considers that there is no potential impact on the flush, but considers that focused mitigation and monitoring are required.

There will be no construction works in the immediate vicinity of Laugh Dahybaun SAC but there will be some works within the lake catchment: T100 and 1.1km of trackway. The NIS' assessment is that, in the absence of mitigation, the single qualifying interest species: Annex II Slender Naiad, could be affected by peat slippage and input of pollutants.

The Carrowmore Lake SAC extends to the road at the western boundary of the subject site. Turbines T33 (216m) and T 39 (205m) are closest to this part of the protected site: Largan More Bog. At these turbines peat is just 1m in depth and is downslope of Largan More Bog. There is substantial risk of peat slippage associated with the roads leading to these two turbines. The likelihood, in the absence of further mitigation, is low as historically peat slides caused by construction activities tend to start at the point of construction and flow downhill and are generally due to loading of the surrounding peat from sidecasting on the downslope site. In this area the peat is relatively shallow and the excavated peat will not be sidecast. The NIS' assessment is that, in the absence of mitigation, the conservation objectives of the protected site could be affected by peat slippage.

The Owenduff/Nephin SAC extends from the south-west of the subject site, from which it is separated by the Owenmore river. The nearest part of the construction work is 750m from the SAC and therefore could not have any impacts on the conservation objectives of the protected site.

Broadhaven Bay SAC is separated from the subject site by a distance of 13km and substantial areas of forestry and the NIS' assessment is that there could not be impacts on the conservation objectives of the protected site.

Slieve Fyagh Bog SAC is separated from the subject site by a distance of 2.5km and substantial areas of forestry and the NIS' assessment is that there could not be impacts on the conservation objectives of the protected site.

Glenamoy Bog Complex SAC is separated from the subject site by a distance of 3km and continuous areas of forestry and the NIS' assessment is that there could not be impacts on the conservation objectives of the protected site.

Eight sites are excluded at screening stage: Owenduff/Nephin SAC, Broadhaven Bay SAC, Slieve Fyagh Bog SAC, Glenamoy Bog Complex SAC, Owenduff/Nephin SPA, Lough Conn & Lough Cullin SPA, Carrowmore Lake SPA and Blacksod Bay / Broadhaven Bay SPA.

Five sites are carried forward to appropriate assessment stage: Bellacorick Bog Complex SAC, Bellacorick Iron Flush SAC, Laugh Dahybaun SAC, River Moy SAC and Carrowmore Lake SAC. A more detailed description of these sites is given in pages 38-44 of the NIS.

Mitigation measures are listed under the headings of peat stability, measures to maintain water quality, specific measures for Bellacorick Iron Flush, operation phase mitigation and residual impacts after mitigation. In-combination effects are included, considering the impact of the project with other wind farms, forestry, peat harvesting and agriculture.

The information contained in the NIS is supplemented with information contained in the EIS particularly:

In Volumes 2A Main Text at:

Chapter 9: Terrestrial Ecology
Chapter 10: Water Quality, Fisheries and Aquatic Ecology
Chapter 13: Geology & Soils
Chapter 18: Iron Flush Hydrological & Hydrogeological Assessment
Chapter 19: Hydrology & Sediment;

In Volume 2B Appendices (1):

Appendix 3: Cutaway Bog Rehabilitation Plan
Appendix 4: Peat Stability Risk Assessment Report
Appendix 5: Work Method Statements

In Volume 2B Appendices (2)

Appendix 9: Terrestrial Ecology

Appendix 14: Bellacorick Iron Flush NIS screening, and

Appendix 16: Erosion and Sediment Control Plan,

This information is supplemented by submissions to the Board from the planning authority, prescribed bodies and observers and further supplemented by information provided at the oral hearing by prescribed bodies, observers and witnesses on behalf of the applicant. The information is adequate for screening for Appropriate Assessment and for the carrying out of Appropriate Assessment.

9.1.1. Submissions to the Board

DAHG

A written submission was received from the Department of Arts, Heritage and Gaeltacht (DAHG), 28/8/2013, which included advice to the Board in relation to Natura sites.

Concerns are expressed in relation to the NIS being insufficiently detailed or specific in relation to the qualifying interests (SACs) and special conservation interests (SPAs), which may be at risk from the project, on its own and in combination with other plans and projects; and inadequate presentation of the scientific assessment of those risks.

They express particular concern regarding information supplied and details of the assessments undertaken in relation to:

Impacts on Bellacorick Iron Flush SAC, its water supply and qualifying interest arising from the development, notably the quarry/borrow pit excavations over 17ha and up to 3m deep.

Impacts on other flushes, their water supply and qualifying interests in Bellacorick Bog Complex SAC arising from the development.

Cumulative /in combination effects on birds, particularly flightlines and migratory routes across the site, and across the adjoining windfarm sites. Birds most likely to be at risk of collision are the Birds Directive Annex 1 species, Whooper Swan and Greenland White-fronted Goose. Contrary to the advice of NPWS at a scoping meeting, they note that there is no consideration of changing trends in bird populations and usage since commercial peat extraction ceased and restoration and rewetting commenced.

DAHG consider that in combination effects to be examined should include Eirgrid's Grid 25 Implementation Programme and Grid West project, the Mayo Renewable Energy Strategy, other existing, permitted and proposed energy developments and windfarms

in the general area, and the existing Cutaway Bog Rehabilitation Plan which has been in place for Bord na Móna lands under EPA IPPC Licence 505, since 2003.

DAHG consider that the interpretation of the findings of Chapter 18 of the EIS: 'Hydrology of Iron Flush Areas', should form part of the NIS, to show the scientific and ecological basis on which it is concluded that there are no risks of adverse effects on the integrity of the SACs. The letter goes into some detail in relation to their concerns regarding the hydrology of the Iron Flush, its delimitation, the groundwater catchment and the potential impact of the proposed borrow pit on groundwater supplying the flush. Their recommendation is that turbines T13, T14, T24, T29 and T30 be removed or relocated further away from the flush.

Also in relation to the Bellacorick Iron Flush they express concerns that the batching plant, which lies directly south-west of and in line with the prevailing winds will, when operational, be using 25 tons aggregate/cement combined to produce $50m^3$ of concrete per day. They consider that there is a potential risk of cement dust being wind borne and reaching the flush. Cement can be lethal to an ecological site; the probability of some dust reaching the flush is deemed to be extremely serious; and they strongly recommend that the batching plant be placed somewhere else off the site entirely.

Possible risks of adverse effects on Formoyle flush, within Bellacorrick Bog Complex SAC, are expressed in relation to the estimated surface water and groundwater catchments and with reference to the drawings provided; and they advise the Board that further scientific evidence is required to demonstrate that adverse effects on the integrity of the SAC are not likely to arise. *In relation to peat stability, it is a concern that 20% of the construction area is in the Substantial Risk category. They also point out that the generic conservation objectives of the sites are: to maintain or restore the favourable conservation condition of the Annex I habitats and/or Annex II species for which the sites have been designated; and therefore that the current proposed project should not limit any future restoration obligations.

They consider that, in relation to SPA's, insufficient consideration was given to the potential effects on birds, their flight paths and migration routes arising from the scale of the turbines and of the development, and from possible in combination or cumulative effects with powerlines and other windfarms. They note that the Flora and Fauna chapter of the EIS does not include a map of other permitted and proposed windfarms locally (e.g figure 2.13 elsewhere in the EIS) or of overhead powerlines or other collision hazards. They advise that further consideration is required of the collision risks, notably for the larger Birds, Directive Annex 1 species which occur in the area: Whooper Swan and Greenland White-fronted Goose.

An Taisce

A written submission was received from An Taisce 29/8/2013, which raises concerns in relation to Natura sites, particularly in relation to hydrological impacts and impacts on Bellacorick Iron Flush SAC, Belllacorick Bog Complex SAC, L Dahybaun SAC, Carrowmore Lake Complex SAC, and Owenduff Nephin Complex SAC. All of these contain bog complexes and peatland ecosystems which are very sensitive to hydrological changes. The development of a wind farm on the site could act to re-fragment the surrounding bog land, including the Owenduff/Nephin Complex SAC and Bellacorick Bog Complex SAC.

Their concerns also include birds of conservation interest present in the area and on the site and they advise that the risk of collision, including flight heights and flight paths, should be examined for all species outside of the breeding season as well as during it, since the impacts on these birds are significant throughout the year, not just during the breeding season.

Planning Authority

The report of the planning authority includes a report from their ecologist which states in relation to NIS appraisal that there are a number of issues for further consideration:

- Habitat categories within the proposed project area including data on water quality/ aquatic ecology should be described in more detail than that provided in Section 2.2.
- There should be a clear and specific mitigation measure proposed for the avoidance and conservation of lowland blanket bog within the Oweninny site, with potential for Annex 1 priority habitat and petrifying spring with tufa formation also an Annex 1 priority habitat.
- Potential impacts on water quality specifically as a consequence of the replacement / upgrading of culverts and associated mitigation measures (where applicable) to offset/reduce any potential significant negative effects should be described.
- The mitigation measures for the Bellacorick Iron Flush, that is, the implementation of an exclusion zone is acknowledged, but clear measures should be put in place should hydrological impacts on the flush be detected during and after the operation of the borrow pit adjacent to turbine 37.

- A diagram/ drawing indicating the location of insignificant, significant and substantial PSRA (Peat Stability Risk Assessment) sites should be included for clarity and to supplement written data.
- More emphasis should be given to the Knockmoyle Sheskin Nature Reserve and Owenboy Nature Reserve which are adjacent to the Oweninny site.
- The removal of 36 ha forestry should be afforded more attention.
- Mitigation measures should be proposed for a number of notable annex 1 bird species outside of Special Protection but within the Oweninny site, including Golden Plover, Hen Harrier and Merlin.

9.1.2. Information Presented at the Oral Hearing:

Applicant, Prescribed Bodies and Observers

Responses to these and other submissions were presented at the Oral Hearing mainly by Mr Gill in his evidence in relation to hydrology and hydrogeology (item 4 'Hydrogeological assessment of sensitive areas at and close to the site') and in his responses to questions; and by Dr Madden in his evidence in relation to terrestrial ecology (item 3 – 'Terrestrial Ecology') and in his responses to questions. Their evidence was heard on day 3 of the hearing. Further evidence presented by Dr Madden, was heard on day 8 (listed as item 31 – 'Summary details of procedures for screening of designated SPA sites for appropriate assessment').

Further submissions in relation to Natura sites were made by Dr Fossitt, and Prof Johnston, on behalf of DAHG, heard on day 6 and listed as items 15 and 16 of the documents received. Dr Brown on behalf of An Taisce was heard at various times and in particular day 8; his written submission is listed as item 33 of the documents received. Mr Galligan made legal submissions, heard on day 8 and listed as item 32 of the documents received. Mr Sweetman and other observers made submissions at various times.

Mr Gill gave evidence in relation to Hydrogeology for the applicant, and responded to the written submissions received by the Board, (item 4).

He described the Bellacorick Iron Flush:

The Iron Flush is located along the western slope of an isolated east-west orientated glacial hill. The western, lower lying side of the hill, where the iron flush exists, slopes

to the west/northwest in the direction of the Sruffaunnamuingabatia Stream. This stream flows along the western boundary of the SAC. The depths of intact peat within the SAC vary between 0.91m and 4.1m. Outside the SAC the peat depths reduce significantly. Boundaries are generally formed along cut facebanks which vary in height from 0.5 to 2m. At the northern boundary there is an existing face bank approx. 1m height and there is a drain at the base; at the western boundary the face bank is approx. 1.5 - 2m height with a drain at the base; the eastern boundary, the glacial hill, has had the peat removed and it slopes down onto the flush; the southern boundary also has a cut face bank of approx. 1.5m – 2m. While the area around the iron flush has been significantly modified, both in terms of topography and hydrology, the iron flush SAC can be best described as an area of intact blanket bog that receives mineral rich groundwater in what is otherwise an ombrotrophic (rain water fed) blanket bog setting. The flush gets its name from the precipitates of iron oxide and other metals that leave an ochre colour in the discharge water from the flush.

Mr Gill described carrying out additional boreholes and trial pits to supplement the site investigations in the EIS, in response to the DAHG concerns, in order to: investigate further the geological conditions in the vicinity of the proposed borrow pit, between it and flush; install groundwater monitoring piezometers (63mm diameter) within zones of highest permeability within the glacial deposits for determination of groundwater levels to define groundwater and groundwater gradients, (shallow flows would be more susceptible to impact than deeper flows) and: undertake where possible falling/rising head tests to determine the permeability of the glacial deposits.

The elevation of the borrow pit is 97-101mOD, and the elevation of the flush is 94 - 97mOD. The borrow pit is topographically higher than the flush and the gradient is south-westerly towards the Sruffaunnamuingabatia stream. With the new investigations they have 65 site investigation locations to define the ground conditions; and 41 groundwater monitoring locations to allow the groundwater flows to be assessed.

Key findings of the investigations are that:

> The sand and gravel deposits in the area of the borrow pit extend in a south-westerly direction as far as the Sruffaunnamuingabatia Stream.
>
> The sand and gravel deposits taper out towards the elevated ridge on the northwest of the borrow pit location.
>
> The sand and gravel deposits taper out in a westerly/north-westerly direction from the borrow pit location towards the iron flush SAC boundary;

The shallow sand and gravel deposits (i.e. the proposed borrow pit source material) was not found to extend to the north beyond the boundary line shown on Fig 1, which accompanies the evidence.

The northern extent of the sand and gravel deposits has been defined. Boreholes show that the groundwater flow direction in the vicinity of the proposed borrow pit is to the southwest, which is in line with the regional groundwater flow presented in the EIS. The potential groundwater flow pathways as described in the Department's submission are not physically possible due to the proven site conditions. Even if a discrete or lateral lense of sand and gravel were present in the ridge line that was not encountered during drilling, groundwater flow from the borrow pit towards the flush would still not be possible, as the groundwater gradient does not exist to drive flow in that direction. The groundwater flow regime is in line with the conceptual model of flow presented in the EIS.

In response to the DAHG advice that turbines be removed, Mr Gill stated that turbine locations was the subject of a very cautious location study and based on the further comprehensive hydrolgeological investigations the issue of proximity does not constrain the current locations. Turbines T13, T24 and T29 are located significantly down-gradient of the flush and its recharge area, and are also located to the west of the Sruffaunnamuingabatia Stream, which is a significant hydrological boundary between these turbines and the Iron flush. In relation to turbines T14 and T 30 as part of the further investigations, a borehole was drilled and a standpipe was installed at each of these proposed turbine locations. Water levels at T30 were found to be approx. 2.5m below the sub-peat water levels from the central part of the flush, groundwater flow direction in the vicinity of T30 is to the west towards the Sruffaunnamuingabatia Stream. Water levels at T14 were found to be approx. the same as the sub-peat water levels at the central part of the flush. The sand at this location has low permeability. T14 is separated from the flush by an east – west ridge. As a result of the prevailing topography and the recorded water levels, Turbines T14 and T 30 are not hydrologically connected to the iron flush or its recharge and therefore their presence cannot alter groundwater flows or water levels within the iron flush area. As a further precaution the use of piled foundations will ensure that dewatering of deep excavations will be avoided, thereby removing the potential for alteration of groundwater levels away from the excavation area towards the iron flush.

The Formoyle Flush

As part of the evidence presented in relation to Formoyle Flush, Mr Gill produced a map indicating the flush. Groundwater in the eastern part of the proposed windfarm site flows to the Fiddaunfura Stream. A series of very low flow, discrete seepage points are

located on the western side of the Formoyle flush along a spring line. These seepage points, along with many other seepage points, that are completely remote to the proposed wind farm development, feed the Formoyle flush area with mineralised groundwater. The areas of T50, T61, T62, T63, T74, T75, T76, T77 and T78 all drain to the Fiddaunfura stream. No part of the proposed windfarm development is in the same surface water drainage catchment as Formoyle Flush. There is no proposed infrastructure within the surface water catchment and therefore no impacts on flush surface water hydrology. The estimated local groundwater catchment to the discrete seepage points on the western side of the flush was determined to be 380,000m^2. A conservative extended maximum groundwater catchment of 2,000,000m^2 is included. Groundwater flow at T76, T77 and T78 could be towards the flush.

As part of the further investigations, mineral subsoil piezometers were installed at proposed turbine locations T65, T77 and T78. These three locations were chosen as three locations are required in order to draw a groundwater contour map. The groundwater level elevations at each turbine location and water elevations within the Fiddaunfura Stream to the north of T62 were used to determine the actual groundwater flow direction and gradient within the overestimated groundwater catchment. The Fiddaunfura Stream will act as a discharge zone for groundwater flow. The groundwater contours show that the groundwater flow direction in this area is in a northerly direction towards the Fiddaunfura Stream and not towards Formoyle Flush. The conservatively overestimated groundwater catchment is incorrect. An updated groundwater catchment is shown in Figure 18 which accompanies the evidence. The groundwater catchment of the Formoyle Flush will not be impacted by any element of the proposed development.

Mapping of the Bellacorick Iron flush - Mr Gill responded to the DAHG concerns in relation to the mapping of the Bellacorick Iron Flush, which DAHG stated should have an area of 8.5ha; stating that the Conservation statement map has been digitised and superimposed on the SAC boundary and they have determined the area to be 6.65ha. A core area of 2.3ha, was identified by the project ecologist, and further mapping undertaken in 2012 shows an outer transition zone between the flush and the surrounding bog, these areas amount to 4.3ha. The present day mapping of the flush area is primarily based on vegetation mapping.

Average year - Hydrological monitoring was assessed against a typical year, based on rainfall figures from Belmullet Synoptic weather station and Eskeragh rain station; and this satisfied Mr Gill that the water level data recorded between 2012 and 2014 at Bellacorick Iron Flush is representative of a typical year and provides a solid baseline to allow characterisation of the flush hydrology and hydrogeology.

Bellacorick Bog Complex - Mr Gill responded to concerns about the potential impact on Bellacorick Bog Complex stating that the Oweninny site is heavily modified in terms of drainage and peat cutting, and as a result the natural hydrology of the area is significantly altered. The EIS, Chapter 18, and the witness statement show that all remaining hydrologically sensitive areas of the site will not be adversely impacted by the proposed development and drying out of the remaining bog areas will not occur.

Lough Dahybaun - Mr Gill responded to concerns from An Taisce, about the potential impact on Lough Dahybaun, from peat cutting and afforestation and further disturbance to the hydrology of the area, stating that the proposed development in the catchment comprises the upgrading of an existing access track, construction of 1.2km of new track and construction of one turbine: T100. A SuDs drainage system will be installed and will integrate with the existing Bord na Móna drainage system in-situ. The access track will be constructed along the existing railway line which minimises sediment disturbance. The existing access track forms a physical barrier separating the wind turbine construction area from the lake. The construction area is 950m from the lake. The construction area drainage will be directed to a settlement pond and subsequently to overland flow. A large artificial lagoon, installed as part of the peat harvesting operations, is located between the access track and L Dahybaun and will provide additional settlement. A manually operated flap valve will be located on the inlet to the settlement ponds which can be closed in the event of an environmental incident. The hydrology of the SAC will not be altered and there will be no potential adverse impact to the Lough.

Knockmoyle/Sheskin and Owenboy Nature Reserves - Mr Gill responded to concerns from An Taisce about the potential for hydrological impacts to Knockmoyle/Sheskin Nature Reserve and Owenboy Nature Reserve, (part of the Bellacorick Bog Complex). The Oweninny River and its tributaries separate the wind farm from the Knockmoyle/Sheskin nature reserve, and acts as a significant hydrological divide. The minimum distance to the nearest turbine is 117m; there is no potential for hydrological impact. The Fiddaunatooghaun River separates wind farm from the Owenboy Nature Reserve, and acts as a significant hydrological divide. The minimum distance to nearest turbine is 2,400m; there is no potential for hydrological impact.

In relation to other peatlands – The remainder of Bellacorick Bog Complex is sufficiently remote and is hydrologically disconnected from the wind farm development and will not be adversely impacted by the proposed development.

Carrowmore Lake - A small section of the Carrowmore Lake Complex SAC abuts the western boundary over a distance of 1.2km. The natural drainage patterns are from west to east and this implies that the SAC is elevated above the development site. It is

hydrologically disconnected by several small streams. The wider Carrowmore Lake Complex SAC becomes increasingly remote and isolated from the subject site.

Owenduff/Nephin - A small section of the Owenduff/Nephin Complex SAC is in close proximity to the south-western boundary of the wind farm site approx. 170m. At this location the SAC is wholly located on the opposite side of the Owenmore River and therefore hydrologically disconnected by a significant drainage divide. The wider Owenduff/Nephin Complex SAC becomes increasingly remote and isolated from the development and will not be adversely impacted.

Petrifying spring and tufa formation - Mr Gill responded to concerns from Mayo County Council regarding the potential for impacts on Annex I petrifying spring and tufa formation priority habitat. They requested clear and specific mitigation, by avoidance, for protection of areas with potential for Annex 1 petrifying spring and tufa formation, priority habitat; stating that there are no roads or turbines located in the estimated groundwater catchment of the spring. During the constraints study the access track from T101 to T86 was moved; there is already mitigation by avoidance.

Dr Johnston gave evidence in relation to Hydrogeology and the Bellacorick Iron Flush, on behalf of the DAHG (item 16).

Dr Johnston accepted that the now established true gradient in the vicinity of the borrow pit is westwards, parallel to the long axis of the flush SAC. The risk to the hydrology of the flush from shallow (>2.5m), wet excavation, as proposed for the borrow put is therefore considered minimal. Nevertheless, the proposed method of excavation i.e. single cells each backfilled before excavation of next, and leaving the existing rail embankment intact, is recognized as a prudent precaution against potential impact. The much improved understanding of the shallow hydrology as revealed by the recent study has also shown a relatively stable environment, as exhibited by the flat responses of the water levels in the monitored piezometers/boreholes. The source, or sources, of the iron-rich groundwater feeding the flush still remains unestablished, hence caution dictates the need for ongoing hydrological monitoring (including water quality) during and for an appropriate number of years post-development. This needs to be accompanied by monitoring of a sufficient array of representative, predevelopment vegetation quadrants at 1, 3, 5 8 years and so on, depending on how long the construction phase extends to and also for at least 5 years post-development. The lack of an obvious shallow source for the recharge area may be quite different from the one depicted in the developer's report from simple hydraulics – and indeed may be relatively remote from the flush itself. Thus there is a need for vigilance in monitoring during the development although turbine foundations and the borrow pit are less likely to affect such deeper pathways.

Mr McCarthy gave evidence for the applicant in relation to Drainage and Sediment Control, (items 6, 6A, 6B, 6C & 6D). He developed a surface water management methodology for the site (chapter 19 and appendix 16 of the EIS) which will mimic the natural drainage patterns and compliment the bog rehabilitation programme: a SuDS approach. The surface water management proposals will maximise the benefits of both the proposed measures and the existing unique site characteristics to control sediment and reduce the risk of increased sediment laden runoff from the site. This will involve the construction of settlement ponds/lagoons at development areas with discharge to a local watercourse. The existing site drainage and water management will provide significant opportunities for additional filtration and settlement following the primary treatment in dedicated settlement ponds/lagoons. The percentages that the footprint occupies of the upper catchments of various rivers are all less than 1%. Following implementation of the mitigation measures no significant residual impacts are anticipated.

Dr Jennings gave evidence in relation to Peat Stability Risk Assessment (PSRA) – for the applicant (items 7 & 7A). The reduced peat thickness on site greatly reduces the risk of peat failure. There is no peat to fail. For peat instability the lower threshold of slope is in the range of 3^0 to 5^0. The ground slope at the proposed wind farm infrastructure locations is mostly less than 3^0 and in many cases less than 2^0. Usually you do not do a stability analysis investigation below 2^0 because the gravitational force is not available to move any peat.

The peat strength on this site is a minimum of 6 kPa and goes up to 30 kPa. Where failures have occurred on other sites he has reviewed, they are less than 4kpa, usually 2kpa.

The Oweninny site has none of the characteristics that would contribute to peat instability.

The peat stability risk assessment methodology used in the EIS was developed by ESBI over a number of years based on their experience of working in peat and is a very conservative and very cautious approach. Overall the site has a markedly high factor of safety, a minimum of 5.73 which is notably greater than that recommended for engineering work where a minimum factor safety of 1.3 is applied.

Dr Kavanagh gave evidence in relation to Aquatic Ecology and Water Quality, for the applicant, (item 5). As stated in section 10.7 of the EIS, rivers draining the Oweninny site are important salmonid fishery rivers and a key angling tourist attraction to the general area. The commercial peat harvesting impacts that occurred in the past have been mitigated by the sediment control system introduced by Bord na Móna and the

extensive bog rehabilitation programme implemented by Bord na Móna, the effects of which are increasingly being observed.

The development of the Oweninny wind farm has potential to cause impacts on the water quality and aquatic ecology of the receiving waters. However, the key potential impacts on water and aquatic ecology have been identified in the EIS as sediment material loss to the aquatic environment, pollution from oils, fuel and waste materials and nutrient enrichment from brash decay associated with forest clearfelling. Good construction practice, which will be imposed on the contractor by the applicant, through a construction environmental management plan, through the construction tender documents, coupled with the implementation of the hydrology and sediment control measures set out in Chapter 19 of the EIS and Appendix 16 of the EIS, the geotechnical mitigation measures set out in Appendix 4 of the EIS and the mitigation measures specified in Section 10.5 of the EIS: will ensure that no significant impact will occur from the construction or operation of Oweninny wind farm.

Dr Kavanagh gave evidence in relation to Air Quality and Climate, (item 28) stating that the limited number of occasions when the batching plant will be used: 30 days for phases 1 & 2 and 55 days for phase 3; and the distance of 2.43km, mean that it is unlikely that dust particles would travel to the flush. He stated that the control system will operate to ensure that there will be no discharge of cement to air during loading from cement tankers to the silos. He considered a possible discharge to air lasting 1 minute: in relation to the composition of the cement in terms of particle size, the wind direction and wind speeds, and the distance of 2.43km between the batching station and the Flush. The predominant wind direction is from S/SW which occurs about 25% of the time. He estimated that 5,810g of dust would be dispersed across an arc of 45^0, of which 42% could potentially reach the Iron Flush area: an arc of 18^0, that is a total of 2,440g; or 0.014g/m^2 on the iron flush. In relation to the potential impact of the deposition on sensitive plant species in the flush, he referred to a review of the effects of dust on vegetation by Farner [2], published in 1993, which indicates that the lowest rates of dust deposition observed to cause an effect were 0.6 and 0.5g/m^2/day. Estimated dust deposition on the Iron Flush arising from a one second release of cement dust from the proposed batching plant is 0.014g/m^2 which is over 40 times lower than the value of 0.6g/m^2 as identified by Farner as being the lowest rate of deposition which can cause impact on the sensitive plant species in the Iron Flush.

Dr Madden gave evidence in relation to Terrestrial Ecology for the applicant, (item 3). He responded to concerns of DAHG (their letter 28/8/2013) that the NIS is not

[2] Farner A. M. The effects of Dust on Vegetation A Review, Environmental Pollution, 79 (1993) 63-75

sufficiently detailed or specific in relation to the process by which it has been determined which conservation objectives, if any, are at risk from the project. Dr Madden stated that the Stage 1 Screening identified 13 Natura Sites within a 15km radius of the site. When the locations and qualifying interests of these sites were evaluated it was concluded that eight sites could be excluded at screening stage as listed at 2.5 of the NIS.

Slieve Fyagh Bog SAC: qualifying interest solely blanket bog excluded because of distance of 2.5km and separated from site by forestry.

Owenduff/Nephin SAC: a very large site with many qualifying interests, including blanket bog and marsh saxifrage. Separated by the Owenmore River and the distance to the nearest part of the construction is 750m.

Broadhaven Bay SAC: a large coastal site selected for a wide range of coastal habitats. There is a distance of over 10km between the sites, and no direct connectivity between the two.

Glenamoy Bog SAC: selected for a range of interests including blanket bog and marsh saxifrage. The distance between windfarm and SAC is 5km and they are separated by plantations.

Owenduff/Nephin SPA: selected for merlin, golden plover and white fronted geese; the reason for exclusion is that the species are largely confined to the SPA and there are no flight lines between the sites.

L Conn and L Cullin SPA: selected for various duck species and also wintering geese, the species are largely confined to the SPA and there are no flight lines between the SPA and the Oweninny site.

Carrowmore Lake SPA: selected for common gull and sandwich tern; the distance is 10km and the species are largely confined to the SPA.

Blacksod Bay Broadhaven Bay SPA: a large site selected for various coastal species 13 km distance, and the wintering species are largely coastal and would not be expected inland.

Screening identified sites which could potentially be impacted by the project: Bellacorick Bog Complex SAC, Bellacorick Iron Flush SAC, Lough Dahybaun SAC, River Moy SAC and Carrowmore Lake SAC. Section 2.4 of the NIS considered the qualifying interests of each site which could potentially be at risk:

Bellacorick Bog Complex SAC - 7 qualifying habitats and species – without mitigation there are risks to all of the qualifying interests from peat stability, impairment of water quality during construction, and impairment of water quality during operation.

Bellacorick Iron Flush SAC – selected for one qualifying interest: marsh saxifrage - without mitigation there are risks from physical access to the site during construction

Lough Dahybaun SAC – qualifying interest – slender naiad; without mitigation there are risks to the qualifying interests from peat stability, impairment of water quality during construction, and impairment of water quality during operation.

River Moy SAC – 11 qualifying interest including salmon, otter, raised bog and degraded raised bog; without mitigation there are risks to 5 of the listed species from peat stability, impairment of water quality during construction, and impairment of water quality during operation. The other annex 1 habitats were considered not to be at risk due to the distance and lack of connectivity.

Carrowmore Lake SAC – selected for 4 qualifying habitats and species: blanket bog, marsh saxifrage, and a rare moss – shining sickle moss; without mitigation there are risks to the two annex 1 habitats from peat stability; the annex II species are considered not to be at risk due to the geographical separation and lack of connectivity.

Dr Madden responded to concerns from DAHG in relation to bird collision risk: that further consideration should be given to collision risk particularly for larger Annex 1 birds species: Whooper Swan and Greenland white-fronted goose; and in-combination effects with power lines and other wind farms; that it is generally accepted that collision risk depends on a range of factors, especially location and local topography and presence of sensitive species.

The findings of surveys of wintering birds 9.3.7.4 of the EIS, carried out over 2 full winters showed that the species referred to are scarce or rare in the Oweninny area. The Whooper Swan is at most an occasional winter visitor in small numbers. Up to about 1940 a large population of Greenland White-fronted Geese occurred on the Bellacorick bogs but deserted the boglands with the arrival of commercial peat harvesting. A flock of c 100 geese subsequently utilised reclaimed grassland in the same area in the 1970s but abandoned the area by the late 1980s. The nearest regular population is a flock of geese at Carrowmore Lake c10km to the west.

The EIS considers the Greenland white-fronted geese in relation to other wind farms. No Greenland white-fronted geese were recorded during winter surveys for Cluddaun windfarm or Corvoderry wind farm. There would be no in-combination effects. At Corvoderry two Whooper Swans were recorded in 2011 to the south of the Corvoderry

site. The Cluddaun EIS recorded one sighting of a flock of whooper swans and concluded that the potential for collision in terms of significance for this species is low. Occasional birds, probably associated with the Carrowmore Lake flock, can be expected to pass through the Oweninny-Knockmoyle area at times. With such low frequency of flightlines by swans and geese, there is no significant risk of collision with turbines. When swans occur on site, local movements between lakes is typically below 20 m height (so as to minimise energy usage) which is well below the rotor sweep of the turbines.

In relation to in-combination effects with overhead lines. There will be 3.9km of new overhead lines within the site. While overhead lines can pose a risk to passing birds it is considered that this is not significant due to infrequent usage. There are two existing 110 kV overhead lines in the area one running east-west from Ballina and one running in a north-westerly direction from Castlebar, merging south of the Oweninny site. The connection for phases 1 & 2 will be to the existing line, as the route will remain the same no change from the perspective of collision is envisaged. A 38kV line runs west to the Mullet peninsula. Per local NPWS management there is no known instance of bird casualties from the existing overhead lines.

Responding to the DAHG request for comparison with previous bird data; which states that at pre-planning stage they advised that data be compared to enable trends to be examined. The 2003 appraisal of one breeding bird survey, used 2 transects to record birds. The assessment based on a single survey is not best practice. The current survey was carried out over 3 seasons 2010-2012 with the use of both transects and Vantage Points as well as focused search for wetland birds and specific search for Merlin. A scientific comparison is not possible. Reference is made to the fact that both Ringed Plover and Common Sandpiper were recorded breeding on site at the time. It is considered likely that populations of scarce breeding species such as Teal, Little Grebe and Common Sandpiper have increased since 2003 due to the bog rehabilitation.

Responding to the DAHG concern in relation to the Bellacorick Iron Flush; marsh saxifrage could only be affected by hydrological and/or hydrochemical change.

A full account of the hydrological workings of the flush system is presented in the statement of another witness. The very detailed hydrological appraisal that has been carried out for the EIS and NIS and contributes significantly to the understanding of how the flush functions; there is also vegetation and rare plant survey and mapping that was carried out for the project. From a review of all hydrological data it has been established that no reasonable scientific doubt remains as to the absence of any impact on the conservation objectives of the Bellacorick Iron Flush SAC.

In relation to the DAHG concerns regarding cement dust from the batching plant being wind borne and reaching the flush, details are given by another witness; the cement will not be exposed to the open air.

Dr Fossitt representing the DAHG gave evidence to the hearing, (item 15). The Board is the competent authority with responsibility for carrying out an appropriate assessment of the proposed development, covering its entire footprint and all associated infrastructure works. In accordance with Section 177V of the Planning and Development Act, 2000, as amended, this must include a determination under Article 6(3) of the Habitats Directive as to whether the proposed development would adversely affect the integrity of a European site.

In submissions to the Board, the Department raised concerns regarding the adequacy and detail of the NIS. The Board was advised that:

1 the NIS was not sufficiently detailed or specific in relation to the process by which it determined what conservation objectives, if any, are at risk from the project, on its own and in combination with other plans and projects,

2 the NIS did not adequately present the scientific assessments of those risks, and

3 it had not been shown that conservation objectives (generic in the case of nearby European sites) were used in the screening process.

It appears, on the basis of the information available to the Department, that these points have not been addressed through the provision of a revised NIS or additional scientific data and analysis, except with respect to the additional hydrogeological investigations undertaken in the case of flushes in Bellacorick Iron Flush SAC and Bellacorick Bog Complex SAC.

Section 3.1.1 of Dr Madden's witness statement includes a limited response to the above in the form of a table 'Natura 2000 sites excluded at Stage 1 of the AA process', and text relating mainly to screening. The qualifying interests of SACs and special conservation interests of SPAs are listed but there is no specific reference to the sites' conservation objectives. Where conservation objectives are generic, as is currently the situation in the case of the European sites listed, they refer to maintaining or restoring the favourable conservation condition of the annexed habitat(s) and/or species for which the sites have been selected. There is a direct link with 'favourable conservation status' which is defined for habitats and species in Article 1 of the Habitats Directive.

Ornithology

The Department does not concur with the exclusion of all SPAs from assessment in the NIS (as per the NIS and the table in section 3.1.1 of Dr Madden's witness statement), and does not agree that there has been sufficient scrutiny of the range of European sites, specifically SPAs, requiring consideration as part of the screening process. It should be noted that screening for appropriate assessment is carried out to assess, in view of best scientific knowledge, if the proposed development, on its own and in combination with other plans and projects, is likely to have a significant effect on a European site.

It is considered that maps showing the location and scale of the proposed development in combination with existing, permitted and proposed windfarms and powerlines, SPAs and their special conservation interests, other areas of importance for birds (including SACs and NHAs), known and potential migration routes and flight paths and flight heights should be used to support and inform screening for appropriate assessment. In relation to migration routes of the Birds Directive Annex 1 species, Whooper swan, data presented in Griffin et al (2011) are of potential relevance to Co. Mayo and this proposed development.

The European Commission's guidance on wind energy developments and Natura 2000 (page 42) states that, when screening, '*the assessment of significance needs to be done on a case-by-case basis… the loss of a few individuals may be insignificant for some species but may have serious consequences for others, like some populations of eagles and vultures and other threatened species*'. The guidance goes on to explain that population size, distribution, range, reproductive strategy and life-span will all influence the significance of the effects. The issues raised by this guidance do not appear to have been addressed in screening or in the NIS.

The Department reiterates previous advice to the Board that there is insufficient consideration of the potential effects on birds, their flight paths and migratory routes arising from the scale of the turbines and of the development, and from possible in combination or cumulative effects with powerlines and other windfarms. The Board is advised that the likely significant effects of the proposed development on various SPAs, particularly those selected for the conservation of the Birds Directive Annex 1 species, Greenland White-fronted Goose and Whooper Swan, require appropriate assessment.

Among other things, the assessment should address collision risks and changes to the ranges and populations of species of relevance, over time periods of relevance with respect to the Birds Directive and appropriate assessment in Ireland. This should include the Bog of Erris flock of Greenland White-fronted Geese, (Fox et al 1994* &

Burke et al in prep)[3] and changes to the Oweninny site resulting from the Cutaway Bog Rehabilitation Plan which has been in place for the Bord na Móna peatlands since 2003.

Other bird species or groups of particular conservation concern occurring at the site are the Annex 1 species Hen Harrier, and breeding waders (see, for example, Copland et al 2011)[4]. In relation to Hen harrier, which roost in the Louth Dahybaun area, birds are known to fly to and from the roost in all directions, including to the north through the windfarm site.

In relation to ornithology, it is the Department's advice to the Board that:

- The appropriate assessment of the likely significant effects of the project, on its own and in combination with other plans and projects, that must be carried out by the Board for the current application needs to include relevant SPAs and bird populations which are not currently covered in the NIS;
- There should be full consideration of the likely effects of the project, alone and cumulatively with other projects, on Hen Harrier, other Annex 1 bird species, breeding waders, and other wild birds occurring at the site, including in the context of the Birds Directive, favourable conservation status at national level, and the changing habitat and environmental conditions at the site resulting from rehabilitation of the commercially worked peatlands, when the EIA is carried out by the Board.
- Mitigation should be sufficiently comprehensive to ensure that it can be demonstrated that the requirements of the Wildlife Acts, 1976-2000, will be met with regard to the protection of breeding birds, their nests and unflown young during construction and operational stages of the development. In this regard, there are concerns that aspects of mitigation for works occurring during the bird nesting season are to be agreed with this Department during construction.

Monitoring

In relation to ecological or related monitoring, it is the Department's advice to the Board that:

[3] Burke et al is not available on the NPWS website. Fox et al is

[4] This appears to refer to a publication of Birdwatch Ireland available by subscription

- Monitoring may be specified to determine the effectiveness of proposed mitigation measures but may not be used to address data gaps or deficiencies in information required to carry out an appropriate assessment;

- Proposals for monitoring, including details of monitoring locations, should be available at the application stage, and should not be deferred to be agreed at a later stage (i.e. post consent);

- All areas where potentially disturbing or damaging monitoring is to occur should be within the current application area, and should be covered by the main project consent.

The Board must satisfy itself, before consent is given for the project, that there is no remaining reasonable scientific doubt regarding the potential for the development to have adverse effects on the integrity of a European site(s).

Dr Madden, on behalf of the applicant, gave evidence in the form of responses to questions from Mr Fitzsimons and submitted a document entitled 'Summary details of process for screening of designated SPA sites for appropriate assessment', (item 31).

The sites were examined for potential impacts – loss or physical disturbance to habitats within the SPA; peat stability impacting on SPA; or water quality impacting on SPA.

In relation to **Owenduff/Nephin Complex SPA**

Greenland White-fronted Geese – wintering (page 9.48 of the EIS). The Owenduff goose population is a sub-flock of the main Bog of Erris population. There are 18 bogland feeding sites, scattered over an area of 200km^2 (cited in Fox et al 1994). Numbers declined in recent years with an average peak of 27 between 1998/99-2002/3 (NPWS sites synopsis). There are 4 other sub-flocks in the Bog of Erris population and in winter 2010/11 the maximum count for the entire population was 66 birds.

The Bellacorick- Keenagh-Dooleeg More sub-flock became extinct in the 1980s (EIS p 9.48) after the harvesting of the bogs (cited in Fox et al). An overall reduction in goose numbers and a contraction in their range has been recorded in recent years. Former goose feeding sites on blanket bog in the northernmost part of the SPA are now deserted though sites further south are still used.

While there is a historic linkage between the Oweninny site and the Bog of Erris population, this no longer exists as the bogs formerly used have been commercially harvested. There are now no regular feeding or roost sites in the northernmost part of

the SPA (total site area 25,707ha) and the nearest area used by the geese is in excess of 5km from the SW boundary of the Oweninny site.

Golden Plover breed sparsely on open bogs within the SPA with 14 pairs recorded within the SPA in 2004. Nesting Golden Plover are extremely territorial during the summer and both parent birds will remain consistently in the nesting area whilst nesting continues. The detailed studies carried out at Oweninny over the three summers recorded one territorial pair in the north-west sector of the site (O'Boyle's Bog) in each year. This pair is not associated with the SPA area.

Merlin – merlin breeds sparsely within the SPA, with between 4-8 pairs estimated within the SPA. Nesting in old crows nests in trees and hunting over the bogs. Nesting merlin are rare within the SPA and wider area. The detailed studies carried out on the Oweninny site over the three summers recorded one possible bird in 2010 but proof of breeding was not obtained. A sighting of a female merlin was made near the Corvoderry site in May 2012 but this bird was not seen subsequently.

It was concluded that considering the relevant conservation objectives, there is no potential for significant effects on Owendufff/Nephin SPA.

In relation to **L Conn & L Cullin SPA**

Greenland White-fronted Geese – wintering (section 2.3.1 of the NIS). The geese numbered 9 between 1994/95-1998/99 period but only 44 were recorded in spring 2012. The geese feed mainly on Annagh Island (grassland) and at a grassland shoreline site near Cloonaghmore Point. There are also traditional bog feeding areas in the Ox Mountains used by the flock.

There are no historic linkages involving geese between the Oweninny site and the L Conn/Ox Mountains (10km+), nor would such be expected due to the distance between the areas.

Detailed studies carried out at Oweninny over two winters (p 9.48 of the EIS) support the conclusion regarding the absence in the Oweninny area of any regular goose flight lines between feeding and roost sites.

Tufted Duck – wintering (Section 2.3.1 of the NIS)

L Conn & L Cullin support a nationally important wintering population (428) of Tufted Duck. Tufted Duck winter on medium to large sized lakes throughout much of Ireland but especially the midlands and west. They feed on animal matter and are entirely associated with lakes; they do not graze or use bogs.

Up to 4 Tufted Duck were recorded on Lough Dahybaun during the winter bird surveys (p 9.49 of the EIS). There are no linkages involving Tufted Duck between Oweninny and L Conn (c10km), nor would such be expected due to the distance between the areas and the ecology of the bird which are confined to medium and large water bodies.

Common Scoter – nesting (section 2.3.1 of the NIS)

L Conn & L Cullin is one of only four sites in the country where Common Scoter breed. However a breeding survey in 2012 recorded only 1 pair and no broods. The ducks frequent densely vegetated islands during the nesting season. There are no nesting sites west of L Conn/Cullin.

The breeding Common Scoter population is strictly confined to the L Conn/Cullin system and there is no movement of birds from the lakes during the breeding season.

The detailed studies carried out at Oweninny over the three breeding seasons support the conclusion regarding the absence in the Oweninny area of any possibility for the occurrence of Common Scoter

Common Gull – nesting (section 2.3.1 of the NIS)

L Conn & L Cullin is a regular breeding site for Common Gull, with 40 pairs in 2000. The gulls breed on islands in the lakes and feed locally.

The breeding Common Gull population is confined to the L Conn/ Cullin wetland system and there is no known movement of birds from the lakes westwards to Oweninny (c10km) during the breeding season.

The detailed breeding surveys carried out at Oweninny over the three breeding seasons recorded between 5 -10 pairs of Common Gulls breeding, scattered on small lakes throughout the site. The gulls were present constantly through the summer and were not commuting to other lakes outside the site.

It was concluded that considering the relevant conservation objectives, there is no potential for significant effects on L Conn & L Cullin SPA.

In relation to **Carrowmore Lake SPA**

Common Gull & Sandwich Tern – nesting. Both of these species nest on Derreens Island within the lake. 59 pairs of Common Gull bred in 2000. However Sandwich Tern has not bred in recent years (164 pairs in 1984).

The breeding gulls and terns, though the latter is not present in recent years, are confined to the Lough Carrowmore wetland system and there is no known movement of birds from the lakes southwards to Oweninny (c 10km) during the breeding season.

The detailed breeding surveys carried out at Oweninny site over the three breeding seasons recorded between 5-10 pairs of Common Gulls breeding scattered on small lakes throughout the site. The gulls were present constantly through the summer and were not commuting to other lakes outside the site.

It was concluded that considering the relevant conservation objectives there is no potential for significant effects on L Carrowmore Lake SPA.

Greenland White-fronted Geese at Carrowmore Lake – while the SPA is not selected for geese and hence geese do not determine the conservation objectives for the site, it was noted that there is a small wintering population (20-30 birds) associated with the lake (9.3.7.4 of the EIS). These birds are part of the Bog of Erris population and appear to use the site for both feeding (along shoreline) and roosting (on water or islands) (p 9.49 of EIS).

The detailed studies carried out at Oweninny site over two winters did not record any regular movement of geese within the Oweninny area. It can be concluded beyond reasonable scientific doubt that the proposed project will not affect the Greenland White-fronted Geese population at the Carrowmore Lake SPA.

In relation to **Blacksod Bay/ Broadhaven Bay SPA** (Section 2.3.1 of NIS)

Sandwich Tern – nesting: a nationally important population 160-170 pairs in 1994 and 81 pairs in 1985. The breeding terns are confined strictly to Inishderry Island and there is no known movement of terns from the coastal strip eastwards to Oweninny (>15km distance) during the breeding season. The detailed breeding surveys carried out at Oweninny over the three breeding seasons did not record any Sandwich Terns.

Wintering Waterbirds – the SPA supports large numbers of wintering wetland birds, with the following selected as qualifying interests (p 8 of witness statement): Great Northern Diver, Light-bellied Brent Goose, Common Scoter, Red-breasted Merganser, Ringed Plover, Sanderling, Dunlin, Bar-tailed Godwit and Curlew.

Great Northern Diver and Common Scoter are strictly marine. The other species are found mainly along the intertidal coastal strip. Curlew occurs inland to feed in fields. All of the qualifying interest species are strongly associated with the coastal strip and offshore waters and would not be expected to visit the Oweninny site (c13km inland) at

any time (p 37 of NIS). The detailed winter surveys carried out at Oweninny over two seasons did not record any of these species within the site or passing over it.

It was concluded that considering the relevant conservation objectives, there is no potential for significant effects on Blacksod Bay/ Broadhaven Bay SPA**.**

Sites in excess of 15km distance from Oweninny

Two further sites were considered but dismissed from the screening evaluation due to their distance in excess of 15km and also the range of qualifying species.

Killala Bay /Moy Estuary SPA **(Site code 004036)**

Qualifying interests (wintering)

Ringed Plover

Golden Plover

Grey Plover

Sanderling

Dunlin

Bar-tailed Godwit

Curlew

Redshank

None of the species occur at the Oweninny site in winter. All of the species are largely or entirely confined to the coastal strip and would not be expected at inland locations.

Illanmaster SPA (site code 004074)

Qualifying interests

Storm Petrel (breeding)

Puffin (breeding)

These two seabird species are strictly marine, only coming ashore to nest. This site was not considered in the screening exercise because of the 17km distance, and as none of the qualifying species occur at Oweninny or anywhere inland in Co Mayo.

Dr Madden further stated that as regards the Greenland white fronted geese, as outlined in the NIS and EIS and his witness statement, they carried out very detailed surveys of wintering birds throughout two seasons. They were concentrating on hen harriers but they looked at all species. During the entire two winters of surveying they had one instance of two geese on site and a second record of a flock in October migrating and they flew over part of the site. On that basis he was confident in concluding that geese are not regular on the site or in the immediate vicinity of the site. In chapter 9 he gives a detailed account of the history of Greenland white fronted geese, Fox et al, shows that the there is no population in that area. The flock which once existed is now extinct. There are no regular daily flightlines or even seasonal flightlines across the site.

Regarding collision risk modelling and stochastic modelling – this was not carried out because of the lack of data, lack of occurrences. There was one instance of geese during the two winters. If birds were there on a regular basis and they were recording flightlines …but they have such an insignificant presence on site that it would be a nonsense.

Regarding mortality prediction - as presented in the EIS and NIS the birds are just not there. In this case based on their surveys they were able to conclude that there was no reasonable doubt, that there would be a risk of collision, that would affect the birds at a population level. Whooper swans and geese are quite widespread throughout the island of Ireland. They will pass over areas which may not be wetlands. You can never rule out anything. They have amassed a lot of information over three years. You have to assess the information you have and draw reasonable conclusions based on that information.

Dr Fossit responded to the applicants response - She is not a birds specialist, however, the screening that was required to determine: 1) whether or not NIS was required; and 2) to define the extent of that assessment and the number of sites and range of areas to be included and conservation objectives of relevance, the scientific basis for doing that and for excluding sites at a greater distance than the 4 sites that were given consideration, is not presented in any way.

In relation to migration routes, given the scale of the windfarm measuring roughly 10km east west, there is potential for impact on migratory populations. There is no night-time data on bird populations potentially moving across the site.

Regarding the protection of nesting birds; and whether details of mitigation will be to be agreed at a time that the project is under construction. It is for the Board to decide whether or not details of mitigation could be deferred to post consent. The

Department's view is that all mitigation should be set out prior to consent to make it clear what will happen; to ensure that all sensitive ecological receptors are protected fully.

9.2. Screening

The first exercise to be carried out by the Board is screening, in order to determine the Natura sites which should be subject to appropriate assessment. If it cannot be excluded, on the basis of objective information *that the proposed development will have a significant effect on a* Natura *site, either individually or in combination with other plans or projects* in view of the sites conservation objectives, it must be subject to appropriate assessment. Where doubt exists about the risk of a significant effect, an AA must be carried out. In assessing the risk of such effects, the significance must be established in the light of, among other things, the characteristics and specific environmental conditions of the site concerned, and the likely effects of the plan or project. If a plan or project is likely to undermine any of the site's conservation objectives (i.e. objectives that relate to the Birds or Habitats Directives), it must be considered likely to have a significant effect on that site (EC, 2006).

9.2.1. Description of the proposed development

The proposed development is a 370 Mega Watts (MW) wind farm to comprise:

- 112 wind turbines with a maximum base to blade tip dimension of 176 m., a tower height in the range 100 - 120 m, with three blades, each with a blade rotor diameter in the range 90 - 120 m. The turbine towers will be either of tubular steel design or hybrid concrete/steel tapering from about 4.5 m diameter at the base to about 3.2 m diameter at the top. A three blade rotor will be attached to the nacelle. The blades will be made of fibreglass-reinforced epoxy material. The nacelle will contain the generator and computer control unit which will monitor of all major functions of the turbine. Two types of wind turbine foundation are envisaged depending on the results of future geotechnical investigations. On good ground a concrete foundation with diameter of approximately 22m (circular or hexagonal shape) will be used. On difficult ground or close to sensitive areas with high dependence on groundwater, reinforced concrete piles will be used. The pile will be approximately 900mm diameter and with an average depth of 17m. The turbine blades will rotate at about one revolution every 3 – 5 seconds, depending on wind speed. The turbines will commence operation at a wind speed of 4 m/s, will attain maximum output at 15 m/s and will shut down when the wind speed reaches a 10-minute average of 25 m/s.
- 8 no. permanent wind measurement anemometer stations.

- 2 no. 110 kV overhead lines comprising angle masts and twin wooden pole sets connecting to the existing Bellacorick substation by underground electricity cables 3.9km
- 4 no. electrical substations
- Underground cables from the wind turbines to the substations
- 85 kilometres of access tracks (c.6km of upgraded existing track, remainder new), including 15km constructed over deeper peat either as floating tracks or by excavation to an average depth of 2m below ground and backfilling:
- A visitors center
- 1 no. operation and maintenance building (centre of site, adjacent T68)
- in addition there will be temporary works will include: 1 no. borrow pit to provide material for access track construction (NE corner, adjacent T37), 1 no. concrete batching plant with associated materials storage (centre of site, adjacent T68), Contractor(s) construction lay down areas and materials storage areas.

9.2.2. Potential Effects

The potential effects of the project alone or in combination with other projects or plans, on the Natura 2000 sites are:

Loss of, or physical disturbance to, habitats

Potential effects on peat stability

Potential impairment of water quality due to construction works

Potential impairment of water quality during operation phase

Potential impacts on hydrology

Potential impacts on bird species

Potential impacts on aquatic species

9.2.3. Natura Sites

The Natura Sites which could potentially be impacted are:

SAC's:

Bellacorick Iron Flush SAC (site code 0466)

Laugh Dahybaun SAC (site code 02177)

Bellacorick Bog Complex SAC (site code 0922)

Owenduff/Nephin SAC (site code 0534)

River Moy SAC (site code 02298)
Carrowmore Lake SAC (site code 0476)
Broadhaven Bay SAC (site code 0472)
Slieve Fyagh Bog SAC (site code 0542)
Glenamoy Bog Complex SAC (site code 0500)

SPA's:

Owenduff/Nephin SPA (site code 004098)
Lough Conn & Lough Cullin SPA (site code 004228)
Carrowmore Lake SPA (site code 004052)
Blacksod Bay / Broadhaven Bay SPA (site code 004037)
Killala Bay/Moy Estuary SPA (site code 004036)
Mullet Peninsula SPA (site code 004227)
Duvillaun Islands SPA (site code 004111)
Inishglora and Inishkeeragh SPA (site code 004084)
Inishkea Islands SPA (site code 004004)
Termoncarragh Lake and Annagh Machair SPA (Site code 004093)
llanmaster SPA (site code 004074)

The following is a screening assessment of the likely significant of potential effects of selected sites in view of their conservation objectives. SACs & SPAs which have been the subject of stage 2 assessment in the NIS are not included here.

SPAs

9.2.4. Owenduff/Nephin SPA (site code 004098)

Conservation Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Merlin (Falco columbarius) [breeding]

Golden Plover (Pluvialis apricaria) [breeding],and

Greenland White-fronted Goose (Anser albifrons flavirostris) [wintering]

The Conservation Plan for the SAC & SPA lists as main conservation objectives

To maintain the Annex I habitats for which the SAC has been selected at favourable conservation status; active blanket bog (approximately 64% of the site), Northern Atlantic wet heaths, Alpine and boreal heath, oligotrophic waters with few minerals, oligotrophic to mesotrophic standing waters, natural dystrophic lakes and ponds, water courses of the plain to montane levels, transition mires and quaking bogs and Juniperus communis formations.

To maintain the Annex II species for which the SAC has been selected at favourable conservation status; Shining Sickle Moss, Marsh Saxifrage, Otter and Salmon.

To maintain the species for which the SPA has been selected at favourable conservation status; Greenland White-fronted Goose, Golden Plover, Merlin and Peregrine Falcon.

To maintain the extent, species-richness and biodiversity of the site.

To continue to develop Ballycroy National Park, Co. Mayo.

To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

In relation to Greenland White-fronted Geese it states that the site is utilised for both feeding and roosting during the winter by a small flock Greenland White-fronted Geese. A number of bog and wet grassland feeding areas are known, scattered throughout the site. The birds utilise small lakes for roosting. The number of Greenland White-fronted Geese over-wintering in the Owenduff-Nephin complex has declined over the past number of years. While this is mainly due to factors outside the site, over-grazing of their feeding grounds and disturbance may be contributing factors.

In relation to Golden Plover it states that Golden Plover breed within the site. Several pairs were recorded in the Owenduff headwaters in the late 1960s and along the Nephin Beg Ridge in 1981. More recently, 14 breeding pairs were recorded in 2004 during the Upland Bird Survey. This survey was carried out in Mayo and Connemara and the main focus was detecting and determining of Golden Plover breeding status. The extensive tracts of blanket bog and heath within the Owenduff-Nephin SPA provide excellent habitat for this species.

In relation to Merlin it states that Merlin typically hunt over blanket bog and heath using open ground among heather, or in old tree nests of crows for breeding. Merlin are

known to use this site for hunting and there are a number of known Merlin plucking posts. There is however, no quantitative information relating to breeding numbers. It is estimated that there are between four and eight Merlin breeding pairs within the site.

In relation to Peregrine Falcon it states that two out of three Peregrine breeding territories within the site are generally occupied in any one year. The cliffs provide excellent nesting ledges.

Assessment

Greenland White-fronted Geese

White-fronted Geese which once wintered at the Oweninny site was part of a population associated with an extensive Bog of Erris site. The commercial harvesting by Bord na Móna on the subject site led to the extinction of the Oweninny flock in the 80's. The remaining Bog of Erris populations are located in a number of other areas removed from the subject site.

The Owenduff Nephin SPA is a large site comprising 26,033 ha (per conservation plan), I accept the evidence given at the oral hearing that there are now no regular feeding or roost sites in the northernmost part of the SPA and that the nearest area used by the geese is in excess of 5km from the SW boundary of the Oweninny site.

Golden Plover

I accept the evidence given at the oral hearing that the pair of Golden Plover breeding on O'Boyle's Bog is not associated with the SPA area.

Merlin

The evidence given in the EIS and at the oral hearing is that suitable foraging habitat in the form of upland and lowland blanket bog for wintering merlin occurs outside the site boundary; that detailed studies carried out on the Oweninny site over the three summers recorded one possible bird in 2010 but no proof of breeding; that a sighting of a female merlin was made near the Corvoderry site in May 2012 but this bird was not seen subsequently; and thatthe species is largely confined to the SPA with no flight lines between the sites.

Peregrine Falcon

No occurrence of peregrine falcon was recorded on the subject site.

Conclusion

I consider therefore, that in view of conservation objectives of the Owenduff / Nephin SPA, the likely effects of the proposed development on these objectives will be not significant.

In relation to in-combination effects with other windfarms in the vicinity, those permitted or the other windfarm currently planned, in view of my conclusion that there will not be significant impacts on the protected site from the subject development, I consider that adverse in-combination effects are not such as to require appropriate assessment.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not in-combination effects with grid west would require appropriate assessment, since a line has yet to be determined. Prior to consent the grid west project will be required to undergo screening / appropriate assessment.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Owenduff/Nephin SPA (site code 004098), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.5. Lough Conn & Lough Cullin SPA (site code 004228)

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Tufted Duck (Aythya fuligula) wintering

Common Scoter (Melanitta nigra) breeding

Common Gull (Larus canus) breeding

Greenland White-fronted Goose (Anser albifrons flavirostris) wintering, and Wetlands.

Common Gull is recorded breeding on the subject site. I accept the evidence given at the oral hearing in relation to Tufted Duck, Common Scoter and Common Gull that these species, which comprise part of the conservation objectives of the protected site, could not be impacted by the proposed development because of distance,10km separation, and as none of the selected bird species of the protected site have regular flight paths over the subject site.

I accept the evidence given at the oral hearing in relation to Greenland White-fronted Goose: a) that there is a low frequency of occurrence on the subject, and; b) that local

movements between lakes is typically below 20 m – 30m height to minimise energy usage, which is below the rotor sweep of the turbines; and that there is no significant risk of collision with turbines and no significant impact on the Lough Conn & Lough Cullin population of Common Gull.

Conclusion

I consider therefore, that, in view of conservation objectives of the Lough Conn & Lough Cullin SPA, the likely effects of the proposed development on these objectives, will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, those permitted or the other windfarm currently planned, in view of my conclusion that there will not be significant impacts on the protected site from the subject development I consider that adverse in-combination effects are not such as to require appropriate assessment.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west, it is not possible to assess whether or not in-combination effects with grid west would require appropriate assessment, since a line has yet to be determined. Prior to consent the project will be required to undergo screening / appropriate assessment.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Lough Conn & Lough Cullin SPA (site code 004228), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.6. Carrowmore Lake SPA (site code 004052)

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Common Gull (Larus canus) breeding,and

Sandwich Tern (*Sterna sandvicensis*) breeding

Assessment

Common Gull is recorded breeding on the subject site. I accept the evidence given at the oral hearing in relation to Common Gull and Sandwich Tern, that the Carrowmore Lake population of these species, could not be impacted by the proposed development

because of distance,10km separation between the sites, and as none of the selected bird species of the protected site have regular flight paths over the subject site.

Conclusion

I consider therefore, that, in view of conservation objectives of the Carrowmore Lake SPA, the likely effects of the proposed development on these objectives will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, those permitted or the other windfarm currently planned, in view of my conclusion that there will not be significant impacts on the protected site from the subject development I consider that adverse in-combination effects are not such as to require appropriate assessment.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west, it is not possible to assess whether or not in-combination effects with grid west would require appropriate assessment, since a line has yet to be determined. Prior to consent/development the project will be required to undergo screening / appropriate assessment.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Carrowmore Lake SPA (site code 004052, in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.7. Blacksod Bay / Broadhaven Bay SPA (site code 004037)

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Great Northern Diver (*Gavia immer*) [wintering]

Light-bellied Brent Goose (*Branta bernicla hrota*) [wintering]

Common Scoter (*Melanitta nigra*) [wintering]

Red-breasted Merganser (*Mergus serrator*) [wintering]

Ringed Plover (*Charadrius hiaticula*) [wintering]

Sanderling (*Calidris alba* [wintering]

Dunlin (*Calidris alpina*) [wintering]

Bar-tailed Godwit (*Limosa lapponica*) [wintering]

Curlew (*Numenius arquata*) [wintering]

Sandwich Tern (*Sterna sandvicensis*) [breeding],and

Wetlands

Assessment

I accept the evidence given at the oral hearing in relation to these species that the wintering species are largely coastal and would not be expected inland; and furthermore for the 10 species for which the SPA is designated, that the separation distance of 13km and absence of regular flight paths over the subject site means that there could not be impacts on the conservation objectives of the protected site.

There is no potential for impacts on the wetland habitat because no water pathway exists between the subject site and the distant protected site.

Conclusion

I consider therefore, that, in view of conservation objectives of the Blacksod Bay / Broadhaven Bay SPA the likely effects of the proposed development on these objectives, will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, those permitted or the other windfarm currently planned, in view of my conclusion that there will not be significant impacts on the protected site from the subject development I consider that adverse in-combination effects are not such as to require appropriate assessment.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not in-combination effects with grid west would require appropriate assessment, since a line has yet to be determined. Prior to consent the project will be required to undergo screening / appropriate assessment.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Blacksod Bay / Broadhaven Bay SPA (site code 004037), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.8. Killala Bay/Moy Estuary SPA (site code 004036)

Objective: To maintain the favourable conservation condition of wetland habitat in Killala Bay/Moy Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

To maintain the favourable conservation condition of the wintering waterfoul:

Ringed Plover (Charadrius hiaticula)

Golden Plover (Pluvialis apricaria)

Grey Plover (Pluvialis squatarola)

Sanderling (Calidris alba)

Dunlin (Calidris alpina alpine)

Bar-tailed Godwit (Limosa lapponica)

Curlew (Numenius arquata),and

Redshank (Tringa tetanus)

Assessment

I accept the evidence given at the oral hearing in relation to these species that none of the species occur at the Oweninny site in winter; and that all of the species are largely or entirely confined to the coastal strip and would not be expected at inland locations.

There is no potential for impacts on the wetland habitat because of distance, in excess of 15km and because no surface water pathway exists between the subject site and the protected site.

The presence of Ringed Plover and Golden Plover breeding within the subject site and the occurrence of a single Dunlin on one occasion in 2009 and on one occasion in 2012 are not considered to be associated with the protected site and are referred to in the section ‘EIS’ under the heading flora and fauna.

Conclusion

I consider therefore, that, in view of conservation objectives of the Killala Bay/Moy Estuary SPA the likely effects of the proposed development on these objectives, will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, those permitted or the other windfarm currently planned, in view of my conclusion that there will not be significant impacts on the protected site from the subject development I consider that adverse in-combination effects are not such as to require appropriate assessment.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not in-

combination effects with grid west would require appropriate assessment, since a line has yet to be determined. Prior to consent the project will be required to undergo screening / appropriate assessment.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Killala Bay/Moy Estuary SPA (site code 004036), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.9. Mullet Peninsula SPA 004227

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Corncrake (Crex crex) [A122]

Assessment

This species does not occur on the subject site. This fact together with the separation distance of in excess of 15km means that there will not be any impact on the protected site.

Conclusion

I consider therefore, that, in view of conservation objectives of the Mullet Peninsula SPA and the likely effects of the proposed development on these objectives, which will not be significant, appropriate assessment is not required.

In relation to in-combination effects with other windfarms in the vicinity, there will be no impact and therefore no in-combination effects with other windfarms. Similarly in relation to in-combination effects with grid west, there will be no impact and therefore no in-combination effects with grid west.

9.2.10. Duvillaun Islands SPA [site code 004111]

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

Fulmar (Fulmarus glacialis) breeding

Storm Petrel (Hydrobates pelagicus) breeding, and

Barnacle Goose (Branta leucopsis) wintering

Assessment

The species are largely coastal and do not occur on the subject site. This together with the separation distance in excess of 15km means that there will not be any impact on the protected site.

Conclusion

I consider therefore, that, in view of conservation objectives of the Duvillaun Islands SPA the likely effects of the proposed development on these objectives, will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, those permitted or the other windfarm currently planned, in view of my conclusion that there will not be significant impacts on the protected site from the subject development I consider that adverse in-combination effects are not such as to require appropriate assessment.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not in-combination effects with grid west would require appropriate assessment, since a line has yet to be determined. Prior to consent the project will be required to undergo screening / appropriate assessment.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Duvillaun Islands SPA [site code 004111], in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.11. Inishglora and Inishkeeragh SPA (site code 004084)

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Storm Petrel (Hydrobates pelagicus) breeding

Cormorant (Phalacrocorax carbo) breeding

Shag (Phalacrocorax aristotelis) breeding

Lesser Black-backed Gull (Larus fuscus) breeding

Herring Gull (Larus argentatus) breeding

Arctic Tern (Sterna paradisaea) breeding,and

Barnacle Goose (Branta leucopsis) wintering

Assessment

These bird species are coastal and do not occur on the subject site. The separation distance of in excess of 15km means that there will not be any impact on the protected site.

Conclusion

I consider therefore, that, in view of conservation objectives of the Inishglora and Inishkeeragh SPA the likely effects of the proposed development on these objectives will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, there will be no impact and therefore no in-combination effects with other windfarms. Similarly in relation to in-combination effects with grid west, there will be no impact and therefore no in-combination effects with grid west.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Inishglora and Inishkeeragh SPA (site code 004084), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.12. Inishkea Islands SPA (site code 004004)

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Shag (Phalacrocorax aristotelis) breeding

Ringed Plover (Charadrius hiaticula) wintering

Sanderling (Calidris alba) wintering

Purple Sandpiper (Calidris maritime) wintering

Turnstone (Arenaria interpres) wintering

Common Gull (Larus canus) breeding

Herring Gull (Larus argentatus) breeding

Arctic Tern (Sterna paradisaea) breeding

Little Tern (Sterna albifrons) breeding

Barnacle Goose (Branta leucopsis) wintering, and

Dunlin (Calidris alpina schinzii) breeding

These species are largely or entirely confined to the coastal strip and would not be expected at inland locations; this and the separation distance of in excess of 15km means that there will not be any impact on the protected site.

The presence of Ringed Plover and Golden Plover breeding within the subject site and the occurrence of a single Dunlin on one occasion in 2009 and on one occasion in 2012 are not considered to be associated with the protected site and are referred to in the section 'EIS' under the heading flora and fauna.

Conclusion

I consider therefore, that, in view of conservation objectives of the Inishkea Islands SPA the likely effects of the proposed development on these objectives will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, those permitted or the other windfarm currently planned, in view of my conclusion that there will not be significant impacts on the protected site from the subject development I consider that adverse in-combination effects are not such as to require appropriate assessment.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not in-combination effects with grid west would require appropriate assessment, since a line has yet to be determined. Prior to consent the project will be required to undergo screening / appropriate assessment.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Inishkea Islands SPA (site code 004004), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.13. Termoncarragh Lake and Annagh Machair SPA (Site code 004093)

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

(Crex crex) corncrake breeding

(Anser albifrons flavirostris) Greenland white-fronted goose wintering, and

(Branta leucopsis) Barnacle goose wintering

Assessment

Termoncarragh Lake and Annagh Machair SPA Site is an important passage ground for Whooper Swan, although this species is not listed among the sites conservation objectives.

Corncrake or Barnacle goose do not occur on the subject site. Greenland white-fronted goose (wintering) has been referred to above. It has been dealt with in some detail in the EIS and NIS and at the oral hearing that the flock which occurred in the area of the subject site is now extinct and that infrequent occurrence on the subject site is likely to be associated with Carrowmore Lake flock. There are no regular flight lines between feeding and roost sites over this site. I accept the evidence given that the occurrence of Greenland white-fronted goose on the subject site is likely to be associated with the Carrowmore Lake flock and therefore that there would be no impact on the Termoncarragh Lake and Annagh Machair SPA population. The separation distance is well in excess of 15km means that there will not be any impact on the protected site.

Conclusion

I consider therefore, that, in view of conservation objectives of the Termoncarragh Lake and Annagh Machair SPA the likely effects of the proposed development on these objectives will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, those permitted or the other windfarm currently planned, in view of my conclusion that there will not be significant impacts on the protected site from the subject development I consider that adverse in-combination effects are not such as to require appropriate assessment.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not in-combination effects with grid west would require appropriate assessment, since a line has yet to be determined. Prior to consent the project will be required to undergo screening / appropriate assessment.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed

development, individually and in combination with other plans or projects would not be likely to have a significant effect on Termoncarragh Lake and Annagh Machair SPA (Site code 004093), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.14. Ilanmaster SPA (site code 004074)

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Storm Petrel (Hydrobates pelagicus) [breeding], and

Puffin (Fratercula arctica) [breeding]

Assessment

I accept the evidence given at the oral hearing in relation to these species that these two seabird species are strictly marine, only coming ashore to nest. This fact together with the separation distance of in excess of 15km means that there will not be any impact on the protected site.

Conclusion

I consider therefore, that, in view of conservation objectives of the Ilanmaster SPA the likely effects of the proposed development on these objectives will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, there will be no impact and therefore no in-combination effects with other windfarms. Similarly in relation to in-combination effects with grid west, there will be no impact and therefore no in-combination effects with grid west.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Ilanmaster SPA (site code 004074), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.15. Potential Impact on Protected Species remote from Natura Sites

A further issue which the Board should consider in relation to SPA's is that which is raised by the DAHG in relation to protected species and their migration routes. The DAHG expressed their concern in relation to Birds Directive Annex 1 species, particularly Whooper Swan and Greenland White-fronted Goose, which are the birds

most likely to be at risk of collision, that given the scale of the windfarm measuring roughly 10km east / west, it has potential to impact on migratory populations. They point out that there is no night-time data on bird populations potentially moving across the site.

The DAHG submission to the hearing states that:

> It is considered that maps showing the location and scale of the proposed development in combination with existing, permitted and proposed windfarms and powerlines, SPAs and their special conservation interests, other areas of importance for birds (including SACs and NHAs), known and potential migration routes and flight paths and flight heights should be used to support and inform screening for appropriate assessment. In relation to migration routes of the Birds Directive Annex 1 species, Whooper swan, data presented in Griffin et al (2011) are of potential relevance to Co. Mayo and this proposed development.

The reference to Griffin et al 2011 is a reference to a study of the migration routes of Whooper Swans and geese in relation to wind farm footprints a report by The Wildfowl & Wetlands Trust in the UK, based on data collected from 7 tagged birds, following the migration routes of the birds, and identifying the factors, such as weather conditions, which may influence their flight lines. All but one of the tagged individuals in the study followed a migration route which took them in a fairly direct line from Iceland and Scotland. One individual was tracked over north west Ireland, in a zig zag route which includes movement close to the subject site. That report states:

> The installation of wind farms has increased rapidly across Europe over the last two decades, as governments seek to secure their energy supplies through increasing use of renewable resources and also to reduce the greenhouse gas emissions associated with climate change. More than 25,000 wind farms are now in operation across Europe.
>
> Whooper Swans, tend to fly at heights within or below the sweep of the rotors both onshore and offshore; migrating overland, the mean flight height (± S.E.) was 8 m (±9 m) above ground level, median flight height was 42 m and the modal value was 10 m.
>
> Data from birds recorded crossing over existing wind farm locations indicated that the birds gained height to avoid the potential obstacle.
>
> For some areas they recommend radar and satellite-tracking studies to clarify potential effects of wind farm development along these flyways.

Assessment

I do not consider that the data in Griffin et al points to the existence of a migration route across the subject site but rather to the shortage of data on migration routes and the impact of wind farms.

The subject site is not close to a site known as a passage site for Whooper Swans. That there seems to be a shortage of data in this respect is acknowledged. The nearest such site is Termoncarragh Lake and Annagh Machair SPA, which is almost 30km from the subject site.

The concern raised by DAHG could therefore be described as the potential for impact on migratory birds related to unspecified SPAs. In my opinion the question that the Board must consider is whether a development of this scale can be permitted at this location or anywhere else in the state, in the absence of a more comprehensive understanding of the migration routes of Whooper Swans, the areas over which they could potentially pass, the heights at which they are likely to travel and the impact that a windfarm would have on such migration. This would be a national / international study and would be better engaged in by a national body such as NPWS.

The Board must consider whether the absence of such information represents a lacuna.

In the light of the extensive surveys carried out on the subject site, although not including night time surveys, which indicate that there has been little presence of Whooper Swan over a two year period, I consider that the question is not specific to this site. I consider that shortfalls in information at an international scale should not be considered a lacuna in terms of this specific site.

In relation to Greenland white-fronted geese, a similar issue arises. There is an historic link to the species which was broken in the early 80's. There is no indication of a noteworthy presence of these birds on the site or of passage over the site of migratory birds, although night time surveys were not carried out.

The Board must consider whether or not this represents a lacuna.

The Board will note the necessity to identify, in the light of the best scientific knowledge in the field, all aspects of the development project which can, by itself or in combination with other plans or projects, affect the European site in the light of its conservation objectives. The Board will note that there must be complete, precise and definitive findings and conclusions and there may not be lacunae or gaps. This requires precise and definitive findings in the light of the best scientific knowledge in the field. A determination that the proposed development will not adversely affect the integrity of

any relevant European site may only be made on the basis of complete, precise and definitive findings and conclusions such that the Board decides that no reasonable scientific doubt remains as to the absence of the identified potential effects[5].

I consider that the detailed surveys carried out over an extensive period do not indicate any significant presence of Greenland white-fronted geese and that in relation to the subject site and the European sites which have been identified as being potentially impacted that there is no lacuna in relation to this species.

SACs

9.2.16. Slieve Fyagh Bog SAC (site code 0542)

Objective: 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:

Blanket bogs (* if active only)

Assessment

This is an area of mountain blanket bog on a plateau, separated from the subject site by a distance of 2.5km. The protected site drains in a number of different directions including a portion which drains towards the subject. Although part of the Natura site shares the Sheskin Srahnakilly catchment with the subject site, Slieve Fyagh Bog is upstream of the subject site and therefore no hyrdological pathway exists from the subject site to the protected site.

Conclusion

I consider therefore, that, in view of conservation objectives of the Slieve Fyagh Bog SAC the likely effects of the proposed development on these objectives will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, there will be no impact and therefore no in-combination effects with other windfarms. Similarly in relation to in-combination effects with grid west, there will be no impact and therefore no in-combination effects with grid west.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be

[5] Ms Finlay Geoghegan, High Court, Kelly v An Bord Pleanála, 2013 No 802 JR

likely to have a significant effect on Slieve Fyagh Bog SAC (site code 0542), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.17. Glenamoy Bog Complex SAC (site code 0500)

Objective: 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:

Salmon (Salmo salar)

Vegetated sea cliffs of the Atlantic and Baltic coasts

Shining sickle moss (Drepanocladus vernicosus)

Petalwort (Petalophyllum ralfsii)

Marsh saxifrage (Saxifraga hirculus)

Machairs

Natural dystrophic lakes and ponds

Northern Atlantic wet heaths with Erica tetralix

Juniperus communis formations on heaths or calcareous grasslands

Blanket bog (*active only)

Transition mires and quaking bogs, and

Depressions on peat substrates of the Rhynchosporion

Assessment

Glenamoy Bog is a prime example of the extreme oceanic form of lowland blanket bog and is one of the most extensive tracts of bog in the country. The bog occupies a gently undulating plain, but extends uphill to cover the slopes of Maumakeogh and Benmore towards the eastern end of the protected site, and northward, out toward the sea cliffs of the north-west Mayo coastline. The site extends over an area of 12,901.80ha and is drained by four rivers - Muingnabo, Glenamoy, Belderg and Glenglasra, none of which drain towards the subject site and therefore there is no potential pathway for impact on the species Salmon (Salmo salar) which occurs in rivers within the protected site. The bog is separated from the subject site by a distance of 3km at the nearest point.

Conclusion

I consider therefore, that, in view of conservation objectives of the Glenamoy Bog Complex SAC the likely effects of the proposed development on these objectives, will not be significant.

In relation to in-combination effects with other windfarms in the vicinity, there will be no impact and therefore no in-combination effects with other windfarms. Similarly in relation to in-combination effects with grid west, there will be no impact and therefore no in-combination effects with grid west.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on Glenamoy Bog Complex SAC (site code 0500), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.18. Broadhaven Bay SAC (site code 0472)

The Conservation objectives for Broadhaven Bay SAC are stated to be:

To maintain or restore the favourable conservation status of habitats and species of community interest.

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], and
Submerged or partly submerged sea caves [8330]

Assessment
This is a coastal site, some distance from the subject with no river connection to the subject site.

Conclusion
The subject site is separated from Broadhaven Bay SAC by a distance of 13km and there is no surface water connectivity so that there could not be impacts on the conservation objectives of the protected site.

In relation to in-combination effects with other windfarms in the vicinity, there will be no impact and therefore no in-combination effects with other windfarms. Similarly in relation to in-combination effects with grid west, there will be no impact and therefore no in-combination effects with grid west.

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed

development, individually and in combination with other plans or projects would not be likely to have a significant effect on Broadhaven Bay SAC (site code 0472), in view of the site's conservation objectives and appropriate assessment is not therefore required.

9.2.1. Conclusion of Screening

It is reasonable to conclude that on the basis of the information available, which I consider adequate in order to issue a screening determination, that the proposed development, individually and in combination with other plans or projects would not be likely to have a significant effect on:

SAC's:

Broadhaven Bay SAC (site code 0472)
Slieve Fyagh Bog SAC (site code 0542)
Glenamoy Bog Complex SAC (site code 0500)

SPA's:

Owenduff/Nephin SPA (site code 004098)
Lough Conn & Lough Cullin SPA (site code 004228)
Carrowmore Lake SPA (site code 004052)
Blacksod Bay / Broadhaven Bay SPA (site code 004037)
Killala Bay/Moy Estuary SPA (site code 004036)
Mullet Peninsula SPA (site code 004227)
Duvillaun Islands SPA (site code 004111)
Inishglora and Inishkeeragh SPA (site code 004084)
Inishkea Islands SPA (site code 004004)
Termoncarragh Lake and Annagh Machair SPA (Site code 004093)
llanmaster SPA (site code 004074)

in view of the sites' conservation objectives and appropriate assessment in relation to these sites is not therefore required.

9.3. Appropriate Assessment

For those Natura sites shich were not screened out the Board is required to consider whether the project alone or in combination with other projects or plans will adversely

affect the integrity of the European site in view of the site's conservation objectives, including consideration of any mitigation measures necessary to avoid, reduce or offset negative effects.

The Natura Impact Statement identified five SACs in respect of which there was potential for impact, in the light of their conservation objectives, having regard to the characteristics of the proposed development. Each site must be subjected to appropriate assessment of the likely significance of potential effects on the site in view of its conservation objectives.

This requires that the conservation objectives of each Natura 2000 site is identified and those aspects of the plan or project (alone and in combination with other plans or projects) that will affect those objectives are considered in terms of the direct and indirect effects; short and long-term effects; construction, operational and decommissioning effects; and cumulative effects.

The NIS which was submitted is a short document but the information is supplemented by detailed information presented in the EIS and submissions to the Board prior to and during the oral hearing and various other available sources of information such as the NPWS web site are referred to in this report as appropriate. I consider that the information available is adequate for the carrying out of Appropriate Assessment.

The potential effects of the project alone or in combination with other projects or plans, on the Natura 2000 sites are:

Loss of, or physical disturbance to, habitats

Potential effects on peat stability

Potential impairment of water quality due to construction works

Potential impairment of water quality during operational phase

Potential impacts on hydrology

Potential impacts on bird species

Potential impacts on aquatic species

9.3.1. Description of the proposed development

The proposed development has been describerd at 9.2.1.

9.3.2. Bellacorick Iron Flush SAC (site code 0466)

Objective: 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:

Marsh saxifrage (Saxifraga hirculus)

The NPWS Conservation Statement refers to the main conservation objectives: to maintain the Annex II species for which the SAC has been selected at favourable conservation status: Marsh Saxifrage, to maintain the extent, species richness and biodiversity of the entire site, and to establish effective liaison and co-operation with landowners, legal users and relevant authorities.

Main management issues are stated to be: drainage, grazing, size of designated area, and wind farm construction.

The Bellacorick Iron Flush SAC is dealt with in detail in Chapter 18 of the EIS: Iron Flush Hydrological & Hydrogeological Assessment, and in Appendix 14: Bellacorick Iron Flush NIS; and also in the written submissions by DAHG and An Taisce, in their submissions to the oral hearing; and more particularly in further detailed site investigations carried out following submission of the EIS and prior to the oral hearing, which were reported to the hearing and documented in item 4 of the submissions received at the oral hearing, in relation to the potential for impact on the groundwater feeding the flush.

The flush has been described earlier in this report.

I accept the evidence given at the oral hearing that the proposed development will impact on shallow groundwater only. I also accept the evidence given in relation to the shallow groundwater flow in the area of the flush, which has demonstrated that no part of the proposed development will impact on the hydrology of the flush.

I accept the evidence given at the oral hearing in relation to the proposed batching plant that the impact of a possible accidental discharge of cement to air lasting 1 minute would not cause a significant adverse impact on the ecology of the flush, and therefore that, subject to the mitigation proposed in relation to dust control, particularly at the concrete batching plant, the proposed development will not give rise to a significant adverse impact on the flush ecosystem.

The other potential impact during the construction phase of a development of this scale is pedestrian or vehicular trespass onto the Flush and its surrounding area. I accept the evidence given that this will be avoided through strict implementation of a Construction

and Environmental Management Plan (CEMP) and through construction tender documents which will be imposed on the contractor by the applicant.

Conclusion

I consider therefore, in view of conservation objectives of the Bellacorick Iron Flush SAC and the likely impacts of the proposed development on these objectives, that subject to the mitigation proposed there will not be significant residual impacts following mitigation.

In relation to in-combination effects with other windfarms in the vicinity: I consider that since either the permitted windfarm or the other windfarm currently planned, would be located at a considerably greater distance from the protected site than the subject development and, since it has been established that the proposed development will not, subject to mitigation impact on the protected site, that there will be no in-combination effects with developments at a greater remove subject to the mitigation provided by normal construction practice.

In relation to in-combination effects with grid west, phase 3 of the subject development is dependent on grid west and the line has yet to be determined. I consider that grid west would be further removed from the protected site than parts of the subject development and accordingly that there will be no in-combination effects subject to mitigation provided by normal construction practice.

I consider it reasonable to conclude on the basis of the information available that the proposed development, individually and in combination with other plans or projects would not adversely affect the integrity of the European site Bellacorick Iron Flush SAC (site code 0466) in view of the site's conservation objectives

9.3.3. Laugh Dahybaun SAC (site code 02177)

Objective: 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:

Slender naiad (Najas flexilis).

Part of the proposed development is located within the L Dahybaun catchment: the proposed upgrade to an existing access track, which is 950m from the lake, the construction of turbine T100, and 1.1km of additional trackway. A large artificial lagoon, installed as part of the peat harvesting operations, is located between the access track and L Dahybaun and will provide additional settlement to that proposed as part of the construction works. A manually operated flap valve will be located on the inlet to the settlement ponds which can be closed in the event of an environmental incident.

Conclusion

I consider therefore, in view of conservation objectives of the Laugh Dahybaun SAC and the likely impacts of the proposed development on these objectives, that subject to the mitigation proposed there will not be significant residual impacts following mitigation.

In relation to in-combination effects with other windfarms in the vicinity: since either permitted windfarms or the other windfarm currently planned, would be located at a considerably greater distance from the protected site than the subject development and since it has been established that the proposed development will not, subject to mitigation, impact on the protected site, I consider that there will be no in-combination effects with developments at a greater remove.

Forestry is identified as a pressure on rivers in the Western River Basin District. In Figure 10-7 of the EIS, which shows the catchment of Lough Dahybaun, it can be seen that the catchment includes areas of forestry within the subject site and within the Corvoderry site. The proposed development does not impact on forestry in the area within the subject site which is within the Lough Dahybaun catchment. No surface water stream or river connects the Corvoderry site to Lough Dahybaun.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not there would be significant adverse in-combination effects with grid west, since a line has yet to be determined. Prior to consent that project will be required to undergo screening / appropriate assessment.

I consider it reasonable to conclude on the basis of the information available that the proposed development, individually and in combination with other plans or projects would not adversely affect the integrity of the European site Laugh Dahybaun SAC (site code 02177) in view of the site's conservation objectives

9.3.4. Bellacorick Bog Complex SAC (site code 0922)

Objective: 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:

Vertigo geyeri

Marsh saxifrage (Saxifraga hirculus)

Natural dystrophic lakes and ponds

Northern Atlantic wet heaths with Erica tetralix

Blanket bog (*active only)

Depressions on peat substrates of the Rhynchosporion, and

Alkaline fens

Bellacorick Bog Complex SAC is a large expanse of lowland blanket bog covering 9,523.83ha divided into two separate areas and situated on a low-lying undulating plain in north Mayo where it encircles the northern, eastern and southern boundaries of the eastern part of the subject site. Knockmoyle/Sheskin Nature Reserve is part of the SAC, lying to the north of the subject site and in its southwards extension it separates the two parts of the subject site.

The SAC has numerous pools and dystrophic lakes, developed on gently undulating glacial drift overlying shales and sandstone and bordering carboniferous limestone to the east. Shallow stream valleys, bordered by humid grassland and heath vegetation, dissect the lowland plain. The site is notable for the widespread occurrence of flush and fen vegetation derived from mineral-rich and often calcareous groundwater seepage areas.

The site contains the largest assemblage of intact fen vegetation in Ireland. The flushes are notable for the presence of several boreal relict mosses and Liverworts. A rare vascular plant species, Marsh Saxifrage (Saxifraga hirculus), occurs here, at one of only very few known locations in Ireland.

Described in the Natura 2000 Standard Data Form as '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.*'

Along the southern boundary, the subject site is separated from the protected site by the west flowing Owenmore river and its tributaries, Lough Dahybaun which is referred to elsewhere in this report and the Fiddaunatooghaun River, which together act as hydrological divides.

Bellacorick Bog Complex SAC does not extend to the west of the subject site.

Along part of the northern site boundary the Fiddaunmuingeera river acts as a significant hydrological divide. The Oweninny river and the Sheskin stream separates the development area from the SAC and O'Boyle's Bog, acting as a significant hydrological divide. Although O'Boyle's Bog, is part of the subject site and includes a small portion of the SAC, it will not be developed.

In the north eastern area of the site, northwards from Formoyle to Lough Doo, the subject site adjoins the protected site over an area where there is no clear hydrological

divide between the two sites. This area drains to the eastwards flowing Owenmore River and its tributaries.

Formoyle Flush is located within this part of the Bellacorick Bog Complex. Formoyle Flush is dealt with in Chapter 18 of the EIS: Iron Flush Hydrological & Hydrogeological Assessment, also in the submissions to the oral hearing; and more particularly in further detailed site investigations carried out following submission of the EIS and prior to the oral hearing, which were reported to the hearing and documented in item 4 of the submissions received; in relation to the potential for impact on the groundwater feeding the flush. No part of the proposed windfarm development is in the same surface water drainage catchment as Formoyle Flush. The groundwater catchment of the Formoyle Flush will not be impacted by any element of the proposed development. An updated groundwater catchment is shown in Figure 18 of the evidence submitted to the hearing.

It is noted that much of the drainage in the eastern part of the subject site is to watercourses which flow through the SAC site. A consideration in the applicant's screening for appropriate assessment was that in the absence of mitigation, some of the qualifying interests could be affected by peat slippage due to construction works in parts of the eastern sector of the site. A substantial slip could flow along the watercourses and spill out over the habitats for which the site is selected.

In chapter 19 Hydrology and Sediment it is stated that the water and sediment management in and around the site has been the subject of international research over many years, from the 1960s to 2013. The experience gained in the area will be employed throughout the project, allowing a SUDS design which is site-specific and suited to the well-humified peat. Reference is also made to the bog rehabilitation programme at Oweninny which is based on three measures aimed at encouraging re-vegetation of the site and stabilising it to minimise suspended solids loading to receiving rivers: undisturbed buffer areas alongside rivers; rewetting of areas by blocking drains; and ploughing of a small number of areas with little or no peat to promote revegetation.

It is considered that the proposals in relation to surface water management and sediment control, which will integrate with the rehabilitation plan currently in place, will ensure that adverse impact on the SAC from the quality or quantity of surface water discharging from the subject site is avoided.

In their letter to the applicant, responding to a request in relation to scoping, 4th October 2012, the Irish Peatland Council stated their concern in relation to turbines in proximity to bog remnants and also to turbines in proximity to protected habitat. '*This development has a strong potential to negatively effect the hydrology and ecology of the blanket bog habitat. IPCC would be strongly opposed to any turbine which is to be*

constructed on or adjacent to protected habitat. This is particularly true of areas of remnant bog which are effectively intact continuations of the blanket bog habitat. IPCC would be strongly opposed to any turbine which is to be constructed on or adjacent to such areas (e.g. Turbines 1, 16, 86 & 110) while concise reviews on the hydrological and ecological impact of all of the turbines is required as each one falls within the original hydrological unit of the surrounding blanket bog.' In this regard they refer to Figure 4b Draft Turbine Locations with Bog Remnants and Figure 3 Draft Turbine Locations and Environmental Designated Areas. The letter and the figures are reproduced in Appendix 1 of the EIS.

Mr Gill responded to concerns raised in relation to hydrological impacts on SACs: Bellacorick Bog SAC, L Dahybaun SAC, Bellacorick Iron Flush SAC, Carrowmore Lake SAC, Owenduff/Nephin Complex SAC and Knockmoyle/Sheskin Nature Reserve all of which are sensitive to hydrological change.

Mr Gill referred in some detail to the avoidance of impact on L Dahybaun SAC, Bellacorick Iron Flush SAC and Knockmoyle/Sheskin Nature Reserve. Formoyle Flush which is within Bellacorick Bog SAC is also addressed in some detail. In relation to the remainder of Bellacorick Bog he stated that Oweninny site is heavily modified in terms of drainage and peat cutting, and as a result the natural hydrology of the area is significantly altered; and further that Bellacorick Bog Complex SAC is sufficiently remote and hydrologically disconnected from the subject site and will not be adversely impacted.

In the EIS there is information in relation to the surface water rivers and streams which drain the site (chapter 19 hydrology and sediment). This part of the site drains to the Owenmore/Cloonaghmore via small tributaries (Fiddaunfura) flowing eastwards. There are deeper peats and bog remnants in this area (fig 4.4 and fig 3.2). Appendix 4 Peat Stability Risk assessment (at 4.5) provides information on ground conditions and topography for each turbine/hardstand. In the case of T16 for example peat depth is stated to be from less than 0.5m to 1.1m, the turbine and hardstand is in a wetlands area and the distance to the nearest watercourse is less than 100m. Appendix 4 E gives a peat stability risk assessment for each turbine site, giving details of peat depth, slope, distance from watercourse etc.; and there are records of trial pits at turbine locations in appendix 4.6; appendix 6 Turbine Foundation Construction Method Statement states that the site investigation reveals that due to a high static water table and the depth to suitable bearing strata, pile foundations are the most suitable foundation solution for the majority of turbine foundations. From the detailed discussions in relation to Bellacroick Iron Flush it can be stated that piling without dewatering, is a precautionary migitation to prevent groundwater reduction.

Surface water drainage is shown on drawing no. QR320201-P-000-060 – Owenmore Cloonaghmore and Oweninny catchments

In my opinion the information provided does not amount to evidence that Bellacorick Bog Complex SAC is sufficiently remote and hydrologically disconnected from the subject site such that there will be no impact arising as a result of the proposed development. I accept that the Oweninny site is heavily modified in terms of drainage and peat cutting, and as a result the natural hydrology of the area is significantly altered. I also accept that the permitted development, with a layout which followed a grid pattern, allowed a larger number of turbines, and therefore in terms of the potential for groundwater disturbance the current proposal is to be preferred. The Board should note that the layout shown in the drawings of the permitted development, and which has been reproduced in the current application as the permitted layout, is not the permitted layout. Conditions attached to the permission require the removal of some turbines and the repositioning of other turbines so that there would be a minimum distance of 200m between any turbine and the protected site. It is also worth noting that in the current layout, no turbine is closer than 200m to the protected site.

In relation to hydrology, and in particular groundwater, it is more difficult to be satisfied that no adverse impact will result from the proposed development, in respect of those areas adjoining the north eastern part of the site. There is no significant hydrological divide present in this area; and in fact lakes and ponds are located on the common boundary between the sites where a narrow portion of the SAC projects into the subject site and is surrounded on three sides by the subject site. The Board may consider that this represents a lacuna and therefore that further information is required, and/or that it is not possible to permit the proposed development.

As a wetland system the hydrology of a bog is of great importance. If as Mr Gill states the water and sediment management in and around the site has been the subject of international research over many years, the hydrology is not well documented in this application, in relation to the north eastern corner of the subject site.

The turbines in this area are turbines T16, T17, T28, T32, T10 and T15. Of these turbines the most significant is, in my opinion, T16 due to its proximity to the protected site and its close proximity to an important bog remnant within the subject site which is effectively an intact continuation of the blanket bog habitat. The Board may consider that it can not be satisfied beyond reasonable scientific doubt, that the development of turbines T16, T17, T28, T32, T10 and T15 and the proposed roadways which would serve these turbines, would not adversely impact, to a significant extent, on the protected site, in view of its conservation objectives.

Obviously the greater the distance from the protected site the less the likelihood of impact. On the previous occasion the Board decided that 200m was the appropriate distance. The proposed development maintains this distance from the protected site.

The fact of the existing permission, which is capable of implementation, is a relevant consideration. As previously stated the permitted development extends to a distance of 200m from the Bellacorick Bog Complex in this part of the site. Although the final layout has not been agreed and will not be the layout as shown on the documents currently on that file, it can be assumed, because of the closer spacing of turbines in the permitted development, that more turbines will be located in this part of the site that currently proposed. In my opinion the current proposal is preferable to the permitted development.

However I consider that the effect of the proposed development on Bellacorick Bog Complex would be significantly mitigated by the omission of turbine T16 and that it would be reasonable to require its removal.

Conclusion

I consider therefore, in view of conservation objectives of the Bellacorick Iron Flush SAC and the likely impacts of the proposed development on these objectives, that further mitigation involving the removal of turbine T16, and the associated roadway is required; and that subject to the mitigation as proposed, and this further mitigation, there will not be significant residual impacts on the protected site.

Forestry is identified as a pressure on rivers in the Western River Basin District, in the River Basin Management Plan for the Western River Basin District in Ireland (2009-2015). In addition Inland Fisheries Ireland state in their written submission that a section of the Sheskin River catchment has been identified as ‘at risk from forestry siltation and eutrophication’ in the Western River Basin Management Plan and that the Forestry and Water Quality Guidelines must be strictly adhered to and that felling should not be carried out during wet weather conditions. The proposed development, including for the erection of T50, T48 within the Owenmore / Cloonaghmore catchment, and T106 within the Fiddaunatooghaun catchment and their associated roads, will include tree felling. In addition the site of the proposed Corvoderry windfarm development is a forested site and that development will require conifer tree felling. As figure 19.2 shows, the Corvoderry site is surrounded by the subject site, and will be separated from natural streams by the subject site such that the drainage and sediment proposals within the subject site will mitigate any impacts arising from the tree felling in the Corvoderry development. I consider that subject to the mitigation as proposed, and the further

mitigation proposed by Inland Fisheries Ireland there will not be significant residual impacts on the protected site.

In relation to in-combination effects with other windfarms in the vicinity: I consider that since the permitted windfarm at Corvoderry, would be located at a considerably greater distance from the protected site than the subject development there will be no in-combination effects with that development.

I would note for the Boards attention that another proposed windfarm is currently before the Board, Cluddaun windfarm, PA 0031, which proposed development also adjoins the protected site. I have reported to the Board recommending refusal of permission, for reasons including the potential impact on Bellacorick Bog Complex SAC, however in view of my conclusion that there will not be significant residual impacts on the protected site from the subject development I consider that adverse in-combination effects would not arise.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not there would be significant adverse in-combination effects with grid west, since a line has yet to be determined. Prior to consent that project will be required to undergo screening / appropriate assessment.

I consider it reasonable to conclude on the basis of the information available that the proposed development, individually and in combination with other plans or projects would not adversely affect the integrity of the European site Bellacorick Bog Complex SAC (site code 0922) in view of the site's conservation objectives.

9.3.5. Owenduff/Nephin SAC (site code 0534)

Objective: 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:

Salmon (Salmo salar) (only in fresh water)

Otter (Lutra lutra)

Shining sickle moss (Drepanocladus (Hamatocaulis) vernicosus)

Marsh saxifrage (Saxifraga hirculus)

Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)

Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto Nanojuncetea

Natural dystrophic lakes and ponds

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho Batrachion vegetation

Northern Atlantic wet heaths with Erica tetralix

Alpine and Boreal heaths

Juniperus communis formations on heaths or calcareous grasslands

Blanket bogs (* if active only), and

Transition mires and quaking bogs

Owenduff/Nephin SAC is an extensive area of 27,063.61ha (per standard data form or 26,033 ha per Conservation Plan) situated to the north of Clew Bay and is dominated by the Nephin Beg mountain range in the east and south, and a large area of blanket bog in the west and north. Many of the mountains in the site exceed 500m in height, with the highest peak attaining 721m. The underlying rock is predominantly schist and gneiss in the low-lying western half of the site, while the more resistant quartzite is the main rock type in the mountainous eastern and southern parts. The site has been designated due to the presence of one of the largest and best national examples of active blanket bog (an Annex I priority habitat), as well as eight other Annex I habitats. These comprise two heath habitats, Juniper scrub, three different lake habitats, a river habitat and mire/quaking bog habitat. In addition, the SAC is designated for four Annex II species: Shining Sickle Moss, Marsh Saxifrage, Otter and Salmon.

The Conservation Plan for 2006-2011 lists the main conservation objectives as:

> To maintain the Annex I habitats for which the SAC has been selected at favourable conservation status; active blanket bog (approximately 64% of the site), Northern Atlantic wet heaths, Alpine and boreal heath, oligotrophic waters with few minerals, oligotrophic to mesotrophic standing waters, natural dystrophic lakes and ponds, water courses of the plain to montane levels, transition mires and quaking bogs and Juniperus communis formations.
>
> To maintain the Annex II species for which the SAC has been selected at favourable conservation status; Shining Sickle Moss, Marsh Saxifrage, Otter and Salmon.
>
> To maintain the species for which the SPA has been selected at favourable conservation status; Greenland White-fronted Goose, Golden Plover, Merlin and Peregrine Falcon.

To maintain the extent, species-richness and biodiversity of the site.

To continue to develop Ballycroy National Park, Co. Mayo.

To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

Main management issues are stated to be:

Afforestation
Decline in Greenland White-fronted Geese numbers
Dumping
Fencing
Livestock trespass into Ballycroy National Park
Loss of Red Grouse habitat
Motor vehicle use
Overgrazing
Peat cutting
Poor state of trails
Poor water quality
Quarrying, and
Rhododendron infestation

Assessment

The area nearest the subject site is a low lying area of blanket bog. It is closest to the subject site at the south western corner near Ballymunnelly bridge and is separated from the subject site by the west flowing Owenmore river which is a substantial hydrological divide.

It is considered that the proposals in relation to surface water management and sediment control, which will integrate with the rehabilitation plan currently in place, will ensure that adverse impact on the Owenmore river and any potential impact on Salmon or Otter will be avoided.

The separation provided by the Owenmore river, between the subject and the protected site will ensure that the hydrology of the SAC will not be adversely impacted.

Bird species have beenreferred to above (9.2.7) in relation to Owenduff/Nephin SPA.

Conclusion

I consider therefore, in view of conservation objectives of the Owenduff/Nephin SAC and the likely impacts of the proposed development on these objectives, that subject to the mitigation proposed there will not be significant residual impacts following mitigation.

In relation to in-combination effects with other windfarms in the vicinity: I consider that since either permitted windfarms or the other windfarm currently planned, would be located at a considerably greater distance from the protected site than the subject development and since it has been established that the proposed development will not, subject to mitigation impact on the protected site there will be no in-combination effects with developments at a greater remove.

Forestry is identified as a pressure on rivers in the Western River Basin District, in the River Basin Management Plan for the Western River Basin District in Ireland (2009-2015). In addition Inland Fisheries Ireland state in their written submission that a section of the Sheskin River catchment has been identified as 'at risk from forestry siltation and eutrophication' in the Western River Basin Management Plan and that the Forestry and Water Quality Guidelines must be strictly adhered to and that felling should not be carried out during wet weather conditions. The proposed development, including for the erection of T60, T73, T93, T97, T98, T102, T103 and T112 and their associated roads, will include tree felling within the Muing catchment which is a tributary of the Owenmore with potential for in effects on the protected site. I consider that subject to the mitigation as proposed, and the further mitigation proposed by Inland Fisheries Ireland there will not be significant residual impacts on the protected site.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not there would be significant adverse in-combination effects with grid west, since a line has yet to be determined. Prior to consent that project will be required to undergo screening / appropriate assessment.

I consider it reasonable to conclude on the basis of the information available that the proposed development, individually and in combination with other plans or projects would not adversely affect the integrity of the European site Owenduff/Nephin SAC (site code 0534) in view of the site's conservation objectives.

9.3.6. River Moy SAC (site code 02298)

Objective: 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:

White-clawed crayfish (Austropotamobius pallipes)

Sea lamprey (Petromyzon marinus)

Brook lamprey (Lampetra planeri)

Salmon Salmo salar (only in fresh water)

Otter (Lutra lutra)

Active raised bogs

Degraded raised bogs still capable of natural regeneration

Depressions on peat substrates of the Rhynchosporion

Alkaline fens

Old sessile oak woods with Ilex and Blechnum in the British Isles, and

Alluvial forests with Alnus glutinosa and Fraxinus excelsior

The system drains a catchment area of 805 km^2. The river and its various tributaries rise in a number of locations some of which are upland areas dominated by blanket bog and heath. Throughout most of its course however the river flows through low-lying countryside where most of the adjoining land consists of agricultural grassland. The river eventually reaches the sea at Ballina where it flows into Killala Bay. In addition to river and lake habitats, the site contains adjoining habitats of ecological interest such as raised bogs, heath, wet grassland and deciduous woodland.

Lough Conn, with a surface of 50km^2, is classified as a mesotrophic system with eutrophic tendencies in its North Basin, while Lough Cullin (surface of 11 km^2) is classified as an oligotrophic system.

The Moy system is one of Ireland's most important salmon waters and it also encompasses two of Ireland's best lake trout fisheries in Loughs Conn and Cullin. Although the Atlantic Salmon (*Salmo salar*) is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is an Annex II species. The Moy is a most productive catchment in salmon terms and this can be attributed to its being a fingered system with a multiplicity of 1^{st} to 5^{th} order tributaries which are large enough to support salmonids < 2 years of age while at the same time being too small to support significant adult trout numbers and are therefore highly productive in salmonid nursery terms.

Assessment

The south-eastern part of the subject site is drained by the Shanvolahan River upstream of the Deel River, which is within the River Moy SAC. The Shanvolahan River river itself is not within the SAC.

The SAC contains water dependent species of conservation interest. The River Moy is also host to an important population of the Freshwater Pearl Mussel; found in the river Deel, as far as the confluence with the Shanvolahan River, 8km from the site. However Freshwater Pearl Mussel is not included in the SACs conservation objectives.

The proposals in relation to surface water management and sediment control, which will integrate with the rehabilitation plan currently in place, will ensure that adverse impact on the Shanvolahan River or downstream impact on the River Moy SAC will not arise and any potential impact on water dependent species will be avoided.

Conclusion

I consider therefore, in view of conservation objectives of the River Moy SAC and the likely impacts of the proposed development on these objectives, that subject to the mitigation proposed there will not be significant residual impacts on the SAC.

In relation to in-combination effects with other windfarms in the vicinity, I consider that since either permitted windfarms or the other windfarm currently planned, would be located at a greater distance from the protected site than the subject development and since it has been established that the proposed development will not, subject to mitigation impact on the protected site I consider that there will be no in-combination effects with developments at a greater remove.

Forestry is identified as a pressure on rivers in the Western River Basin District, in the River Basin Management Plan for the Western River Basin District in Ireland (2009-2015). In addition Inland Fisheries Ireland in their written submission recommend that the Forestry and Water Quality Guidelines must be strictly adhered to and that felling should not be carried out during wet weather conditions. The proposed development, including for the erection of T50, T48 within the Owenmore / Cloonaghmore catchment, and T106 within the Fiddaunatooghaun catchment, and their associated roads, will include tree felling. These areas drain to the Deel/Shanvolahan (see Figure 2.1) which is part of the River Moy catchment. I consider that subject to the mitigation as proposed, and the further mitigation proposed by Inland Fisheries Ireland there will not be significant residual impacts on the protected site.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not there would be significant adverse in-combination effects with grid west, since a line has yet to be determined. Prior to consent that project will be required to undergo screening / appropriate assessment.

I consider it reasonable to conclude on the basis of the information available that the proposed development, individually and in combination with other plans or projects would not adversely affect the integrity of the European site River Moy SAC (site code 02298in view of the site's conservation objectives.

9.3.7. Carrowmore Lake SAC (site code 0476)

Objective: 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:

Shining sickle moss (Drepanocladus (Hamatocaulis) vernicosus)

Marsh saxifrage (Saxifraga hirculus)

Blanket bogs (* if active only), and

Depressions on peat substrates of the Rhynchosporion

This site is located north and east of Bangor Erris, Co. Mayo. There are two main parts to the site: Carrowmore Lake, a large, shallow oligotrophic/mesotrophic lake, and Largan More Bog, an area of blanket bog. From an altitude of 6 m at the lake, the site grades upwards in a general south-easterly direction, reaching 199 m on Largan More Bog.

Assessment

At its nearest point, the subject site is separated from protected site by the public road to the west. Surface water drainage in the vicinity of the subject site is from the protected site eastwards towards the subject site; and the protected site rises significantly westwards from the road.

Turbines T33 (216m) and T 39 (205m) are closest to this part of the protected site. At these turbines, peat is just 1m in depth and is downslope of Largan More Bog. In the absence of mitigation there is a risk of peat slippage arising from the proposed development. Although the risk is low as historically peat slides caused by construction activities tend to start at the point of construction and flow downhill and are generally due to loading of the surrounding peat from sidecasting on the downslope site. In this area the peat is relatively shallow and the excavated peat will not be sidecast.

The proposals in relation to peat stability and sediment control, will ensure that adverse impact on the Carrowmore Lake SAC will not arise.

9.3.8. Conclusion

I consider therefore, in view of conservation objectives of the Carrowmore Lake SAC and the likely impacts of the proposed development on these objectives, that subject to the mitigation proposed there will not be significant residual impacts on the SAC.

In relation to in-combination effects with other windfarms in the vicinity: I consider that since either permitted windfarms or the other windfarm currently planned, would be located at a considerably greater distance from the protected site than the subject development and since it has been established that the proposed development will not, subject to mitigation impact on the protected site that there will be no in-combination effects with developments at a greater remove.

In relation to in-combination effects with grid west, although phase 3 of the subject development is dependent on grid west it is not possible to assess whether or not there would be significant adverse in-combination effects with grid west, since a line has yet to be determined. Prior to consent that project will be required to undergo screening / appropriate assessment.

I consider it reasonable to conclude on the basis of the information available that the proposed development, individually and in combination with other plans or projects would not adversely affect the integrity of the European site Carrowmore Lake SAC (site code 0476) in view of the site's conservation objectives.

9.3.9. Overall Conclusion of Appropriate Assessment

The omission of turbine T16 is recommended as additional mitigation. It is considered that subject to that additional mitigation and the mitigation proposed in the NIS, EIS and at the oral hearing, the effect of the proposed development on Natura sites would not be significant and should not be a reason to refuse permission.

I consider it reasonable to conclude on the basis of the information available that the proposed development, individually and in combination with other plans or projects and sugject to the mitigation proposed and the additional mitigation here recommended, i.e. the omission of T16, would not adversely affect the integrity of the European sites:

Bellacorick Iron Flush SAC (site code 0466)
Laugh Dahybaun SAC (site code 02177)
Bellacorick Bog Complex SAC (site code 0922)
Owenduff/Nephin SAC (site code 0534)
River Moy SAC (site code 02298)
Carrowmore Lake SAC (site code 0476),

in view of the sites' conservation objectives.

10. Environmental Impact Assessment

The application is accompanied by an EIS which has been supplemented by information submitted at the oral hearing.

The EIS was completed in June 2013. It is presented in 8 volumes as set out below.

The EIS includes a description of the proposed development and some consideration of alternatives.

EIS Volumes

Volume 1	-	Non Technical Summary
Volumes 1A	-	Planning Documents Natura Impact Statement
Volumes 1B	-	Planning Drawings Volumes 1
Volumes 1B	-	Planning Drawings Volumes 2
Volumes 2A	-	Main Text 20 Chapters
Volumes 2B	-	Appendices 1
Volumes 2B	-	Appendices 2
Volumes 2C	-	Photomontages

Volumes 2A	-	Main Text
Chapter 1	-	Non Technical Summary
Chapter 2	-	Description
Chapter 3	-	Project Implementation
Chapter 4	-	Alternatives
Chapter 5	-	Policy and Planning
Chapter 6	-	Human Beings
Chapter 7	-	Noise
Chapter 8	-	Shadow Flicker
Chapter 9	-	Terrestrial Ecology
Chapter 10	-	Water Quality, Fisheries and Aquatic Ecology
Chapter 11	-	Landscape
Chapter 12	-	Air Quality & Climate
Chapter 13	-	Geology & Soils
Chapter 14	-	Traffic & Transport
Chapter 15	-	Forestry
Chapter 16	-	Material Assets
Chapter 17	-	Cultural Heritage

Chapter 18	-	Iron Flush Hydrological & Hydrogeological Assessment
Chapter 19	-	Hydrology & Sediment
Chapter 20	-	Indirect and Interaction of Impacts

Appendices

Volumes 2B Appendices (1):

Appendix 1A	-	Scoping Report
Appendix 1B	-	Letter to Stakeholders
Appendix 1C	-	Letter to Local Residents
Appendix 1D	-	Responses
Appendix 1E	-	Public Meeting Advertisements
Appendix 1F	-	Public Consultation Leaflet
Appendix 2	-	Bord na Móna IPPC Licence
Appendix 3	-	Cutaway Bog Rehabilitation Plan
Appendix 4	-	Peat Stability Risk Assessment Report
Appendix 5	-	Work Method Statements
Appendix 6	-	Emergency Response Plan
Appendix 7	-	Noise Monitoring Report including modelling

Volumes 2B Appendices (2)

Appendix 8	-	Shadow flicker
Appendix 8A	-	Shadow flicker assessments
Appendix 8B	-	Shadow flicker assessments house 19
Appendix 8C	-	Cumulative shadow flicker assessments
Appendix 9	-	Bord na Móna Licence
Appendix 9A	-	Vegetation Descriptions for turbine and substation locations
Appendix 9B	-	Ecological Descriptions/rankings of remnant bog areas at Oweninny
Appendix 9C	-	Description of bird survey transect sections
Appendix 9D	-	Birds recorded by transect sections at Oweninny Cutover Bog, summers 2010, 2011, 2012.
Appendix 9E	-	Details of summer Vantage Point surveys
Appendix 9F	-	Details of winter Vantage Point surveys
Appendix 9G	-	Details of autumn Vantage Point surveys
Appendix 9H	-	Scientific names of bird species mentioned in text
Appendix 10	-	Photomontages (refer to Volume 2C)

Appendix 11	-	Correspondence from GSI
Appendix 12	-	Road Safety Audit
Appendix 13	-	Cultural Heritage Correspondence
Appendix 13A	-	Minutes of meeting with National Monuments Service
Appendix 14	-	Bellacorick Iron Flush NIS screening
Appendix 14A	-	NIS screening
Appendix 14B	-	Minister's consent
Appendix 14C	-	Flora licence
Appendix 14D	-	Ecology of Flush – Vegetation Study
Appendix 14E	-	Logs
Appendix 14F	-	Water level Plots
Appendix 14G	-	Recovery Plots (recharge co-efficients for different hydrogeological settings)
Appendix 15	-	Flood Risk Assessment Substation 1, Substation 2, Substation 3, Substation 4 and Visitor Centre.
Appendix 16	-	Erosion and Sediment Control Plan

10.1.1. Adequacy of the EIS

I consider that the information contained in an EIS complies with article 94 of the 2001 Planning and Development Regulations. I consider that the information available to the Board, which includes: the information submitted with the application, information submitted in written submissions, information presented at the oral hearing and various other sources of information, such as the NPWS web site; is adequate for the carrying out of Environmental Impact Assessment in this case.

10.1.1. Requirement to carry out EIA

In accordance with Section 171A of the Planning Act 2000 as amended an environmental impact assessment must be carried out by the Board.

In this assessment the direct and indirect effects of the proposed development need to be identified, described and assessed in an appropriate manner, in accordance with Articles 4 to 11 of the Directive. The following section of this report identifies, describes and assesses the likely significant direct and indirect effects of the project on the environment, under the headings: human beings; flora and fauna; soil, water, air and climate; landscape and visual; material assets and the cultural heritage; and interactions.

10.1.2. Human Beings

The relevant chapters of the EIS are:

Chapter 6 Human Beings
Chapter 7 Noise
Chapter 8 Shadow Flicker
Chapter 12 Air Quality

and the relevant appendices are:

Appendix 1 which includes consultation with stakeholders
Appendix 6 Emergency Response Plan
Appendix 7 Noise Monitoring and modelling
Appendix 12 Road Safety Audit

and the relevant submissions to the oral hearing are:
item 11 which accompanied evidence given by Mr Eugene McKeown on noise
item 12 which accompanied evidence given by Dr Martin Hogan on human health
item 14 and item 37 which accompanied evidence given by Mr Peter Sweetman
item 30 which accompanied the evidence given by Dr Paddy Kavanagh on material assets and main interactions of potential impacts of the project.
Various others who gave oral evidence to the hearing included in their statements reference to human beings, in particular people who gave evidence on day six at an extend sitting of the hearing, to facilitate the local community.

I would refer the Board to Mr Speer's report attached as appendix 1 to this report, which includes an assessment under the headings of noise, shadow flicker, air quality and roads and traffic, all of which are relevant to human beings.

Likely significant direct and indirect effects of the project on human beings:

The likely significant direct and indirect effects of the project on human beings are:

Noise during construction

Noise during operation

Shadow flicker during operation

Traffic during construction

Visual amenity

Safety risks from operational turbines.

Description of the identified likely significant effects of the proposed development on human beings.

The impact of construction noise is described in paragraph 1.1 and following paragraphs of Mr Speer's report.

The impact of operational noise is described in paragraph 1.2 and following paragraphs of Mr Speer's report.

Infrasound & low frequency sound is described in paragraph 1.3 and following paragraphs of Mr Speer's report. Low frequency noise (LFN) and infrasound were issues of concern to observers.

Low frequency sound is referred to in the EPA guidance published in 2011 *'Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites (NG3)' ,* which states that it is a common misconception that low frequency sound is a significant component of the aerodynamic noise associated with wind farms; the issue is rather that as distance increases from a noise source, the noise spectrum becomes more biased towards low frequencies, as a result of the greater attenuation of middle to high frequencies by atmospheric effects. With reduced attenuation of low frequencies, low frequency sound may be a significant characteristic of a large wind farm site when heard from a distance, although close to the turbines it would not be significant.

Mr Speer refers to concerns in relation to infrasound and human health, and he quotes from the *Proposed Revisions to the Wind Energy Development, Guidelines for Planning Authorities: Targeted Review in relation to Noise, Proximity and Shadow Flicker'* published by the Department of the Environment, Community and Local Government in December, 2013 which states in the introduction that *'Concerns of possible health impacts in respect of wind energy infrastructure are not matters which fall within the remit of these guidelines as they are more appropriately dealt with by health professionals'.*

The proposed targeted revisions to the wind energy guidelines was accompanied by a publication titled 'Examination of the Significance of Noise in Relation to Onshore Wind Farms, commissioned by Sustainable Energy Authority of Ireland (SEAI), and prepared by Marshall Day Acoustics, November 2013. The issue of low frequency sound (20Hz to 200 Hz) and infrasound (below 20Hz and largely below the human hearing threshold) is considered in this report.

The Marshall Day report makes the following points in relation to infrasound:

- Infrasound is naturally occurring in the environment including sources such as waves and Waterfalls

- Infrasound is also present from manmade sources including aircraft, rail traffic and mining explosions
- Human perception of sound energy in the infrasound frequency range is much less acute than other frequency bands. Significant energy is required to produce levels of infrasound which are high enough to be perceived by humans.

The Marshall Day report refers to the World Health Organization statement that:

> *There is no reliable evidence that infrasounds below the hearing threshold produce physiological or psychological effects.*

The UK Department of Trade and Industry Low Frequency Noise report, 2006, prepared by Hayes McKenzie, indicated that measured infrasound levels in the vicinity of modern multi-megawatt wind farms were substantially lower than the threshold of hearing for even the most sensitive members of the population.

The Marshall Day report also cites the UK Institute of Acoustics Bulletin in March 2009 which included a statement of agreement between acoustic consultants regularly employed on behalf of wind farm developers, and conversely acoustic consultants regularly employed on behalf of community groups campaigning against wind farm developments (IAO JS2009). The intent of the article was to promote consistent assessment practices, and to assist in restricting wind farm noise disputes to legitimate matters of concern. On the subject of infrasound the article notes:

> *Infrasound is the term generally used to describe sound at frequencies below 20 Hz. At separation distances from wind turbines which are typical of residential locations the levels of infrasound from wind turbines are well below the human perception level. Infrasound from wind turbines is often at levels below that of the noise generated by wind around buildings and other obstacles. Sounds at frequencies from about 20 Hz to 200 Hz are conventionally referred to as low-frequency sounds. A report for the DTI [6] in 2006 by Hayes McKenzie concluded that neither infrasound nor low frequency noise was a significant factor at the separation distances at which people lived. This was confirmed by a peer review by a number of consultants working in this field. We concur with this view.*

A study in Wisconsin USA, is also referenced. Four acoustic consulting firms investigated the occurrence of low frequency sound at three dwellings (R1 - 3,303ft from the nearest turbine R2 -1,280ft and R3 - 7,110ft) in the vicinity of a wind farm (distributed over approximately six square miles with 86m hub height and 100m rotor diameter). The four investigating firms were recording low frequency sound, all recorded sound at the nearest house, some recorded sound at the other locations. They agreed that further surveys were necessary, including surveys when the wind farm was not operational for comparison purposes; and that LFN and infrasound are a serious issue, possibly affecting the future of the industry which should be addressed

[6] The Department of Trade and Industry

beyond the present practice of showing that wind turbine levels are magnitudes below the threshold of hearing at low frequencies. A specific project was at the time of the survey being considered for approval, the report includes a recommendation that a long term average design goal for emissions attributable to the array of wind turbines, exclusive of the background ambient, at all non-participating residences should be 39.5 dBA or less.

The consultation document on the targeted revisions to the guidelines states that it is intended to address the assessment of wind turbine noise in detail (including the potential for special audible characteristics) in the form of Best Practise Guidance to be contained in Appendix 1, not currently available. Further details on noise assessment and an appropriate methodology for modelling noise to suit the application of the proposed absolute limit will be included as a Best Practice Technical Appendix within the final guidelines.

In relation to the proposed development, the issue, given the permission existing on this site, is that larger trubines, as currently proposed, generate more LFN and infrasound than smaller turbines.

The impact of shadow flicker during the operational stage is described in paragraph 2.0 and following paragraphs of Mr Speer's report.

The impact of shadow flicker on people who suffer from photosensitive epilepsy is an issue of concern to observers. The motion of a three bladed turbine is not normally of concern (the trigger is 3 flashes per second) because they normally operate below 60rpm, but the motion of motion of overlapping blades presents a risk of inducing a seizure in a vulnerable person. Dr Hogan referred to shadow flicker in his witness statement *'shadow flicker effect is something which, for the vast majority of people, is a minor annoyance but nothing more. However, concerns have been raised that in some people with photosensitive epilepsy it could trigger a seizure*.' '*In order to protect the small number of vulnerable individuals, shadow flicker is taken into account in the design and location of turbines*.' '*The applicant has proposed fitting all turbines within ten rotor diameters of any house that can be potentially affected by shadow flicker with a curtailment mechanism which would shut down those turbines when the conditions were such as could theoretically cause shadow flicker.' 'This means that shadow flicker will not result in any significant health effects'*.

The proposed targeted revisions to the wind energy guidelines which has been referred to earlier states:

The time period in which a neighbouring property may be affected by shadow flicker is completely predictable from the relative locations of the wind turbine and the property.

Modern wind turbines have the facility to measure sunlight levels and to reduce or stop turbine rotation if the conditions that would lead to shadow flicker at any neighbouring property occur. Thus in practice with careful site design and appropriate mitigation, and most critically the use of appropriate equipment and software, no existing dwelling or other affected property (e.g. existing work places or schools) should experience shadow flicker.

The concern to observers in relation to the impact of shadow flicker on people who suffer from photosensitive epilepsy outside their houses was raised.

Mr Sweetman told the hearing that he suffers from epipipley but not photosensitive epilipsey and he made the point that the reflection of trubines on a bright wall could induce a seizure in a vulnerable person. He requested that the Board impose a condition requiring the elimination of shadow flicker from overlapping turbines at the curtilage of a property.

Mr Speer refers in his report to his understanding that the term 'shadow flicker' when used in reference to the development of wind energy has consistently been interpreted as referring solely to the flickering effect of shadows cast by the rotation of the blades of a wind turbine on people inside buildings exposed to light from a narrow window source. In the interests of consistency, he considers that for the purposes of assessing the subject application, the effect known as 'shadow flicker' should be construed as referring solely to the interior of a dwelling house / building in line with current national guidance.

The impact of traffic during construction is described in paragraph 3.0 and following paragraphs of Mr Speer's report.

Visual amenity **-** Visual Impact is referred to under the separate heading of Landscape and visual effects. In chapter 11 of the EIS 'landscape and visual impact' the applicant considers that the impact from some areas in the Primary Principal Visual Zone, the area closest to the subject site will be 'substantial' i.e. '*the proposal forms a significant and immediately apparent part of the scene that affects and changes its overall character*'. A 'severe' impact would be '*the proposal becomes the dominant feature of the scene to which other elements become subordinate and it significantly affects and changes its character*.'

Safety risks from the operational turbines were raised as concerns by observers. In his evidence to the oral hearing (item 30 of the submissions received) Dr Kavanagh referred to due care and precautions which have been outlined throughout the EIS with respect to the construction, operation and decommissioning of the wind farm. He stated that an Emergency Response Plan, had been prepared and is attached as appendix 6

to the EIS. He responded to observer concerns regarding throwing of part of a blade. That there have been a small number of reported incidents of turbine blade failure in Europe. These have generally resulted in the blade or fragments falling close to the turbine itself. The basic technology to be employed in the project is well understood, there have been significant technical advances and the development of the technology is reflected in its growing application in many successful projects both nationally and internationally. Because of the distance to the nearest dwellings, which is greater than 1000m, it is extremely unlikely that even under the extreme conditions in this area, which have been considered, the wind turbines would cause additional damage or risk to persons.

Mr Sweetman referred to an incident: a fire at a turbine in the Netherlands, where two individuals lost their lives. Dr Kavanagh responded that the most important item in the Emergency Response Plan is to evacuate the site. Mr Lynch stated that there is an emergency evacuation plan. The first action is to evacuate and secure your own safety and the safety of your colleagues and then contact the emergency services. Mr Sweetman queried what assistance the emergency services would be able to render in view of the height of the turbines, which seems a reasonable comment. Once the turbines have been erected it can be expected that the amount of time operatives will be required to attend to their maintenance will be relatively limited. Due of the height of the turbines, the risk to maintenance personnel is higher than at normal work heights, and it is important that procedures and protocols be set out and followed, in detail. It is also worth noting that this site will be a workplace during both construction and operation and that the Health and Safety Authority have responsibility for occupational health and safety.

The impact of air quality is described in paragraph 4.0 and following paragraphs of Mr Speer's report.

Assessment of the likely significant effects of the proposed development on human beings.

Mr Speer's assessment is that the impact of construction noise can be successfully mitigated.

Mr Speer concludes that in all instances the predicted noise levels during the operational phase of the development will be below the recommended fixed noise levels of 43d(B)A (and 37.5dB(A) in the case of low noise environments) and, therefore, should not give rise to any significant impact on the amenities of nearby noise sensitive receptors / dwelling houses.

Having regard to the separation distances to dwellings and based on the information currently available, I consider that there will not be a significant effect from the impact of low frequency noise.

Mr Speer's refers to mitigation proposed in relation to shadow flicker that a shadow detection and control system will be installed on all those wind turbines within 10 No. rotor diameters of any existing dwelling which has the potential to experience shadow flicker and this system will be implemented as required during the operational phase of the development. Furthermore, the applicant has made a commitment that if it is determined that the annual guidance limits have been reached at a residence at any point during the lifetime of the wind farm, immediate steps will be taken to shut down the relevant turbines at further times when shadow flicker could potentially occur.

Mr Speer suggests the attachment of a condition to any permission to address this issue.

The cumulative shadow flicker analysis undertaken by the applicant yielded virtually identical results to those obtained for the Oweninny Wind Farm when considered in isolation. Therefore, the proposed development when considered in conjunction with the developments planned at both Corvoderry and Cluddaun will not give rise to any notable cumulative impact in terms of the levels of shadow flicker experienced at nearby receptors.

Mr Speer states that potential instances of excessive shadow flicker could be satisfactorily mitigated by pre-programming selected turbines to prevent their operation on the dates and times when shadow flicker could cause a nuisance.

In relation to photosensitive epilipsey the occurrence in the population is low, the risk of a seizure was stated to be 1 in 10 million. The Board should consider whether or not shadow flicker should be controlled at the curtilage of dwellings given that the level of risk to the population in general is low or whether the control should be in relation to houses as Mr Speer advises. I consider that a condition should be attached to any permission to ensure that the impact of shadow flicker by overlapping blades should not occur at any time at any of the houses identified in the shadow flicker assessment in the EIS.

Mr Speer's assessment is that the impact of construction traffic can be successfully mitigated.

From Mr Speer's assessment of the likely impact on air quality, no significant impact on residents of the area is anticipated.

Visual amenity – the visual impact of such an extensive large scale development is difficult to mitigate and there will be significant effects on the visual amenities of the residents of the area. The development permitted by the Board under ref 16.131260 is for 180 no. 100m high (to blade tip) turbines each with a capacity of 1.5 MW. The proposed development is 112 no. 176m high (to blade tip) turbines each with a capacity of 2.5 – 3.5 MW.

It is arguable that the proposed development, which will be more open and will allow less obstructed views through the site will have no greater an effect on the local landscape. That is not to say that it will have no greater visual impact on the residents. I note the comments of the inspector on the previous file (PL16.131260) that '*the proposed development would undoubtedly further erode the appearance of the natural landscape of this location and bring prominent, large scale development closer to residential and agricultural properties. On balance, however, I accept that the significant benefit accruing from this major infrastructural development, when set within a contained geographical area on a degraded landscape, outweighs the perceived adverse visual impact resulting from a development set at a distance of 1 kilometer and greater from residents in the environs of the site*.'

I note the emphasis in government policy on renewable energy and in particular the opportunities presented by wind energy, which is of critical national strategic importance. For this reason I do not consider that the impact on visual amenity should be a reason to refuse permission. I consider that a community gain contribution, can offer some mitigation to residents, and that the immediate locality should be main focus of the benefit.

Safety risks from the operational turbine – falling blade parts do not appear to constitute any serious risk to residents of the area since residences are located in excess of 1km from any turbine.

There is an inherent risk to maintenance personnel because of the height of the turbines, which can be mitigated by careful operational procedures, but not eliminated.

Conclusion - Effects following mitigation

I consider that, subject to the mitigation proposed and further mitigation recommended above, the likely residual effects of the project on human beings should not be a reason to refuse permission.

10.1.3. Flora Fauna

The relevant chapters of the EIS are:

Chapter 9 Terrestrial Ecology
Chapter 10 Water Quality, Fisheries and Aquatic Ecology
Chapter 18 Iron Flush Hydrological & Hydrogeological Assessment
Chapter 19 Hydrology & Sediment

and the relevant appendices are:

Appendix 2 Bord na Móna IPPC Licence
Appendix 3 Cutaway Bog Rehabilitation Plan
Appendix 4 Peat Stability Risk Assessment Report,
Appendix 9 Terrestrial Ecology
Appendix 14 Natura Impact Screening Bellacorick Iron flush

and the relevant submissions to the oral hearing are:
item 3 of the submissions to the oral hearing which accompanied evidence given by Dr Madden in relation to Terrestrial Ecology;
item 4 of the submissions to the oral hearing which accompanied evidence given by Mr Gill in relation to Hydrogeological assessment of sensitive areas at and close to the site;
item 5 which accompanied evidence given by Dr Kavanagh in relation to Aquatic Ecology and Water Quality;
item 15 which accompanied evidence given by Dr Fossit on behalf of DAHG in relation to natural heritage;
item 16 which accompanied evidence given by Prof Johnston responding to the witness statement of Mr Gill in relation to the Bellacorick Iron Flus; and
item 33 which accompanied evidence given by Dr Browne on behalf of An Taisce.
Various others who gave oral evidence to the hearing who included in their statements reference to flora and fauna.

Description of Site's Flora and Fauna

The Oweninny site is located at Bellacorick in north-west Mayo in a part of the county dominated by Atlantic blanket bog. The site of the proposed Oweninny wind farm extends to some 5,000 hectares (50km^2) and lies mainly at an altitude range of between 80 and 140 m OD; rising to 151 m at Furnought. It is encircled by designated sites. The Bellacorick Bog Complex SAC abuts or is close to the site over large parts of the northern, eastern and southern site boundaries.

The adjoining areas of Bellacorick Bog Complex SAC include the Knockmoyle Nature Reserve to the north-west, and Formoyle Flush to the east; the Owenboy Nature Reserve is close to the south-east. There are other protected sites adjoining - Carrowmore Lake Complex SAC adjoins to the west and Owneduff/ Nephin SAC extends to the south-western corner of the subject site. Two other Natura site are located within the site's boundaries: Bellacorick Iron Flush SAC and Lough Dahybaun SAC. Protected sites are dealt with under the separate heading of Appropriate Assessment and are therefore not dealt with in any detail in this chapter.

The site is owned by Bord na Móna, and largely comprises cutover and cutaway bog harvested commercially from the 1950s to the early 2000s. The site includes blanket bog remnants (46 no.) scattered throughout the site, predominantly in the north-eastern and north-western parts. Mostly lowland blanket bog, these areas also contain areas of dry heath and wet heath and patches of rich fen and flush. There are also a number of lakes and ponds across the site, some of recent origin.

A petrifying spring and tufa formation, an annex I priority habitat, occurs within the site: beside an old railway bed in cutaway bog in the centre south of the site (see page 9.18, plate 9-4 and paragraphs onwards from 18-10); rated as of county importance.

Freshwater pearl mussel is recorded in the River Deel at the confluence of the Deel and the Shalvolahan Rivers, approximately 8km from the site.

An area of approximately 317 ha, known as O'Boyles Bog, in the north-west of the site is a relatively intact bogland, where bog development was limited to drainage works. Bog remnants vary in size to less than 5ha. They are classified according to their importance in Appendix 9B (Terrestrial Ecology); largely reflective of their size and the degree of interference from drainage works.

Although bog remnants were not cut for peat, some were drained in preparation for cutting and others have marginal disturbance from local cutting or tracks. Remedial works undertaken by Bord na Móna have involved the blocking of drains at most of these sites in an attempt to restore their hydrological integrity. While lowland blanket bog is the main habitat (some of which is considered as active), other Annex I habitats are associated with these remnants, including wet heath, dry heath, dystrophic lakes and oligotrophic lakes.

The bog rehabilitation programme, implemented as a requirement of the Integrated Pollution Prevention Control License (IPPC License Number 505) issued by the Environmental Protection Agency (EPA), largely involved blocking drains, sculpting the peat surface and encouraging the development of peat-forming vegetation with the objective of re-vegetating with bog vegetation in order to stabilise the bog, rather than

restoring the blanket bog, which was not considered possible. The works carried out under the rehabilitation plan will facilitate the proposed drainage and sediment control measures.

The site includes some 352 hectares of Coillte forest plantation, comprising mainly Sitka Spruce and Lodgepole Pine. This is located mainly around and to the northwest of Lough Dahybaun. The site also encompasses 192 hectares of private forest plantation land at Corvoderry, which is surrounded by the subject site but outside the site boundary. Areas of farmland also adjoin the site.

Internally the site is traversed by the remains of a former Bord na Móna rail network, which is now a network of access tracks, drivable by 4 wheel vehicle only. These routes represent un-excavated bogland over which a thin surface layer of aggregate was applied. Although these areas were not excavated the removal of the surrounding peatland and the drying out of the general area has caused a lowering of their level. As trackways they are now in various states of repair.

The subject site includes an existing windfarm: Bellacorick wind farm, comprising 21 turbines with an installed capacity of 6.45 MW, of which 20 turbines are rated 300kW with a hub height of 31m and a tip height of 46.5m and 1 is rated 450kW with a tip height of 53.5m. This windfarm has been operating within the site since 1992.

Although the site is relatively flat, networks of rivers, flow in different directions through the site. Tributary rivers, the Inagh, Alterderg, Fiddaunfrankagh and Glenora rivers, rise on the southern slopes of the Maumkeogh Mountains and drain southwards, joining to become the Oweninny river which gives the site its name. The Oweninny River drains the central part of the site. The Oweninny river is fed by the Srahmeen river and Knockmoyle Stream from the west and by numerous small tributary streams from the east (Fiddaungal, Fiddaunnaglogh, Fiddaunnameenabane, Fiddauncam and the Fiddaunnamuinggeery) before entering the Oweninny wind farm site.

The Owenniny is joined by the Sheskin Steam which drains the forested south-eastern slopes of Slieve Fyagh and also forms the site's internal boundary with the O'Boyle's Bog area in the extreme north-west sector of the site. The Oweninny and the Fiddaunnamuingeery form part of the site boundary. The Sruffaunnamuingabatia, which drains the Bellacorick Iron Flush SAC area within the site, flows westwards and joins the Oweninny river. The Oweninny is also joined by the Muing river which drains Lough Dahybaun within the site. The Oweninny flows southwards, externally to the site and effectively dividing the site in two before joining the Owenmore turning westwards after Bellacorick Bridge and paralleling the N59. The Owenmore is joined at this location by the Altanabrocky river flowing northwards from the Nephin Mountains.

The north-eastern part of the site is drained by small tributaries (Fiddaunfura) which rise in Shanvodinnaun and flow eastwards to the main easterly flowing river, also named the Owenmore. This river rises in the townlands of Cluddaun and Shanettra to the north of the site before flowing eastwards becoming the Cloonaghmore River before entering the sea at Rathfran Bay which is within Killala Bay.

The south-eastern part of the site drains to tributaries of the Shanvolahan River (Fiddaunagosty, Shanvolahan and Fiddauntooghaun) before entering the Deel River which drains to Lough Conn and eventually joins the River Moy at Ballina before entering the sea at Killala Bay.

A habitat survey of the entire site was carried out, with specialised studies of the Bellacorick Iron Flush and for the rare plant Marsh Saxifrage (under licence from NPWS). The blanket bog remnants which remain on site were surveyed and there is an assessment of the flush system at Formoyle, east of the site. Summer, winter and autumn bird surveys over two years (2 winters 3 summers); an otter survey, and a bat survey were conducted. The results are presented in chapter 9, terrestrial ecology, and supporting appendices.

The worked out peatland, where most of the proposed development will be carried out is not ecologically rich.

Self seeded lodgepole pine and rhodendrum are invasive species within the site.

Terrestrial Fauna

The EIS provides information on some of the Bird species recorded on the site.

The site was surveyed for breeding birds in the 2010, 2011 and 2012 seasons using transect survey, vantage point watches and focused surveys of specific areas of potential interest, not covered by the other two methods. In addition, sections of forest boundary within the site were walked for signs of Merlin presence in 2011 and 2012.

The site was surveyed for wintering birds in winters 2011/12 and 2012/13. In addition, a site visit in February 2011 was focused specifically on search for Greenland White-fronted Geese on site and in the wider area.

The winter surveys were focused on the potential presence of the following groups or species of birds: Wildfowl, including geese and swans, Waders, especially Golden Plover; and Hen Harriers, Merlin and other birds of prey. In addition, all other winter birds using the site were recorded during the various surveys. The details of the surveys are given in chapter 9 of the EIS.

Bird species recorded on the site during 2010, 2011 and 2012 breeding seasons are listed in Table 9-18, giving the breeding status and conservation status. Fifty species were recorded of which 23 were confirmed breeding, 15 probable breeding, the remainder were not breeding (5) or possible breeding (15).

Wintering birds are recorded according to whether they were recorded on transects sections during winter (table 9-19 winter 2011/12 and 2012/13) or autumn (table 9-20 October 2011 and August to October 2012).

The EIS gives details of some of the wintering birds recorded on the site:

Whooper Swan (Birds Directive Annex I; Amber list) were recorded in small numbers on several of the water bodies on site during the 2011/12 winter (plus one record was reported in November 2012. No swans were present on site during surveys from December 2012 to March 2013. No swans were recorded passing over the site during the various vantage point watches in winters 2011/12 and 2012/13. Two Whooper Swans were flushed from a small lake (Lough Doo) within the Knockmoyle Nature Reserve and flew south-east towards the Furnought/Corvoderry, during a survey on 15th March 2011 for the Cluddaun wind farm development.

Greenland White-fronted Goose (Birds Directive Annex I; Amber list) - There was only one record of Greenland White-fronted Geese during surveys in February 2010, winter 2011/12 and winter 2012/13. This comprised two birds (in company with 4 whooper swans) which were flushed from ponds in the Laghtanvack area of the site on the morning of 16th November 2011. The geese took off in misty conditions and flew in a westerly direction over Knockmoyle bog. It is considered likely that these birds may have taken temporary refuge on the site during heavy fog the previous night (perhaps attracted by the swans). The only other known recent record of Greenland White-fronted Geese in the area is a flock of 23 which flew over the existing wind farm area towards Knockmoyle Bog on 31st October 2012. Ten 'grey' geese in the northernmost part of the site in late October and early November 2012 are likely to have been part of the same group of birds. The early date of these birds would suggest that they were recent arrivals which were attracted to the Knockmoyle Bog area.

Up to about 1940, a large population of Greenland White-fronted Geese occurred in the Keenagh-Dooleeg More-Bellacorick bogs but the geese deserted the boglands with the arrival of commercial peat extraction. A flock of c.100 geese subsequently utilised reclaimed grassland in the same area up to the 1970s. This population had become extinct by the late 1980s. The traditional Bog of Erris population includes two sub-populations in the vicinity, the Owenduff flock and the Carrowmore Lough flock. Local NPWS staff have been monitoring Greenland White-fronted Geese in and around the

Nephin SPA and have recorded an overall reduction in goose numbers and contraction in their range in recent years.

Teal (Amber list) – These were recorded at six locations and it was considered that at least three to four pairs breed on site each year (one pair confirmed); they consider that up to 6 pairs may have been present on site in 2009. Teal is a localised breeding species in Ireland and is particularly associated with bog lakes and pools. It occurs scattered in small flocks (max. 12) on suitable water bodies throughout the site in autumn and winter.

Tufted Duck (Amber list) - Small numbers (max. 4) of Tufted Duck occur on Lough Dahybaun during winter. Tufted Duck is a widespread breeding and wintering species in Ireland. Wintering birds are particularly associated with large midland and western lakes.

Hen Harrier (Birds Directive Annex I; Amber list) - Only one bird was recorded during the summer surveys: on 25th June 2012 a foraging male flew low (<5 m) from the Laghanvack area in a south-east direction towards the area of the old power station (Figure 9-7). Also in 2012, a local farmer reported seeing a male Hen Harrier towards the northern end of the existing wind farm road in mid August. While there is no recent history of Hen Harriers breeding in north-west Mayo, the sightings in 2012 suggest that there may now be at least some prospecting pairs in the wider area.

The EIS gives details of some of the summer birds recorded on the site:

Kestrel (Amber list) - a pair bred in a building in the northern sector of the site in 2011 (no evidence of nesting there in 2010 or 2012). A sighting of three together in August 2012 suggests a local breeding pair with a juvenile. Sightings of single birds, often hunting, were made throughout the site on several of the summer site visits. Kestrels are occasional throughout the site in autumn and winter.

Merlin (Birds Directive Annex I; Amber list) breeds sparsely in north-west Mayo, with a known territory to the north-west of the subject site.

Red grouse (Red list) are resident within the site and on adjoining bogs. They are regular on the larger expanses of intact or relatively intact site, notably at O'Boyle's Bog and along the eastern and north-eastern margins of the site, and can occur on any of the bog remnants; also on some of the re-vegetating areas of cutaway where ling heather has a good cover. It seems unlikely that there is a breeding territory within the wind farm site.

Water Rail (Amber list) - heard on site - there is likely to be a few breeding pairs on site.

Ringed Plover (Amber list) - a summer visitor to the site, with an estimated 21 breeding territories throughout the site. The species has been breeding at Oweninny since at least April 2003.

Golden Plover (Annex I and Red list) - a pair of Golden Plover was present holding territory on O'Boyle's Bog in each of the three survey years, now a rare breeding bird in Ireland. In winter they are occasional in small numbers throughout site. Golden Plover is a common winter visitor throughout much of the country.

Lapwing - does not breed on site but is likely to be an occasional visitor in autumn and winter.

Dunlin (Amber list) - a single Dunlin was present in a flooded area to the north-west of Bellacorick flush on one occasion and not seen again. A single Dunlin had also been recorded on site by Copland in July 2009. Dunlin is a rare breeding species in Ireland, with small numbers surviving on the wet bogs and coastal machairs in the west. While breeding is possible at Oweninny, it is more likely that the birds recorded in 2009 and 2012 were failed or non-breeding birds passing through.

Snipe (Amber list) - well distributed through the site with at least 10 pairs recorded in suitable breeding habitat (wet bog) and showing evidence of breeding. More are likely to be there as Snipe is a difficult species to census due to its secretive nature. Autumn/Winter - in autumn and winter Snipe are widely distributed throughout the site, generally singly or in small scattered groups of up to five, occasionally more.

Woodcock (Amber list) - is a winter visitor to the Oweninny site. Birds were recorded regularly (between 5 and 11 individuals) along the track between Lough Dahybaun and the site entrance when returning after darkness from the Hen Harrier evening roost watches.

Greenshank (Amber list) was recorded in suitable breeding habitat to the north-west of the Bellacorick Iron Flush from May to July 2012, the amount of calling suggested that two birds were present though two birds together were never observed. These observations indicate, at the least, attempted breeding ('Probable' category according to the Breeding Atlas criteria). This record is of significance as Greenshank has only once before been recorded breeding in Ireland – at Achill Island in the early 1970s.

Common Sandpiper (Amber list) - is a summer visitor to the site and it is estimated that up to 30 pairs breed within the site. The species is confined to areas of open water and along the main rivers. Common Sandpiper has been breeding at Oweninny since at least April 2003.

Common Gull (Amber list) - is a summer visitor to the site, numbers of breeding pairs varies between about five to ten pairs. In 2012, two pairs bred successfully at Lough Nagrumpaun (beside Lough Dahybaun) and at least one pair bred successfully at Laghtanvack. A 2010 survey of inland breeding gulls in counties Mayo and Galway recorded eight pairs at Bellacorick. This survey showed that the overall breeding population in the two counties has been in decline since the 1980s.

Kingfisher (Birds Directive Annex I; Amber list) - a Kingfisher was recorded flying west along the River Muing from the bridge at the entrance to the existing wind farm on 18th December 2012. Kingfisher is a widespread but scarce bird throughout Ireland. Occasional birds would be expected outside of the breeding season on any of the watercourses within the site.

Snowy Owl (Birds Directive Annex I; Amber list) - a Snowy Owl was largely resident within the site and the wider area around the site during the 2009-2011 period. It had been seen within and around the Corvoderry wind farm site on three occasions during surveys in 2011 and was also reported from near Ummerantarry in the period March-June 2011 (Cluddaun EIS). In the present study, the owl was observed between Furnought and Fermoyle on 16th November 2011. Snowy Owl is a rare vagrant to Ireland, with a grand total of 78 recorded in the country up to 2010. An adult female which was recorded on the Mullet Peninsula from 2006 to 2010 is considered likely to be the same bird seen elsewhere in the west (including south to Galway) over this period. While Snowy Owl is listed on Annex I of the EU Birds Directive, a lone individual such as this has limited conservation value.

Swift (Amber list) - a party of four Swifts was recorded over the site (in association with swallows) on one occassion. Likely to be occasional over site in spring and autumn.

Skylark (Amber list) - is widely distributed throughout the site being absent only from the completely bare peat surfaces and the conifer forests; numbers indicate a stable population across the site. The majority of Skylarks leave the site in autumn to winter in more hospitable areas in the south, east and midlands and especially in cereal growing regions.

Sand Martin (Amber list) - breed locally on site utilising peat banks to excavate nesting holes.

Swallow (Amber list) - breed in some buildings on site and in surrounding areas and may be seen anywhere over the site during summer; probably local migrants, occurring widely over the site in autumn.

Wheatear (Amber list) - were recorded in small numbers in summers 2011 and 2012 and it is possible that a few pairs breed. A large movement of migrant birds was present on site in early May 2012 – this involved many hundreds of birds passing though the site to breeding grounds elsewhere. Individual Wheatears recorded on site in autumn were probably migrants.

Grasshopper Warbler (Amber list) - occur sparsely throughout much of the site. Evidence of their presence is usually by singing males in suitable vegetation (i.e. rushes).

Starling (Amber list) - breed in buildings within and around the site. Post breeding birds form flocks from mid summer onwards and were often present in the fields north of the power station. In winter larger flocks can form in the fields which surround the site.

Linnet (Amber list) - breed sparsely within the site. This is a species typical of heathland and was recorded in dry cutaway bog with associated scrub. In autumn and winter, small flocks of Linnets feed within the site, often along the tracks.

Twite (Red list) - a party of seven Twite was recorded feeding along the edge of a track in the westernmost sector of the site on 14th November 2011. Twite is an extremely localised breeding species in Ireland being confined largely to the west Donegal and west Mayo coast. In winter, the population is augmented by immigrants from Scotland and the distribution is generally from Achill north-eastwards to Strangford Lough. Wintering birds are almost entirely found in coastal areas where they feed on salt marshes and machair. The occurrence of Twite at Oweninny is unexpected and the record is one of the furthest inland locations where they have been recorded.

The significance of the presence of the birds is described:

The site supports an important diversity of bird species that is characteristic of western blanket bog, wetland habitats and forest/scrub: 29 birds of conservation importance, 21 are amber list; many occur in small numbers and on an occasional basis. Of the 7 annex 1 species wintering birds, the presence of wintering hen harrier is the most significant. A regular night time roost occurs on the ridge to the north-east of L Dahybaun, utilising the heather. This provides optimum conditions for night roosting. Of the breeding birds, the one pair of Golden Plover breeding on O'Boyles bog is of particular note. This is a rare breeding species in Ireland and is characteristic of the North Mayo blanket bogs. It seems unlikely that Merlin breed on the site although it breeds in the wider area. Whooper Swan occur in low numbers. Occasional Greenland white fronted geese occur although the Greenland white fronted geese flock is no longer present in the wider area.

Red Grouse, red list, occurs on site; the northern half of Co Mayo had reasonable populations 2006-2008. The rehabilitation of the bog will encourage further red grouse.

Lapwing is likely to be an occasional autumn and winter visitor.

The assemblage of breeding wetland bird species, all at least amber listed, especially water birds, is notable on the site, particularly: Ringed Plover, Common Sandpiper and breeding Snipe.

A probable breeding event by Greenshank in 2012 is only the second recorded instance in Ireland. There is some chance that the same birds could return.

The breeding of Teal and Common Gull is also significant as both of these are scarce breeding species in Ireland.

There is a large population of amber listed Skylark on the site.

The DAHG made a written submission to the Board which includes:

Previous survey should be included to assess changes which have taken place over time, on this site. Recommendation that all new power lines should be placed underground to reduce the aerial obstructions for birds and to reduce the impact on birds using the area.

Bats

There are 10 species of bat in Ireland of which 5 were recorded on the subject site (table 9-17): common pipistrelle, soprano pipistrelle, Leisler's bat, Daubenton's bat and Natterer's bat. The site has potential for three other bats: brown long-eared, whiskered; and Brandt's.

Their occurrence:

Common pipistrelle – widespread; soprano pipistrelle - widespread but more active over water bodies and along riparian vegetation; Leisler's bat - hunting over the area for 90 minutes after dusk and then detected intermittently throughout the night, more than one specimen of this species was present; Daubenton's bat active over the lakes and rivers throughout the night; and Natterer's bat detected commuting along a track near a small lake at Moneynierin.

The most favourable bat habitats on-site are the larger watercourses and bodies and their riparian vegetation, scrub areas and the woodland edges of the coniferous plantations, all of which offer shelter for swarming insects on which bats feed. The large areas of regenerating cut-over bog are windswept, open landscapes that are poor for these animals. The present assessment has confirmed the presence of five bat species on-site and others may be expected to occur on occasion. All but one of the bat species confirmed or expected on-site are normally low fliers, e.g. <10m above ground level, and at a low risk from turbine impacts. Leisler's bat is a high-flying species and is of most concern. It is classified as a high risk species in relation to wind turbines as it is high-flying, travelling considerable distances between roosts and foraging areas. Avoiding cluttered environments by keeping above the tree canopy, normally flying between 10m and 70m above the ground and known to reach heights of 500m; flying at such heights could potentially bring it into conflict with wind turbines.

Other mammals

Otters - tend to occur throughout the main river channels on the site, with some use of the larger tributaries.

Badgers - were recorded at three locations. Badgers are sparsely distributed throughout the site, with the main focus in the vicinity of conifer plantations.

Pine Martens - avail of the conifer plantations for cover, though will feed out on open bog and especially along the rail tracks.

The Irish Hare - is widely distributed throughout the entire site.

Aquatic Fauna

As the EIS states the rivers of North Mayo, particularly the Moy and its tributaries are a major tourist attraction for both domestic and foreign anglers. The Owenmore and Oweninny river systems are important fishery rivers in the area. This is clearly set out in the Inland Fisheries Ireland (IFI)) publication "Towards a New Era for the Owenmore"; a specific catchment management plan for this river with a main objective:

"To ensure that the Owenmore fisheries are effectively managed for today's generation and conserved for future generations"

The south-easterly flowing Deel river is a tributary of the Moy and also hosts an important population of the protected species, Freshwater Pearl Mussel. The north-easterly flowing Owenmore river or Cloonaghmore river are also an important local fisheries resource. Maintaining the water quality and fisheries habitat of these rivers is

paramount during the development, operation and decommissioning phases of the project.

Historically, the peat harvesting operations at Oweninny had a significant impact on the aquatic ecology of the receiving waters in the catchments draining the area. This arose from loss of peat silt material from bare peat areas within the site, which sedimented in river beds. In response to this problem and following consultation with the Fisheries Board and the Environmental Protection Agency, Bord na Móna developed a comprehensive system of drainage control using settlement ponds to trap sediment in surface runoff and a bog rehabilitation programme to rewet bare peat areas and encourage vegetative re-growth. Reduction of bare peat areas is effective at reducing loss of peat material to the aquatic environment. These measures, developed in conjunction with the North-western Regional Fisheries Board and the Environmental Protection Agency (EPA), have proved successful in significantly reducing peat particle loss to the aquatic environment with a consequent major improvement in water clarity, ecology and fish habitat. This was evidenced by a major study undertaken by IFI and funded by Bord na Móna between 2005 and 2008. As the bog rehabilitation programme effectiveness continues, further reductions in peat material loss from the site will result as the extent of bare peat areas reduces.

Inland Fisheries Ireland made a written submission to the Board which includes:

The site drains to three river catchments: the Owenmore, Moy (via the Deel river), and Cloonaghmore. All three rivers and their tributaries are important in terms of salmon and trout. Salmon fishing in the Deel and Clooghmore has been restricted as a conservation measure to protect stocks due to a decline in numbers. The Deal River contains populations of fresh water pearl mussel, which is highly sensitive to silt discharges.

Flora

Protected flora found in the Bellacorick Iron Flush and L Dahybaun and dealt with in the section Appropriate Assessment. Paragraphs hereunder, dealing with bog remnants and bog rehabilitation, include other flora found on the site.

Petrifying spring and tufa formation

A small area of calcareous spring habitat with tufa formation was identified in the habitat survey beside an old railway bed in cutaway bog in the south-eastern corner of the site.

The vegetation at the spring are indicator species of alkaline fen habitat. The habitat merges with bottle sedge swamp to the south. This area of habitat corresponds to the priority Annex I habitat petrifying springs with tufa formation, (9.18 of the EIS).

A poor fen and flush is referred to under the heading of soils and water.

Bog Remnant Areas and the Bog Rehabilitation Project

In total there is 1,000 hectares (of the total 5,000 ha site area) of bog remnants within the site.

The bog remnants together with the proposed site layout can be identified on Figure 1 of the EIS which shows project elements in relation to habitat and vegetation. Figure 2 identifies all bog remnants and assigns a number to each. Details of each remnant are given in Appendix 9B.

The largest bog remnant is 317 ha, known as O'Boyles Bog, located in the north-west of the site. It is a relatively intact bogland, where bog development was limited to drainage works. Bog remnants shown in Figure 9.2, and classified according to their importance in Appendix 9B (Terrestrial Ecology). County importance is the highest ranking, which is the ranking given to O'Boyle's Bog, and also to remnant no. 29, a remnant of 112.5ha at the eastern site boundary adjoining the Bellacorick Bog Complex SAC (T77, T78 and T86 are in the vicinity). Local importance-higher value is the ranking given to a number of larger remnants listed as: remnant no. 22 which is the remnant (21.2ha) within which the Bellacorick Iron Flush is located; remnant no. 23 which is a remnant of 33.0 ha in the centre of the site south of the Bellacorick Iron Flush; no. 25 which is a remnant of 28.6 ha adjoining and east of L Dahybaun; no. 26 which is a remnant of 49.6 ha adjoining north and east of L Dahybaun; no. 27 which is a remnant of 16.2 ha in several parts, south of the Corvoderry site; and no. 34 which is a remnant of 77.1ha in the north-eastern corner of the site adjoining the Bellacorick Bog Complex SAC. The remaining remnants are ranked local importance-lower value mostly comprising smaller areas, down to less than 5ha in size. In total there are 46 no. remnants listed.

Since 2001 a bog rehabilitation plan has been implemented, as required by the IPPC license. The objectives of the rehabilitation plan are the stabilisation of the peat production areas; mitigation of silt run-off into watercourses; and re-establishment of peat-forming vegetation where possible. It has been successful in promoting the establishment of typical peatland species such as bog cotton and peat forming mosses and there has been a reduction in bare peat from ~53% 2001 to ~11% in 2011. A large number of open water 'artificial lakes', have developed in low-lying depressions with

poor drainage. Water levels fluctuate markedly throughout the year. Drainage ditches in cutover areas have been blocked with peat. Main outfalls have been blocked and have resulted in the creation of long term silt settlement areas. Where possible drainage ditches in areas of bog remnants have also been blocked in order to manage and restore the natural hydrology, and ploughing of gravel slopes has been undertaken to prevent soil and gravel erosion and encourage re-vegetation. This ploughing is also likely to increase infiltration to groundwater.

identification of the likely effects identified on flora and fauna:

The likely significant direct and indirect effects of the project on flora and fauna are:

- Loss of, or physical disturbance to, habitats and potential effects on peat stability
- Impacts on hydrology including water quality
- Impacts on fauna (disturbance, collision, trauma)
- In-combination effects with other plans and projects

Description of the likely significant effects of the proposed development on flora and fauna.

Terrestrial Fauna

Birds

The Impacts to be considered are mainly Disturbance/Collision and loss of habitat.

Of particular concern are potential impacts on birds of conservation importance which are detailed in the EIS at 9.4.8.

Annex I and/or Red Listed bird species:

Hen Harrier – The potential to disturb the hen harriers roosting at L Dahybaun, is considered in chapter 9 of the EIS including figures 9.8, 9.9 and 9.10.

A core area on a ridge to the east of L Dahybaun used as a night roost is shown in Fig 9.8 of the EIS. Harriers arrive from east and south just before dark and depart in these directions in the morning after first light. Except for 4 instances over the two winters all the activity took place within the confined area indicated on the map.

The applicant states that there is little potential for collision as the flight path of the birds has been shown to be away from the subject site. By constructing the six turbines

nearest the L Dahybaun roost outside the main winter period, and with careful design of the layout, the applicant considers that the project will not have adverse impacts on the roosting behaviour of the wintering hen harrier.

The DAHG in their evidence to the oral hearing stated that the hen harrier which roost in the L Dahybaun area are known to fly from the roost in all directions, including north through the windfarm site. In their written submission to the Board (28/8/2013) they advised that it is probable that usage of the site by this species is far more than recorded as recording days only give the picture of what was present at a specific time and day. As this species uses a wide expansive range it is recommended that turbines sites T103, T108 and T109 be removed further away from their present proposed positions.

At the oral hearing Dr Madden on behalf of the applicant gave further evidence in relation to the winter hen harrier roost in the L Dahybaun area. The survey was carried out over two winters, following a methodology devised by NPWS for monitoring of winter roost sites. Vantage point surveys were carried out; transect surveys include small birds which form their prey. Cumulatively these give an accurate account of the usage of the site by hen harriers during the winter which shows regular use of the night roost, but very occasional use of the main area during day time. Hen harriers are not hunting on site during the day time. The very low density of small bird species during winter would not be capable of supporting regular foraging hen harriers.

At design stage a critical assessment was made of the risk to hen harrier. Hen harrier winter flights are typically below 20m and well out of range of the rotor sweep. Three turbines were identified which gave cause for some concern due to their proximity to the core roost at distances of 100m, 150m, and 250m distance. The roost site on the ridge is c 20m higher than the adjoining bogs and birds circling could pass within the rotor sweep level. These turbines were moved as a precautionary measure.

Regarding the removal of T 103, T108 & T109; T 103 & T108 are located within conifer forest approx. 500m to the west of L Dahybaun, and 1.5km from the core roost area. No flight lines were recorded over these forests to the west. Dr Madden considers that these turbines pose no risk of disturbance or collision. T 109 is closer to the core roost site: approx. 125m. It is located to the northeast of the easternmost end of the roost area. The ridge is gently sloped at the eastern end, and birds leaving the ridge will be well below the rotor sweep and out of collision risk zone. Dr Madden considers that turbine T109 does not pose a risk of disturbance or collision to the wintering hen harrier.

Construction work at this turbine (T109) together with T99, T100, T105, T107, and T110 will take place outside the winter period (9.5.11.1 of the EIS), to ensure that the birds

are not disturbed and these turbines will each have a warning strobe light fitted to alert birds flying during poor light conditions, (9.5.11.2 of the EIS).

Merlin - Merlin typically flies low and fast close to ground level, and the presence of turbines would not deter hunting over the site.

Red Grouse - It can be assumed that the site will become more important for red grouse in the future as re-vegetation of bare surfaces proceeds. Recent studies have suggested that while red grouse densities declined significantly at wind farms during the construction phase they appeared to recover by the first year of operation. Red grouse does sometimes fly and when doing so it normally keeps at low heights (> 10 m) and any impact is expected to be temporary and slight.

Golden Plover - The site does not support significant numbers of golden plover in autumn or winter and small flocks would still be expected to land within the site to feed or rest when the wind farm is operational. The nesting area is approximately 1 km north of the Sheskin river which separates the O'Boyle's bog from the remainder of the site and the development will not interfere with this breeding territory. A recent study of an upland wind farm has shown no evidence of a decline in population abundance in Golden Plover over a 3-year period; therefore the presence of the wind farm is not expected to deter future prospecting by plover to establish territory elsewhere on the site.

Whooper Swan - Whooper swan is considered a species prone to collision with structures such as turbines and particularly overhead power lines, especially during inclement weather (fog, heavy rain etc.). The risk at Oweninny, however, is considered of low significance due to the small numbers of swans involved and the irregular usage of the site.

Greenland White-fronted Geese - Greenland white-fronted geese are only occasional visitors to the area. Should greenland white-fronted geese be passing over the site, the risk of colliding with the wind turbines is negligible when light and visibility during the day allow flying geese to see the turbines and avoid them, by diverting their flightlines or by gaining altitude. However, when flighting in very poor light at dawn and dusk, or in very poor weather conditions and visibility (fog, mist, heavy drizzle etc.), the geese would be at some risk of potential collision. While accepting that a risk of collision exists if geese were passing through the site during inclement weather conditions, the chances of this actually happening are considered remote due to the rarity of geese in the wider area.

Kingfisher - as a very occasional visitor to the site, with only one record of kingfisher throughout the study, it would not be expected to be affected by the proposed development.

Snowy Owl - The snowy owl recorded is considered a wandering vagrant throughout north-west Mayo. It could visit again in the future. It is expected that the owl would avoid areas where construction works are underway. When operational, the risk of collision would be low as the bird spends much of its time on the ground and generally flies close to ground level, (within 10 - 20 m).

Impacts on Amber Listed species

Ringed Plover and Common Sandpiper - Ringed plover and common sandpiper have a fairly widespread distribution throughout the site. Ringed Plover is associated with the permanent lakes and ponds though it can also occur on bare open areas of peat with associated gravel exposures and perhaps seasonal flooding. Common sandpiper is also associated with the permanent lakes and ponds but also occurs along the rivers. Mitigation will be to ensure that works don't commence in areas where breeding birds have already established territories. Operational turbines would have little if any disturbance impacts on these species. The risk of collision is negligible as during the breeding season the movements by these species is very localised and flight lines tend to be close to the ground (mostly <10 m).

Snipe - the baseline surveys have shown that breeding snipe is generally distributed within the site where suitable habitat occurs (i.e. wet re-vegetated cutover bog). It is inevitable that some of the wind farm development will encroach on suitable breeding habitat for snipe. While ample areas of potential habitat will still exist within the site, the overall breeding population of snipe may be reduced by the presence of the wind farm; though any decrease may be offset by the further development of suitable wetland habitat elsewhere on site. As snipe is an amber listed species that has declined as a breeding species throughout Ireland in recent decades, this likely impact is rated as significant. Snipe is also a widespread winter visitor to Oweninny and can occur in most habitats, from dense stands of rushes or bog vegetation to bare peat. It seems unlikely that Oweninny wintering birds would be disturbed during winter by either construction works, apart from the immediate area of the works, or the operational wind farm. The risk of collision for snipe during both summer and winter is negligible due to their behaviour of staying on the ground for the majority of the time and then only flying in short bursts of flight.

Greenshank - The presence of breeding or attempted breeding Greenshank is noteworthy as this species has been recorded breeding in Ireland on only one previous occasion. There is some chance that the same bird(s) may return to the Oweninny site in subsequent years though colonisation in the long term by more than one pair seems unlikely. If a breeding pair is on site at the time of construction, it is likely that construction works within a distance of several hundred metres of their territory would force them to abandon any breeding attempts for that season. Mitigation would be required to ensure that possible breeding birds present are not disturbed. Whether the presence of the operational wind farm would deter prospecting birds from settling in the site is not known but as this is a case involving a single pair in an area without any previous history of the species, there is a reasonable probability that there may be a deterring effect due to the presence of the turbines. While this impact would be of some significance, the impact would need to be interpreted in the context of this being a single, isolated breeding pair without much prospect of long-term colonisation of a wider area.

Common Gull - Common gull has a scattered breeding distribution across the site. Breeding birds would be expected to be disturbed by construction works within a distance of several hundred metres of the nesting area. Mitigation would be required to ensure that possible breeding birds present are not disturbed. An objective of the post construction habitat management will be to create further permanent ponds within the site, which will suit this species.

Teal and Little Grebe - Teal and little grebe: these two species breed sparsely across the site where well developed wetland habitats occur. As with other wetland species, breeding birds would be expected to be disturbed by construction works close to the breeding area (within several hundred metres). Mitigation would be required to ensure that possible breeding birds present are not disturbed. Once operational it is unlikely that birds would be deterred from breeding due to the presence of the turbines. During the breeding season, these birds stay close to the nest area and flight lines tend to be close to the ground (mostly <10 m). Neither species is considered at risk of collision with turbines. Wintering teal occur on site in small numbers and are mostly confined to the various lakes. The wind farm development is unlikely to have any adverse impacts on wintering birds. An objective of the post construction habitat management will be to create further permanent ponds within the site, which will suit these species.

Other Amber Listed species - There are unlikely to be any significant adverse impacts by the wind farm on the amber listed passerine (perching bird/songbird) species which occur regularly on site (skylark, sand martin, swallow, wheatear, grasshopper warbler, starling, linnet). Construction works during the nesting season would cause disturbance

to birds in the immediate work area but this can be mitigated by site clearance works taking place outside of the breeding season (and thus removing the potential for nesting to occur). Generally, wind farm developments can be expected to have fewer effects on passerine species than on waterfowl or birds of prey.

Birds in General

The EIS states that most bird species, including the wintering hen harriers, will not be affected by the project, but that evidence from elsewhere shows that breeding snipe have a low tolerance to the presence of turbines and the population on site can be expected to decrease; though any decrease may be offset by further development of suitable wetland habitat elsewhere on site. Some bird collisions may occur but species particularly prone to collision, especially swans and geese, occur within the site area only on an occasional basis and then in small numbers.

In their letter to the Board dated 28/8/2013 the **DAHG** stated that habitat conditions for birds should be improving on the site, owing to rehabilitation plan which is in operation and the assessment of the likely effects on birds should be considered in the context of these trends; and that previous surveys should be included. They recommended undergrounding power lines.

Dr Madden told the oral hearingthat the methodology of the previous survey was not comparable to the methodology they have used; that the present assemblage of birds will not change over time. In particular geese need wet bog, and bog cotton to feed on; it would take a long long time, if ever, for good quality bog to develop. He couldn't see birds using this site when they have good quality bogs at Owenduff and Glenamoy. These bogs have a huge carrying capacity. If there are a few good breeding years the numbers on the wet bogs will increase. There may be some dropping in to the subject site, resting or roosting overnight as they have found, but as regards occurring on a regular basis, that is unlikely.

Dr Madden responded to the DAHG recommendation for undergrounding all new power lines: 3.9 km of new overhead lines is proposed. Data show that there is no significant activity across the site by species vulnerable to collision risk either daily or seasonally. As far as can be established, there is no known instance of bird casualties from existing overhead lines in the Bellacorick area and there is no justification to recommend undergrounding.

At the oral hearing DAHG stated that mitigation should be sufficiently comprehensive to ensure that it can be demonstrated that the requirements of the Wildlife Acts, 1976 - 2000, will be met with regard to the protection of breeding birds, their nests and unflown young during construction and operational stages of the development. In this regard,

they had concerns that aspects of mitigation for works occurring during the bird nesting season are to be agreed with the Department during construction.

DAHG advised the Board that monitoring may be specified to determine the effectiveness of proposed mitigation measures but may not be used to address data gaps or deficiencies in information required to carry out an appropriate assessment. Proposals for monitoring, including details of monitoring locations, should be available at the application stage, and should not be deferred to be agreed at a later stage (i.e. post consent).

Dr Madden stated that the conservation status of birds – the conservation status of the various species will not deteriorate during the construction and operation of the wind farm. As further wetland habitat develops on site in the future, scarce wetland breeding species such as Teal, Ringed Plover & Common Sandpiper, can be expected to increase in numbers.

Bats

The Impacts to be considered are mainly disturbance/collision.

Some international evidence suggests that barotrauma, which involves tissue damage to air containing structures caused by rapid or excessive pressure change, rather than collision, may be a contributory factor where bat mortalities have been recorded.

The planned turbine development is to be sited within an area of cutover blanket bog currently over-flown by Leisler's bat and whose scrub, forest edge and watercourse habitats are currently in use by at least three bat species. From a review of research from mainland Europe and North America, risks to bats from wind turbines are acknowledged and it is possible that some bat mortality may arise as a result of the planned development. Therefore, some general mitigation measures are recommended to reduce the likelihood of adverse impacts on local bat populations.

The guidance document 'Wind energy development and Natura 2000, published 2011' refers to bat's low annual reproductive output and long life expectancy, so they may be susceptible to even small additional mortality. It states that bats mostly commute or migrate between summer roosts and hibernation sites. Timing varies for each species according to geographical location and from one year to the next depending on weather conditions but several studies have shown that there is a peak in mortality in late summer and autumn during dispersal and migration, and that migrating species may be particularly susceptible. A common assumption has been that bats use echolocation to avoid wind turbines but they may not do so for energy-saving reasons when travelling over long distances in open areas.

The EIS states that in mainland Europe and North America, evidence of bat collisions has led to growing concern about the siting and operation of wind turbines. The most serious incidents have involved bat species that fly very high and for long journeys, particularly species on long distance migrations. Many of these overseas turbine / bat mortality studies are at wind farms with significantly large numbers of turbines, sited along known bat migration routes where many hundreds or even thousands of bats commute seasonally resulting in numerous deaths and injuries. There is currently no evidence that mortality of bats on the same scale occurs in Ireland and indeed such mortality would not be expected as Ireland does not support comparable bat migrations.

An Taisce's written submission 29/8/2013 refers to bats: according to Eurobats the building of turbines within forestry will create new linear features which may attract more bats to forage in the direct vicinity of the wind turbine and the risk of morality will increase if the clearing is not wide enough. The recommended minimum distance is 200m to forest edges. A bat mortality study carried out at the University of Calgary revealed that the drop in air pressure caused by the whirling blades of turbines is causing the lungs of bats to burst. In general, more corpses are found underneath turbine bases in comparison to birds corpses. However Professor Racey of Aberdeen's school of biological sciences found that bats are deterred by the electromagnetic radiations emitted from radar installations. Radar could be used to deter bats from approaching wind turbines. Thus, the applicant may need to take further such measures, to ensure that bats are not adversely affected by this proposal. The use of red lights was also proposed to deter the bats from the vicinity of the turbines, however this may need to be investigated further.

Dr Madden told the oral hearing that their bat expert Mr Conor Kellegher who is familiar with the area, has advised that because of the low number of bats he recorded during his survey there was no need for corpse surveys; bats are not attracted to the site because of its windswept nature; the conifer trees are attracting them and they will be removed in due course.

Mitigation – In the EIS, some general mitigation measures are recommended to reduce the likelihood of adverse impacts on bats:

> Where lighting is required, directional lighting shall be used to prevent overspill; by the design of the luminaire and use of accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only.
>
> Any bridge to be altered shall first be surveyed for bat presence. If bats are found, subject to safety considerations, some crevices beneath the bridge shall

be retained for their continued use according to best practice bat mitigation measures for bridge works.

Bats commuting and foraging along on-site woodland edge boundaries will be safeguarded by providing a 50m minimum buffer zone between the rotors of planned turbines and the nearest vegetation to reduce the risk of collision and/or barotraumas, noting that this distance should be measured from the vegetation to the tip of the rotor blades, not to the base of the turbine. This should prevent impacts to bats that mainly fly low along linear features, e.g. the pipistrelles.

Other Terrestrial Fauna

Otter is listed as near threatened in the Irish red list. Ireland is a European stronghold for the species. Larger rivers in the study area provide good habitat.

Pine Marten and Irish hare both annex V listed, occur within the site. Common frog occurs throughout the site. Common lizard is found within the site. Badgers are likely to be present in the forested areas and there could be disturbance to a sett.

The EIS states in relation to the impact of the proposed development on other important fauna species, that they are unlikely to be affected by the project.

The measures to protect watercourses, including sediment management, surface water treatment, avoidance of work in riparian areas, and minimising works in rivers, which have been restricted to improvement of existing crossings, will mitigate any impact on otters.

Aquatic Fauna

The impacts to be considered are impact of the project on peat stability and the impact on surface water quality during construction and operational phases; impacts from the development of crossing points.

The EIS states that the project has potential to impact on the aquatic environment through its potential to cause sediment material loss from construction areas and pollution due to oil spills and waste material management. Unlike the peat harvesting operations of the past, only a small fraction of the site will be disturbed by construction and potential sediment and other polluting substances will be controlled by good engineering construction practice and through implementation of a site specific drainage and sediment control plan.

Freshwater pearl mussel is recorded in the River Deel at the confluence of the Deel and the Shalvolahan Rivers, approximately 8km from the site. The Fiddaunatooghaun is a tributary of the Shalvolahan. Seven proposed wind turbine sites and access trackways are located within the upper watershed of the Fiddaunatooghaun stream. An existing

railway embankment, which was part of the Bord na Móna peat harvesting operations, forms a physical barrier between six of the turbines and the small first and second order streams in the upper catchment. One turbine T110, is within 100m of the first order stream feeding into the Fiddaunatooghaun. This is located, by design, on bare earth, where all peat has been removed. The drainage from this turbine passes through a settlement pond /lagoon and subsequently to an existing Bord na Móna silt pond within the stream, before entering the Fiddaunatooghaun.

IFI made a written submission to the Board which included reference to the potential to impact on aquatic fauna through peat stability, wastewater, and the cement batching plant. The submission recommends mitigation in relation to each of these issues and a general mitigation that turbines should be kept a minimum of 100m from all watercourses.

IFI recommend that they should be consulted where existing culverts are to be altered or new culverts installed. Any in-stream works should be carried out between May and October during dry weather conditions. A section of the Sheskin River catchment has been identified as 'at risk from forestry siltation and eutrophication' in the Western River Basin Management Plan. The Forestry and Water Quality Guidelines must be strictly adhered to and felling should not be carried out during wet weather conditions. The Emergency Response Plan should include the IFI as a notifiable body in the event of a major spill or other significant discharge of polluting matter to surface waters.

The protection of the aquatic environment in these salmonid rivers and the River Deel's fresh water pearl mussel, is of extreme importance.

The proposed development will involve the harvesting of some existing forestry. Forests and forest management practices in peatland environments have been identified as potentially important sources of water pollution, because they make available phosphorus to peat surfaces which have extremely low phosphorus adsorption capacity; and the phosphorus can easily be carried to surface waters by runoff, especially in storm conditions. Phosphorus is the limiting nutrient for algal growth in freshwaters. It is important that, following tree felling operations, the brash is removed, and not left on the ground to increase the available phosphorus, to discharge to sensitive surface waters.

In relation to potential impairment of water quality during operational phase – waste water treatment systems are to be installed to treat wastewater in accordance with EPA Guidelines. Surface water runoff from roadways and paved areas will discharge to settlement ponds and overland flow. No impact on water quality during operational phase is anticipated.

Likely Effects on Flora including the Bog Remnant Areas and the Bog Rehabilitation Project.

The impacts to be considered are construction in bog remnant areas; impact on peat stability and hydrology; and the introduction or spread of invasive species.

The proposed development has the potential to adversely affect the hydrology of the area and consequently to impact on the sites habitats and surrounding habitats, since the habitats in and surrounding the site are sensitive to hydrological change.

In Chapter 10 '*hydrology of the site'* it is stated that the Oweninny wind farm site lies within three main river catchments – Owenmore (Oweninny) flowing westwards to Tullaghan Bay on the west coast, Cloonaghmore (a different Owenmore) flowing north east to Killala Bay on the north Mayo coast and the Deel (Shanvolahan) flowing to Lough Conn in the Moy River Catchment. The main rivers draining the site area are shown on Figure 10-1 and the river catchments are shown on Figure 10-2.

The Oweninny site has been comprehensively drained in the past by a series of parallel open ditches to facilitate peat production. As a result of harvesting operations large areas of the site have been stripped to the subsoil layer. The ditch drains which were installed in the worked bog, discharge to the natural drainage of the area. Since harvesting ceased Bord na Móna has undertaken a bog rehabilitation programme as part of the requirements of the IPPC Licence for the peat harvesting operations. The rehabilitation works included the blocking of bog drains to allow re-wetting of areas. This has facilitated re-growth of surface vegetation, significantly reducing the loss of peat material from the site to the aquatic environment.

The wind farm development will interact with the bog rehabilitation plan where new access tracks, hardstands and turbine bases will be constructed, over a small area of the overall site <5.4%. Where existing access tracks occur these already interact hydrologically with the bog rehabilitation plan. There will be no discharge to natural watercourses or to areas where successful bog rehabilitation is underway. The wind farms system will mimic the existing hydrology in the bog rehabilitation plan.

The bog remnants can be identified together with the proposed site layout on Figure 1 of the EIS which shows project elements in relation to habitat and vegetation. Figure 2 identifies all bog remnants and assigns a number to each. Details for each remnant are given in appendix 9B.

Mitigation by avoidance has been employed. Except in small number of cases where minor incursions occur due to the necessity of the wind resource design and where existing Bord na Móna roads and paths were already established, bog remnants have been avoided. Permanent wetland areas developed from post peat production rehabilitation measures, now well established wetlands, have been avoided; and cutover bog area where there is ongoing scientific research on bog restoration by BnM ecologists and GHG emissions research, funded by the EPA, have been avoided. Most of the construction impacts are from roadways rather than turbine placements.

The success to date of the Bellacorick Bog Rehabilitation Plan has already been noted. The proposed development will result in some minor changes to drainage patterns, these will not be significant in terms of the overall bog restoration plan.

There is a commitment to enhance the hydrology, generate more open water and complete more drain blocking. The site will be managed in a manner that will maximise

the further development of wetlands habitats and will result in long term positive hydrological impact.

When the turbine and road drainage network has been completed there will be further drain blocking to increase wet areas and promote sphagnum growth and establishment. New areas will be identified to enhance long-term replacement siltation ponds. Substantial ponds will be created by using newly installed roads as potential water retention berms, and there will be targeted drain blocking on deep peat and adjacent bog remnants to enhance rewetting of deep peat areas and to encourage re-vegetation by typical peatland species, and also to offset potential drying out and carbon losses.

The invasive species rhododendron and lodge pole pine have become established within the subject site. These invasive species may become more problematic as a result of the project. In addition, movements in and out of the site have the capacity to introduce further invasive species. An Taisce raises this as an issue of concern to them and request that a programme to remove the existing invasive plants be carried out as well as continued monitoring of the spread of those plant species.

The IFI recommend that measures should be put in place to prevent the spread of invasive species as a result of works being carried out.

The avoidance of introducing invasive species will be part of the CEPM. The IFI bio-protocol will be used.

Assessment of likely significant effects

Birds

The bog rehabilitation, which has created a wetland, has improved the site's attractiveness to birds.

It is important that construction work should be managed so that no work takes place during the breeding season, in the vicinity of breeding birds and no work takes place during the winter near the hen harrier roost.

The DAHG recommendation that all new power lines should be placed underground to reduce the aerial obstructions for birds and to reduce the impact on birds using the area seems reasonable.

In relation to bird species which could potentially collide with wind turbines, the evidence is that they occur in small numbers on the site and their occurrence is unlikely to increase. Given the low frequency at which they occur, I consider that the impact on these species, notwithstanding their conservation importance, will not be significant.

I consider that the DAHG recommendation that all new power lines should be placed underground to reduce the aerial obstructions for birds and to reduce the impact on birds using the area is reasonable and should be the subject of a condition.

The DAHG have expressed concern, that aspects of mitigation for works occurring during the bird nesting season may require agreement with the Department during construction. Notwithstanding detailed surveys carried out as part of the EIS and detailed advice contained in the reports of the planning authority's ecologist and the DAHG, it is inevitable that some issues will require further agreement. It seems reasonable that if a decision to grant is being considered, conditions may be attached by the Board, which require the applicant to reach agreement regarding points of detail, with the DAHG. In my opinion this would not constitute information required by the Board at this stage to complete the information required to carry out EIA.

Bats

Leisler's bat is the bat most at risk from collision due to the height at which they fly: above the tree canopy normally flying between 10m and 70m above the ground but known to reach heights of 500m; the speed at which they travel, in excess of 40km/h; and the considerable distances: up to 13.4km recorded in Ireland, they travel between roosts and foraging areas.[7]

Leisler's bat is probably the third most common bat species in Ireland with a stable population of 20,000+ mature individuals; but it is listed as near threatened on the Irish Red List because the Irish population is estimated to comprise 20-25% of the world population; and is therefore of International Importance.

It would have been of interest to have more detail on the survey methodology, in order to be satisfied that a single night's survey was sufficient (repeated on a single night the following year) to conduct a study of the entire site.

The Board should note the proposed mitigation is not that recommended in Eurobats guidance which states that '*if wind turbines are being sited right in the middle of forests, tree felling will be necessary to erect them. This will create new linear features which may attract more bats to forage in the direct vicinity of the wind turbine and the risk of mortality will increase if the clearing is not wide enough. In this case the recommended minimum distance (200m) to forest edges will be the only mitigation measure acceptable if the project is not abandoned*.' Eurobats also recommends that for land

[7] Bat Conservation Ireland Wind Turbine/Wind Farm Development Bat Survey Guidelines, December 2012

based wind turbines the pre-survey assessment should consider bat activity within a 10km radius of the wind turbine.

While the distance recommended in Eurobats might have been considered by the applicants, their proposal is supported by guidance in the UK. It is acknowledged that bat activity recorded on the site was low, and for this reason the mitigation proposed is considered adequate.

Other Terrestrial Fauna

Currently this site is inaccessible and many parts are very remote from public roads, the provision of access routes through the site could increase public access and make parts of the site less attractive to wildlife. However, given the scale of the site, there will continue to be areas which are remote and inaccessible.

Aquatic Fauna

The potential for impact from the construction of the proposed development arising from peat stability is given detailed consideration in the EIS. This has been addressed by avoiding areas of risk and limiting the development to areas where the risk is below certain thresholds: mitigation by avoidance. No impact during the construction phase arising from peat stability is anticipated.

In relation to potential impairment of water quality due to construction works - sediment loss is an issue which has had a significant impact on aquatic ecology in this area in the past. The potential for impact on surrounding watercourses from the construction of the proposed development is given detailed consideration in the EIS. The development of a bog rehabilitation plan following cessation of the bog development was mainly a response to the adverse impact of runoff on rivers in the area. The measures already taken to deal with this issue will facilitate the subject development. Detailed consideration has been given to protecting water quality in the design of the proposed surface water drainage system. Mitigation is proposed through the separation of surface water drainage from soiled runoff; the capture of soiled runoff and discharge to settlement ponds to remove and isolate contamination at source; followed by spreading across the surface; and utilisation of the bog rehabilitation drainage. No impact on water quality during construction phase is anticipated.

Brash should be removed from the site and a condition to this effect should be included.

IFI will be consulted in relation to any works at rivers and any river crossings.

Petrifying spring and tufa formation

The potential impacts on the petrifying spring and tufa formation are: damage through construction works or through impact with the hydrology of the area and impact through water quality.

A catchment of 48,000m^2 is defined for this spring. Mitigation by avoidance has been utilised. There are no roads or turbines located in the estimated groundwater catchment of the spring. During the constraints study the access track from T101 to T86 was moved to avoid this catchment.

Bog Remnants

The potential impacts on bog remnant areas are direct damage to these areas through construction works and indirect impact through surface water quality or quantity or through impact with the hydrology of the bog remnants.

The remnants are not of equal importance. As stated earlier in this section they are classified according to their importance in Appendix 9B.

Because mitigation by avoidance has been adopted, no impact during the construction phase arising from peat stability is anticipated.

Mitigation through design has been used; the development considered the bog rehabilitation plan and bog remnant areas, developing wetlands aand the carbon research centre; there is a slight impact on remnants – no. 9 and no 23; and apart from the immediate development area the remainder of the site will continue as in the rehabilitation programme and there will be opportunities to create further wet areas close to the turbines.

Remnant no. 9 is a remnant of 33.1ha stated to be of Local (Lower value) importance. Remnant no. 9 is located near the south western end of the site. It is a large, L-shaped bog remnant which has been extensively drained in the past with some areas in the north of the remnant also stripped of surface vegetation. In these stripped areas there is a high cover of bare peat with Eriophorum angustifolium the main recolonizing species. The drains have been blocked with peat dams in recent years and this should improve the hydrology of the remnant over time. Turbines T64 and T79 will impact on the western margin of the remnant and T65 will impact on the southern margin.

Remnant no 23 is a remnant of 33.0 ha - Local (Higher value) importance. The blanket bog habitat within this relatively large remnant area is of variable quality. In the eastern half of the area the peat is firm with numerous deep drains and with a species-poor vegetation which is generally dominated by Molinia caerulea. In the middle of the

remnant area the habitat is more intact with Calluna vulgaris, Molinia caerulea, Tricophorum cespitosum and Cladonia portentosa providing the bulk of the vegetation cover. Along the western margins there has been extensive disturbance, resulting in the presence of substantial areas of bare peat and exposed subsoil. Turbine T57 will impact on the northern margin of the remnant and T58 will impact on the southern margin.

As stated in the section on Appropriate Assessment turbine T16 would be constructed close to remnant no. 34 adjoining the Bellacorick Bog Complex SAC any adverse impact on the remnant could potentially affect the priority habitat.

Identification of cumulative / in combination impacts in relation to flora and fauna

In combination impacts have potential to cause effects on birds and terrestrial mammals and via the hydrology including water quality, on bog remnants and protected bogs, and on aquatic fauna.

Description of in combination impacts in relation to flora and fauna

Cululative or in-combination impacts arising from the proposed development combined with the other permitted and proposed wind farms in the immediate area, a total of 171 turbines, are considered in the EIS in terms of habitats and birds.

In terms of habitats, the EIS states that the Cluddaun project could potentially impact on intact blanket bog within O'Boyles bog if peat slippage crom the Cluddaun occurred but good design and construction management can provide mitigation. Access to the Cluddaun site is not expected to increase the risk of ecological impacts in the Oweninny site as no additional areas of habitat will be affected.

In terms of birds, the EIS states that there is some potential for construction works related to the Cluddaun project to cause disturbance to the bird interests, especially nesting Golden Plover, within the O'Boyle's Bog sector of the Oweninny site. The Oweninny project alone has been designed to ensure that there are no impacts on the important bird species of this bog site. The single turbine proposed for Dooleeg is within the corridor used by wintering Hen Harriers associated with the winter roost within the Oweninny site and this turbine could pose a collision risk to the birds; sensitive design and appropriate mitigation is being following in the Oweninny project to ensure that any risk to the hen harriers is minimised. For woodland birds, the cumulative impact would be increased due to the removal of substantial areas of conifer forest but all of the affected species are widespread birds of the countryside. Further, the creation

of open spaces within the forests is likely to benefit species such as skylark and meadow pipit. Access to the Cluddaun site through the access tracks developed for the Oweninny wind farm and the right of way to the Corvoderry site is generally not expected to increase the risk of impacts on bird species within the Oweninny site as no additional areas of habitat will be affected. The additional traffic along the roads would not generally be an issue unless a sensitive species, such as Golden Plover, was nesting close to the road (up to 500 m). Should the works for the Cluddaun and/or Corvoderry projects commence only after the Oweninny works are complete, it is recommended that the habitats alongside the access be surveyed for sensitive bird species and if necessary seasonal restrictions on usage may be required.

The EIS states that that careful planning and design of the wind farm layout (with a high emphasis on avoidance of ecological receptors), along with appropriate mitigation as required, will minimise significant ecological impacts. Breeding Snipe have a low tolerance to the presence of turbines and the population on site can be expected to decrease (though any decrease may be offset by further development of suitable wetland habitat elsewhere on site). Some bird collisions may occur but species particularly prone to collision, especially swans and geese, occur within the site area only on an occasional basis and then in small numbers. Other important fauna species, such as otters, bats and the common frog, are unlikely to be affected by the project. It is stated that it can be objectively shown that none of the designated sites within and around the site will be affected in any way. The development of the wind farm will result in some changes to the habitats within the site but these changes can be considered as being consistent with the rehabilitation of the site since commercial peat extraction ceased in the early 2000s and will be managed so as to maximise the further development of wetland habitats.

Dr Madden responded at the oral hearing, to the DAHG's comments that in-combination effects should be considered in relation to plans and projects including: EirGrid's Grid 25 implementation programme, Grid West, the Mayo Renewable Energy Strategy, other existing, permitted and proposed energy developments, windfarms in the general area and the existing cutaway bog rehabilitation plan. Dr Madden's response is that section 9.4.12.1 of the EIS considered the proposal in combination with permitted Oweninny Wind Farm, the permitted Corvoderry Wind Farm, the permitted Dooleeg Wind Farm and the proposed Cluddaun wind Farm; forestry; peat harvesting; and agriculture.

Dr Madden responded to the DAHG's comments in relation to the Cutaway Bog Rehabilitation Programme. The work was completed in 2012. The bog rehabilitation plan was considered and bog remnant areas were avoided including bog remnants – no. 9 and no 23 slight impact; also developing wetlands and a carbon research centre.

Apart from the immediate development area, the remainder of the site will continue as in the rehabilitation programme and there will be opportunities to create further wet areas close to the turbines. There will be no additional in-combination effects.

Assessment of likely significant cumulative in combination effects in relation to flora and fauna

The Renewable Energy Strategy is underpinned by a Strategic Enrivonmental Assessment and a Habitats Directive Assessment; although this is only evidenced in a single paragraph on page (iv) of SEA report.

In relation to Grid 25 the emerging preferred corridor for the 400kv line appears to commence at a location northwest of Maygownagh, runs west of Ballina, east of Foxford and Swinford and then south of Charlestown and Ballaghaderreen. This 1km wide corridor, which is located 7.1km east of the Oweninny wind farm has been subject to a detailed constraints report, carried out in August 2012. When the alignment of the project is confirmed, any application for planning approval will be subject to a mandatory EIA and AA. Until then it is not possible to determine the nature and scope of any in-combination effects between the proposed wind farm and the Grid West project. In-combination effects will be required to be assessed by EirGrid PLC.

In relation to fauna, where no significant effects are identified from the proposed development, it is unlikely that significant cumulative effects will accrue in combination with the other windfarms.

Conclusion in relation to effects on flora & fauna

Birds

I consider that many of the birds which have become established at the site can co-exist with the windfarm.

I consider that subject to the additional mitigation recommended the effect of the project following mitigation would not be significant in relation to birds.

Bats

I consider that subject to the mitigation proposed the effect of the project following mitigation would not be significant in relation to bats.

Other Terrestrial Fauna

I consider that subject to the mitigation proposed the effect of the project following mitigation would not be significant in relation to other terrestrial fauna.

Aquatic Fauna

I consider that subject to the mitigation proposed, the effect of the project following mitigation would not be significant in relation to the quality of surface waters or in relation to aquatic fauna.

Petrifying spring and tufa formation

I consider that the impacts to petrifying spring and tufa formation have been mitigated in the layout design and that the effects of the project on petrifying spring and tufa formation would not be significant.

Bog Remnant Areas and the Bog Rehabilitation Project

I consider that the impacts to bog remnants has been largely mitigated in the layout design and that the impacts on remnants numbered 9 and 23 noted in section 9.5 of the EIS would not be significant in view of their location and level of importance.

I consider that there could be a significant negative impact on remnant no. 34 which is a remnant of 77.1ha at the eastern site boundary adjoining the Bellacorick Bog Complex SAC, arising from the development of turbine T16 in close proximity and in order to mitigate that impact turbine T16 should be omitted, in the absence of a detailed hydrological assessment of the area which demonstrates that there will be no adverse effect on the bog remnant or the adjacent SAC. Subject to that further mitigation the effect of the project following mitigation would not be significant in relation to bog remnant areas and the bog rehabilitation project.

Cumulative / In-combination effects

Earlier in this report the potential impact of the proposed development on the adjoining protected bog, Bellacorick Bog Complex, where it adjoins the subject site, in the north eastern part of the site, where no significant hydrological divide exists was referred to. The Cluddaun site which adjoins the subject site also adjoins the protected bog, in this general area, and there is similarly no significant hydrological disconnection between that site and the protected site. In addition to the potential for cumulative / in-combination impact from the proosed development together with the Cluddaun development adversely affecting the Bellacorick Bog Complex, which is referred to in

the section on Appropriate Assessment, there is the potential for cumulative impact on bog remnants within the subject site and the Cluddaun site.

In relation to the subject site the existing permission, which can be implemented, is an important consideration.

Conclusion regarding acceptability having regard to residual effects

I consider that, subject to the mitigation proposed, and further mitigation recommended above the likely residual effects of the project on flora and fauna would not be significant and should not be a reason to refuse permission.

10.1.4. Soil, Water, Air & Climate.

The relevant chapters of the EIS are:

Chapter 10 Water Quality, Fisheries and Aquatic Ecology

Chapter 13 Geology & Soils

Chapter 19 Hydrology & Sediment

and the relevant appendices are:

Appendix 3 Cutaway Bog Rehabilitation Plan

Appendix 4 Peat Stability Risk Assessment Report

Appendix 16 Erosion and Sediment Control Plan

and the relevant submissions to the oral hearing are:

item 4 of the submissions to the oral hearing which accompanied evidence given by Mr Gill in relation to Hydrogeological assessment of sensitive areas at and close to the site;

item 5 which accompanied evidence given by Dr Kavanagh in relation to Aquatic Ecology and Water Quality;

item 6 which accompanied evidence given by Mr McCarthy in relation to Drainage and Sediment control;

item 7 which accompanied evidence given by Mr Jennings in relation to Geotechnical Engineering and Peat Stability; and

item 16 which accompanied evidence given by Prof Johnston responding to the witness statement of Mr Gill in relation to the Bellacorick Iron Flush.

Various others who gave oral evidence to the hearing who included in their statements reference to soils and water.

Description of the development in terms of soil & water

Hydrology of the site (Chapter 10 of the EIS) - The Oweninny wind farm site lies within three main river catchments – Owenmore (Oweninny) flowing westwards to Tullaghan Bay on the west coast, Cloonaghmore (a different Owenmore) flowing north east to Killala Bay on the north Mayo coast and the Deel (Shanvolahan) flowing to Lough Conn in the Moy River Catchment. The main rivers draining the site area are shown on Figure 10-1 and the river catchments are shown on Figure 10-2.

This is a high rainfall area, the 30 year long term average rainfall at Eskeragh station is 1457.6mm, 18% higher than Belmullet. The site is generally underlain by blanket peat bog, over glacial deposits.

The site is made up of peat soils, which over much of the site were excavated and removed to the (former) nearby Bellacorrick electricity plant to fuel the generator. Because the underlying subsoil was undulating, a continuation of the drumlin belt to the east, there are areas, in hollows in the subsoil, where the peat was not fully extracted. There are also areas where no peat was extracted, although regular lines of drainage ditches were dug, in preparation for peat extraction. These latter areas are termed bog remnants and comprise about $^{1}/_{5}$ of the site area.

The Oweninny site has been comprehensively drained in the past by a series of parallel open ditches to facilitate peat production. Large areas of the site have been stripped to the subsoil layer resulting from harvesting operations. The ditch drains installed in the worked bog discharge to the natural drainage of the area. The rehabilitation works including the blocking of bog drains to allow re-wetting of areas. This has facilitated re-growth of surface vegetation, significantly reducing the loss of peat material from the site to the aquatic environment.

As already noted the channel of the Oweninny River has been recommended for NHA status under IGH 14 ‘fluvial and lacustrine geomorphology’.

There are areas within the site of planted forestry (352 ha), some of which will require felling to facilitate the proposed development.

In the past the removal of the peat from the site involved the use of railways. Some were permanent ways, placed at ground level on a hard surface. Others were temporary tracks laid down for the period of extraction, lifted and re-laid in another extraction area. The permanent rail lines have been removed since operations ceased, but the ground on which they were placed is now in use as trackways, being above the general ground level, but suitable only for 4 wheel drive vehicles. The level of these trackways is below the original ground level, the ground on which they were placed

having dried and shrunk. The proposed development involves the improvement and re-use of these trackways as well as the development of additional roadways.

The proposed development includes excavation of the peat soil for roadway construction (85 km of which 6 km is existing track, to be upgraded), erection 112 turbines each with a crane hardstand; four electrical substations, and other structures and buildings. It is proposed to use a 'borrow pit' within the site as a source of building material for the roadways, and to develop a peat deposition area. Additional peat deposition will be carried out in engineered mounds, along roadways within the site where conditions are suitable.

As previously stated a bog rehabilitation programme, was implemented between 2001 and 2012, which involved blocking main outfalls and blocking drainage ditches in cutover areas, creating a large number of open water areas or artificial lakes, in low-lying areas. Long term silt settlement areas have been created. One of the main objectives of the bog rehabilitation programme, was to provide a long-term solution to sediment loss to watercourses. This has been achieved. The silt settlement areas which have been created will be utilised in the proposed development.

Soil - The proposed development will involve peat removal, aggregate removal and peat storage on site, which will give rise to the potential for the generation of sediment.

There is potential for peat slippage arising from excavations into peat, from increased loads on peat and from alteration of drainage patterns: poorly designed drainage on unstable areas may increase the risk of landslide.

Water - There are streams and rivers throughout the development site which could be impacted by the proposed development. Groundwater is close to the surface is several locations and could be impacted by the proposed development. The proposed development is within a wetland environment and will create new surface/subsurface features which have potential for interfering with the hydrology of the area. The development of new access tracks across existing rivers has the potential to obstruct water flow or interfere with aquatic fauna.

The proposed development will generate sediment which could include unmanaged erosion and if this discharges to watercourses could cause modification to stream channel morphology, potentially smothering habitats and impacting on aquatic flora and fauna, especially fish, and also potentially impacting on freshwater pearl mussel.

The proposed development could interfere with the hydrology of sensitive groundwater dependent ecosystems: protected bogs flushes and a petrifying spring and tufa formation, and bogland.

In-combination impact on hydrology/hydrogeology – there is potential for the proposed development impact on groundwater and surface water in-combination with other development in the vicinity: Corvoderry Wind Farm (permitted), Cluddaun wind Farm (proposed), Grid West (at a preliminary state of design) and the Oweninny Bog rehabilitation Scheme.

The likely effects of the proposed development will be discussed under the following headings.

Potential impacts on hydrology

Potential effects on peat stability

Potential impairment of water quality due to construction works

Potential impairment of water quality during operation phase

Potential impact on the geo-heritage site

Potential impact on air quality and climate

In-combination effects with other plans and projects

Description of likely effects

Hydrology

The proposed development has the potential to adversely affect the hydrology of the area and consequently to impact on the sites habitats and surrounding habitats, which are sensitive to hydrological change.

Drainage of the site has been given detailed consideration in the EIS, in chapter 19 Hydrology & Sediment.

The hydrology of the area has been much altered as a result of the drainage works which were carried out in advance of peat extraction, the peat extraction itself and the post extraction bog rehabilitation programme.

The bog rehabilitation programme at Oweninny is based on three measures aimed at encouraging re-vegetation of the site and stabilising it to minimise suspended solids loading to receiving rivers: undisturbed buffer areas alongside rivers; rewetting of areas by blocking drains; and ploughing of a small number of areas with little or no peat to promote re-vegetation.

The objective of the site drainage plan for the proposed development is to replicate these drainage patterns by:

- Limiting the impermeable fraction of the development, with particular attention to sensitive locations.
- Re-directing upslope clean surface water around structures and providing first stage treatment to construction/operation water locally at structures to remove and isolate contamination at source.
- Thereafter, spreading surface runoff across the surface to maximise the benefits of the existing site characteristics through use of buffer zones and rehabilitation areas.

Roadways will create new linear features which could interfere with established watercourses.

The EIS states that if suitable ground conditions are present for shallow foundations at the turbine bases located in areas adjacent to the environmentally designated areas (around the Bellacorick Iron Flush SAC, Lough Dahybawn SAC and in the eastern area of the site in the Formoyle Iron Flush catchment area) shallow foundations will be considered. However where the water table requires lowering in these areas, in order to construct the base, then only a piled foundation solution will be considered such that pumping of groundwater water will be avoided. At the oral hearing Mr Gill confirmed that foundations of turbines in the vicinity of Bellacorick Iron Flush SAC will be piled. Piled foundations involve less interference with the site's hydrology. Indicative turbine foundations are shown on drawing number QR320201-P-000-042, Appendix 5.

The EIS states preliminary site investigations have been carried out at the turbine sites of Oweninny Wind Farm in order to determine the likely foundation requirements for access roads and turbines, it is likely that most of the turbines will be supported on piles due to the depth of peat across the site, the high static water level and the poor strength of most of the shallow subsoils.

Rivers - The development of the access track network will require the upgrading of existing river crossings and the construction of new crossing locations over streams. The existing Bord na Móna machine bridge across the Oweninny river will be upgraded to carry electricity cables. There will be no in-river modification works. The culverts at the site entrance on the Muing river will be removed and replaced by a box culvert or clear span bridge. Further crossings using box culverts will take place upstream on the Muing river and on its tributary the Muingamolt. A small existing culverted crossing of the Sruffaunnamuingabatia stream will be replaced by a box culvert or clear span bridge. Replacement of existing crossings with box culverts on small streams near the headwaters of the Owenmore/ Cloonaghnore river, the Fiddauntura and the Fiddaunnagosty streams will also take place. Small stream crossings will occur in the headwaters of the small river flowing beneath the Ballymonnelly Bridge into the Owenmore.

Stream crossing works will be discussed with Inland Fisheries Ireland and will be carried out in accordance with the "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites"1 or any updates as appropriate.

Groundwater - the development of the Oweninny wind farm has potential to cause impacts groundwater aand groundwater dependent terrestrial ecosystems (GWDTE). The potential impacts on Bellacorick Iron Flush and Formoyle Flush are dealt with under the separate heading: appropriate assessment, the potential impact on the bog is dealt with under bog remnants, under flora and fauna.

Mr Gill gave evidence to the oral hearing that the conceptual model of recharge (i.e. shallow recharge and deep groundwater upwells), based on the detailed investigations of the Bellacorick Iron Flush was considered when assessing the other flush zones.

A poor flush area and a petrifying spring and tufa formation, are located in the eastern area of the site. The poor flush is located in the vicinity of proposed turbine no. 49 and the petrifying spring and tufa formation is located to the east of proposed turbine no. 101.

A spring/seepage area described as a petrifying spring and tufa formation, is located to the east of proposed turbine no. 101, in an area of cutaway bog. (Figure 18-2 of the EIS and Plate 18-10). This is considered a good example of this rare habitat which is listed with priority status in Annex I of the EU Habitats Directive. This habitat is rated as having County Importance. Mineral subsoils here are exposed in the vicinity of the spring area. The spring comprises numerous low volume seepage points which appear to emanate from the mineral subsoils. Based on the topography of the area and the location of the mineral subsoil exposures, a preliminary groundwater catchment of approximately 48,000m^2 is delineated for the spring. There are no proposed turbines or road infrastructure within the estimated groundwater catchment of the spring and therefore no impacts are anticipated.

A poor flush area is located in the vicinity of proposed turbine no. 49. This has a radius of approximately 25m and is located in an area of cutaway bog (see Fig 18-17 and Plate 18-11 of the EIS). Cutover peat with an average depth of 1.5m exists in the area of the flush. The peat thins out towards the north of the flush area where mineral subsoil exposures were noted. The poor flush area and the sounding cutaway peat drain in a north-easterly direction towards a tributary of the Cloonaghmore River. Field hydrochemistry indicates minerotrophic water and analysis shows that the water emerging from the poor flush area is the same groundwater type as the Bellacorick Iron Flush. The concentration of dissolved iron is in the same range as the Bellacorick Iron Flush. Deeper iron rich groundwater upwells may also be contributing flow to this flush. A preliminary groundwater catchment of approximately 20,000m^2 (0.2 ha) is delineated for the flush area. There is one proposed turbine within estimated groundwater catchment to the flush (no. 49) substation no. 4 is located to the south (see drawing no

QR320201-P-000-020). The EIS states that drainage mitigation measures will ensure that there will be no net loss of recharge within the catchment to the flush. It further states that based on a geotechnical assessment, this has been determined to be the best location for this turbine as the peat depths at this location are thin compared to the surrounding peat. Locating the turbine outside of this area would create an unacceptable risk in terms of peat stability. In order to mitigate against impacting on the poor flush in terms of recharge, all runoff from the turbine hardstanding area will be discharged within the delineated groundwater catchment to the flush. The collected surface water runoff will be released by controlled outfalls onto the existing natural ground surface in the vicinity of the turbine. This method, which will assist in maintaining recharge volumes, will ensure that there will be no impact on the water balance of the poor flush.

The Potential Effects of Peat slippage

The potential for peat slippage arising from the proposed development has been considered in chapter 13 of the EIS. The site is relatively flat and has been worked for the extraction of peat, which indicates that the risk of slippage is low. The ESBI has undertaken a detailed review of slope and peat stability risks, generally in accordance with the Natural Scotland Executive publication 'Peat Landslide Hazard and Risk Assessment: Best Practice Guide for Electricity Generation Developments' 2006, and including a peat stability risk assessment methodology developed by ESBI.

The information in the EIS was supplemented and superceded by evidence given at the oral hearing by Mr Jennings on Geotechnical Engineering and Peat Stability (item 7 of the submissions received).

Mr Jennings pointed out that most of the peat has been removed and that the peat thickness in extensive parts of the site is less than 0.5m which greatly reduces the risk of peat failure. The site is relatively flat with slopes predominantly less than 3^0 and in many cases less than 2^0. For slopes to fail the lower threshold is in the range $3 – 7^0$. The undrained peat strength ranges from 6 to 30kPa in comparison to where peat slides have occurred where undrained peat strength has been measured at about 2kPa.

Responding to the written concerns of DAHG that more rigorous site investigation would be required in certain locations, prior to development, Mr Jennings stated that it is normal construction practice to carry out further site investigations, that no new risks with respect to peat stability are contemplated.

He referred to the peat stability risk assessment (PSRA) which was carried out for the project. He produced a new table, table 2 of his witness statement, which he said

should replace table 4.2 in appendix 4 of the EIS, because the actions suggested in table 4.2 are inconsistent with the mitigation measures identified elsewhere in the EIS.

In table 2 the ranking of risk is from serious to insignificant with suggested actions as follows:

Serious – avoid project development at these locations, (0% of development).

Substantial – project should not proceed unless hazard can be avoided or mitigated at these locations, without significant environmental impact, in order to reduce hazard ranking to significant or less, (20% of development).

Significant – project may proceed pending further investigation to refine assessment and mitigate hazard through relocation or re-design at these locations, (40% of development).

Insignificant – project should proceed with monitoring and mitigation of peat landslide hazards at these locations as appropriate, (40% of development).

Mr Jennings pointed out that the PSRA provides a worst case and conservative result. To supplement the PSRA an analysis, modelling the site, assuming a translational (infinite slope) failure, had been carried out as part of the assessment in the EIS. The undrained shear strength value was assumed at 2.5kPa and a surcharge of 10kpa. The results were used as a correlation tool for the PSRA. The actual peat strength based on site investigation results ranges from 6 to 30kPa. PSRA was developed for use on essentially intact mountainous blanket peat, hence the findings provide a very conservative and cautious assessment of the peat stability risk at Oweninny, where there are large areas of minimal (<0.5m depth) or zero peat; and the peat depth across approximately 70% of the construction area is less than 1.5m. In the harvested areas the peat is also in small discontinuous zones.

For areas of ‘Substantial risk’, avoidance, while desirable, is not necessarily required. The Scottish Guide notes that designs should be modified to incorporate engineering measures to reduce or eliminate the risk as an alternative to avoidance.

While the risk rating results from the PSRA show a proportion (20%) of the proposed development in the Substantial risk category, this is an artefact of the conservative nature of the assessment, and is therefore not a true reflection of the actual peat stability at the site.

To demonstrate the conservative nature of the PSRA results, Mr Jennings carried out a peat slide analysis, where a factor of safety (FoS) was calculated for the twenty turbines located in the substantial category, for two situations: 1) no surcharge loading, and 2) a

surcharge of 10kPa, equivalent to 1m of stockpiled peat (assumed as a worst case). The calculations, set out in appendix C attached to Mr Jenning's witness statement, use the lowest undrained peat strength recorded on the Oweninny site (6kPa) or the actual values from shear vanes at relevant trial pit locations, where available. The results for the twenty turbine locations are given in a table on page 4 of appendix C of his witness statement. The FoS for situation 1 is in excess of 5.73 for all locations, with a range of 5.73 to 10; and for situation 2 is in excess of 4.64 with a range of 4.64 to in excess of 10. The safe acceptable range of FoS is typically 1.3 to 1.4, above which the level of risk is acceptable.

Potential Impairment of Water Quality During Construction Phase

The key potential impacts on water and aquatic ecology, in the surrounding rivers and L Dahybaun, have been identified in the EIS as sediment material loss to the aquatic environment, pollution from oils, fuel and waste materials and nutrient enrichment from brash decay associated with forest clearfelling. Forestry operations have been identified in the River Basin Management Plan for the Western River Basin District in Ireland (2009-2015), as a pressure on rivers in the Western River Basin District.

(per EIS) - Historically, the peat harvesting operations and loss of peat silt material from bare peat areas within the site, which sedimented in river beds, was a significant issue which has been addressed by the Bog Rehabilitation programme, developed in conjunction with the North-western Regional Fisheries Board and the Environmental Protection Agency (EPA), which has been successful. As the bog rehabilitation programme effectiveness continues, further reductions in peat material loss from the site will result as the extent of bare peat areas reduces.

Borrow pit – (per EIS) to reduce the requirement for import of access track construction material to the site, use will be made of one borrow pit that has been assessed to contain suitable material. The borrow pit is approximately 17 hectares in area and will be excavated to a depth of about 2m, giving an estimated 340,000m^3 of material for access track construction, (sufficient to construct approximately 70km of access tracks with dimension 5.5m x 0.8m). It is not intended that the borrow pit will be fully reinstated, although it is expected that it may be partially reinstated using suitable excess materials arising from the site works. The flooded borrow pit area remaining post reinstatement will be established as a wet land area to maintain and enhance biodiversity.

Deposition of peat - (per EIS) excavated peat will be side cast on the upper side of access tracks (see drawing no. QR320201-P-000-056). In areas that are not suitable for side casting, excavated peat will be removed to a peat repository that will be

constructed on an area of cutover bog where risk of peat instability is minimal. This area will be sized and phased to accord with peat arisings and will be contained as needed with appropriate run off controls. It is anticipated that the height of berms and thickness of peat in the repository area will not be greater than 1 m.

Where side casting occurs, it is anticipated that the existing vegetation, extensive area and existing drainage system will remove any risk of generation of silt to surface water bodies. At the large excavation locations, such as turbine bases and substations, silt control measures will be incorporated into work area drainage with the discharge onto cutover bog rather than directly to surface water, which will provide additional silt control.

The peat deposition area is enclosed on three sides by the existing Bellacorick wind farm access tracks. A new access track on the remaining westerly side, between T70 and T83, will be constructed as part of the Oweninny development which will form a boundary some 150m from the Muingamolt River. Internal access tracks within the repository area will be constructed to facilitate peat deposition. The peat respository area will be drained through the access tracks to a settlement pond system with subsequent overland flow to a large existing Bord na Móna artificial pond. The peat deposition area will be designed to be fully stable. It will be located in a flat area away from sensitive receptors, designed to be completed in phases and will include specific drainage and silt controls. On completion the surfaces will be stabilised by the establishment of natural peat land vegetation.

Sediment control has been addressed in detail in the EIS, particularly in chapter 19 and in appendix 16. Water and sediment management in and around the site has been the subject of international research over many years, from the 1960s to the present. The experience gained in the area will be employed throughout the project, in a SUDS design which is site-specific and suited to the well-humified peat.

Initially, as part of the bog development, water tables were lowered at the site by constructing shallow drainage ditches of 0.75m depth – there was no benefit at greater depths. The ditches needed to be at a very close interval of 4.5m as the well-humified peat is impermeable except in the pores near the surface. In the cutaway bog, peat banks remain vertical and the water table can be about 100mm below the surface. Drainage work in a windfarm would normally pro-actively drain working areas and direct all flow and sediment within a designed drainage network. There is usually sufficient depth of outfall nearby all construction areas. However, in the undulating cutaway peat area of Oweninny, slopes are generally very low, some areas are flat and the likely outfall is a considerable distance from many construction areas. Although a drainage

system was installed during peat extraction in most areas, this drainage system has been largely revoked by the bog rehabilitation programme.

There are natural rivers within the site and the area is drained by a network of manmade drainage ditches. A significant number of features of the rehabilitation within the site will benefit a Sustainable Drainage System (SuDS) approach to surface water management for the development. These are: Vegetated Filter Strips, Existing Wetland, Existing Surface Ponds, Vegetated Drainage Channels, and Existing Settlement Ponds.

The potential impacts apply primarily during construction if the flow paths are interrupted or redirected. General disturbance of the vegetation cover during construction has the potential for short-term generation of high suspended sediment loads in rivers draining the area. This potential for an increased sediment loading will be short-term and will reduce as vegetation in disturbed areas re-establishes. Potential impacts may also arise in respect of increased sediment loading resulting from any dewatering of excavated areas.

Unlike the peat harvesting operations of the past, only a small fraction of the site will be disturbed by construction and potential sediment and other polluting substances will be controlled by good engineering construction practice and through implementation of a site specific drainage and sediment control plan.

Brash - Clearfelling of up to 36 ha of commercial forests will be carried out to facilitate wind farm construction. Due to the spatial dispersion of the clearfelling, the impact from nutrient enrichment will be less than would occur in the case of more intensive felling. Brash arising from the felling will be used in the protection of extraction tracks. In deep peat areas which coincide with forest plantation the turbine foundation footprints, cranepad footprints and access track footprints will be excavated during construction and material transported to the peat repository area. Brash embedded on the surface of these areas will also be transported to the peat repository area.

The repository is founded on mineral soil beneath the thin peat layer. In contrast to peat, mineral soil has a higher absorption capacity for phosphorus due principally to the naturally high concentrations of free iron and aluminium oxides and hydrous oxides in the soil

Measures to control spillages of oil during construction, and to dispose of wastewater during construction and operational phases are detailed in the EIS.

Inland Fisheries Ireland (IFI) made a written submission to the Board which included their concern regarding the potential to impact on aquatic fauna through peat stability, wastewater, and the cement batching plant. The submission recommends mitigation in relation to each of these issues and a general mitigation that turbines should be kept a minimum of 100m from all watercourses. IFI also recommend that they should be

consulted where existing culverts are to be altered or new culverts installed; any in-stream works should be carried out between May and October during dry weather conditions; the Forestry and Water Quality Guidelines must be strictly adhered to and felling should not be carried out during wet weather conditions; and the Emergency Response Plan should include the IFI as a notifiable body in the event of a major spill or other significant discharge of polluting matter to surface waters.
They point out that a section of the Sheskin River catchment has been identified as 'at risk from forestry siltation and eutrophication' in the Western River Basin Management Plane.

Potential Impairment of Water Quality During Operational Phase

In relation to operational impacts the EIS states that the wind farm will have the potential for pollution of watercourses with suspended solids due to eroding of track surfaces and drains. There will be some potential for impact to occur associated with the maintenance operations carried out on the turbines and the electrical substations and from the use of the O&M facility and Visitor Centre. These include: leakage or spillage of fuels, lubricants and hydraulic fluids from equipment used on the development site; and waste from on site toilet and wash facilities contaminating surface and groundwater through failure of the waste water treatment systems serving the electrical substations, O&M building and Visitor Centre. The suite of mitigation proposals includes liaison with IFI and monitoring.

Potential Impact on the geo-heritage site

No works will be required except the upgrade or replacement of the existing river crossing. If works on the banks of the Oweninny are required beyond the footprint of the general structure GSI will be contacted and works agreed.

Potential Impact on Air Quality and Climate

The proposed development has the potential for negative impact on air quality during construction.

It is likely that the impact on climate will be positive.

The impact of air quality and climate is described in paragraph 4.0 and following paragraphs of Mr Speer's report.

In-Combination Effects with Other Plans and Projects.

Effects in-combination the Corvoderrywindfarm are identified in the EIS. That site is drained westwards by the Muing river and eastwards by the Fiddaunagosty stream.

There is potential for cumulative impacts to arise from loss of suspended solids and other pollutants to these rivers arising from the construction activities associated with both developments. Additionally development of Corvoderry will require the Clearfelling of 160 hectares of forest plantation. There will therefore be some potential for cumulative nutrient enrichment impact of the Muing and Fiddaunagosty rivers. Detailed mitigation has been set out in the environmental impact statement which accompanied the planning application for Corvoderry Wind Farm which when fully implemented will ensure that any cumulative impact will not be significant.

Effects in-combination the Cluddaun Wind Farm are identified in the EIS. That site is located to the north of the Oweninny site and is likely to be constructed during Phase 3 of the Oweninny development. The Cluddaun site is drained westwards by the Fiddauncama and Fiddaunmuinggeery both tributaries of the Oweninny river and to the east by tributaries of the Owenmore/Cloonaghmnmore river. Keyhole felling of approximately 143 hectares of forest plantation will occur at this site to facilitate the wind farm development. There is potential for nutrient release from brash associated with the clearfelling and the potential for cumulative impacts to arise in terms of nutrient enrichment, increased suspended solids and impact from other pollutants such as oils and waste materials on the upper tributary rivers of the Oweninny and Owenmore/Cloonaghmore system. Detailed mitigation has been designed for the proposed Cluddaun wind farm development and the cumulative impacts are not likely to be significant.

In-combination impact on hydrology/hydrogeology – there is potential for the proposed development impact on groundwater and surface water in-combination with other development in the vicinity: Corvoderry Wind Farm (permitted), Cluddaun wind Farm (proposed), Grid West (at a preliminary state of design) and the Oweninny Bog rehabilitation Scheme.

In relation to groundwater, Mr Gill's evidence to the oral hearing was that the subject site is located in both the Belmullet Groundwater Body and the Bellacorick-Killala Groundwater Body, both of which have PI aquifer categories i.e. poor aquifer which are generally unproductive except for local zones. Oweninny Cluddaun and Corvoderry are spread over approximately 110km^2, and the electricity transmission lines over a wider area. Due to the low permeability of much of the subsoil (blanket peat) and the aquifers, a high proportion of the recharge will discharge rapidly to nearby streams and rivers. Shallow groundwater is likely to discharge to streams and lakes with short flow paths between recharge and discharge, i.e. there will be no significant regional groundwater flow. Each development has site specific controls for management of substances that may impact locally on groundwater quality. Given the spread of the development and the comprehensive suite of surface water mitigation proposals, there

is negligible potential for in combination cumulative impacts on the surface water environments.

Surface Water - In relation to in-combination impacts on surface water - Mr Gill gave evidence to the oral hearing that given the spread of the development Oweninny wind farm, Cluddaun wind farm, Corvoderry Wind Farm and the indicative corridor of the Grid West route; and the comprehensive suite of surface water mitigation proposed there is negligible potential for in combination cumulative impacts on the surface water environments.

Bog Rehabilitation Plan - At the oral hearing Mr Gill stated that the proposed development will interact with the Oweninny bog rehabilitation plan in areas where new development is occurring. Where existing tracks occur these already interact hydrologically with the bog rehabilitation plan. The potential for new interaction to occur is over a small area: <5.4% of the site. Where interaction occurs there will be no direct discharge of runoff from the proposed wind farm drainage to natural water courses or areas where successful bog rehabilitation is underway. The wind farm drainage system will mimic the existing hydrology of the site as it stands currently within the bog rehabilitation plan.

Grid West - Given the spread of the development, the type of groundwater systems, the nature of the wind farm and transmission line developments, being generally shallow, near surface construction, and the comprehensive suite of surface water mitigation proposed for groundwater protection, there is no potential for in combination cumulative impacts on the groundwater environment, and no potential for in-combination cumulative impacts on adjacent groundwater dependent designated site or other local hydrologically sensitive peatland areas.

Corvoderry – the site is enclosed within the subject site and at a greater remove from sensitive sites; with its own management of impacts on water; so that there is little potential for cumulative effects.

Cluddaun – the subject site adjoins the Cluddaun along a portion of the northern boundary. The Fiddaunmuinggeery river forms the boundary. It is proposed to link the two developments by means of a roadway which would serve as the development roadway to the Cluddaun site.

Assessment of the likely significant effects of the proposed development on soil water, air and climate.

Good construction practice, will be imposed on the contractor by the applicant through a construction environmental management plan through the construction tender documents, coupled with the implementation of the Hydrology and sediment control measures set out in Chapter 19 of the EIS, Appendix 16 of the EIS , the geotechnical mitigation measures set out in Response to submissions Appendix 4 of the EIS and the mitigation measures specified in Section 10.5 of the EIS.

Removal of peat - It is not considered that the loss of peat arising from the excavation of areas for development is significant in light of the low level of importance of these areas as bogland habitats. In one instance the excavation of peat is considered to be significant and this is dealt with under the separate heading of 'Flora and Fauna'

Deposition of peat – Based on the detailed assessment in the EIS and further evidence given at the oral hearing it is not considered that the deposition of peat will give rise to significant effects on soil and water.

Peat slippage - Based on the detailed assessment in the EIS and further evidence given at the oral hearing it is not considered that peat slippage will occur or that such will give rise to significant effects on soil and water.

Interference with site drainage - Based on the detailed assessment in the EIS and further evidence given at the oral hearing it is not considered that there will be any significant interference with drainage within the site or that such will give rise to significant effects on soil and water.

GWDTE – Based on the detailed assessment in the EIS and further evidence given at the oral hearing it is not considered that there will be any significant effect on any groundwater dependent terrestrial ecosystem. Potential impact on Bellacroick Bog Complex has been referred to under the heading Appropriate Assessment, and in this section under the heading Flora and Fauna. It is considered that there is the potential for cumulative impact with the Cluddaun windfarem having regard to the shared boundaries and infrastructure.

It is not considered that there will be any significant impact on the geo-heritage site.

The potential for cumulative impact in-combination with the proposed Cluddaun windfarm, should be considered as part of the assessment of that proposed development which is before the Board under PA0031.

Based on the detailed assessment in the EIS and further evidence given at the oral hearing it is not considered that there will be any significant Impact on river morphology or that such will give rise to significant effects on soil and water.

Removal of peat - It is not considered that the loss of peat arising from the excavation of areas for development is significant in light of the low level of importance of these areas as bogland habitats.

Air Quality and Climate

From the assessment in Mr Speer's report there will not be any significant impact on air quality during the construction phase based on measures to ensure best practice site management and dust minimisation and having regard to the temporary duration proposed construction works; significant detrimental impact on air quality during the operational phase is not anticipated.

Mr Speer's assessment, with which I agree, is that the generation of renewable electricity by the proposed turbines will have a positive impact on climate by reducing carbon emissions and contributing to the achievement of national and international emission reduction objectives through the displacement of traditional methods of energy generation by the unsustainable combustion of fossil fuels such as coal and oil.

Conclusion regarding acceptability having regard to residual effects

I consider that, subject to the mitigation proposed and further mitigation recommended above the likely residual effects of the project on soil, water, air and climate, would not be significant and should not be a reason to refuse permission. The potential for cumulative impacts with Cluddaun is noted.

10.1.5. Landscape and visual effects

The relevant chapters of the EIS is:

Chapter 11– landscape,

and the relevant appendices are:

Appendix 10

Volume 2C *'Photomontages June 2013*' which is a book of Photosheets, is also relevant

and the relevant submissions to the oral hearing are:
items 8, 8A, 8B (book of photomontages - '*Oral Hearing Comparative Photomontages March 2014*'), & 8C, and
item 25, which accompanied evidence given by Mr Schulze; and
item 36 which accompanied evidence given by Mr Sweetman.
Various others who gave oral evidence to the hearing included in their statements reference to landscape and visual effects.

Identification of potential effects
The major visual elements of the proposed development are the 112 no. tall wind turbine structures, each consisting of three blades mounted on a tower. The towers will have a maximum height in the range 100 - 120 m, and the blades will have a length in the range 45 – 60 m. The maximum height, with the blade upright, will be 176m. Turbine rotors and nacelles will swivel to face the prevailing wind. The turbines are arranged in two main sections across the former peat harvesting areas and these sections are separated by the Oweninny and Owenmore Rivers.

Other visible elements will be 8 no. permanent wind measurement anemometer stations; overhead lines (2 No 110 kV), 4 no. electrical substations, 85 kilometres of access tracks (including c.6km of upgraded existing track), a visitors centre, an operation and maintenance building and temporary works including a borrow pit, a concrete batching plant with associated materials storage and contractors construction lay down areas and materials storage areas.

The proposed development has potential to have a considerable visual effect on the receiving environment. In particular, the turbines, because of their scale, number, and that fact that they have moving parts, have potential to have a significant visual effect.

Description of potential effects
The topography of the receiving environment is a basin, encircled to the west, north and north-east by hills, and to the south by mountains. A drumlin belt extends eastwards. The site is located in the centre of the basin surrounded by protected bogs which extend as far as and across surrounding uplands.

Human influence is recognisable in the form of a number of overhead transmission lines in the vicinity of public roads, and commercial forest plantation. The former industrial character created by the Bellacorick peat burning Power Station has been significantly reduced due to the removal of all vertical power station structures and the ongoing rehabilitation of the large peat harvesting areas.

The EIS states: ‘A wind farm obviously indicates human impact within the landscape and as a consequence reduces the perception of remoteness.

It states that the main parameters defining Visual Effects (as described in Section 11.2.1) are: extent of visibility and nature of visibility. In areas where visual effects are significant there is also an effect on the landscape character. It asserts that the assessment of the visual character is based on widely accepted design principles; and that when wind farms are related to the landscape characteristics their sculptural image as well as their functional role may be seen as an enrichment of the local landscape character.

In the EIS they have used Zones of Theoretical Visibility (ZTV) maps and Wire Frame Models as part of their survey methodology.

Areas from where the wind farm might be visible are mapped as Zones of Theoretical Visibility and these are presented separately for hub and blade tip height on the ZTV Maps. The extent of visibility is described in the Visual Impact Map.

ZTV maps were prepared for a range of turbine heights, 120 m hub height and 176m blade tip height, and 100 m hub height, 150 m tip height. The area in the survey encloses a 30 km radius to establish visibility from surrounding areas. The maps represent visibility within a bare earth landscape and so depict a worst case scenario with none of the screening effects of vegetation being taken into account. Hence they have been used as a general guide to visibility, as one tool in the assessment process, and on site surveys were used to back up or confirm the findings of the ZTV mapping.

The Wire Frame Models developed are three dimensional wire frame models constructed from key viewpoints within a 30km radius. These were used to assess the visual relationship of the wind farm to the existing topography and the visual relationships between each turbine.

To illustrate the nature of visibility, photomontages have been used. Photomontages illustrate the landscape and visual effects of the wind turbines within the Zones of Theoretical Visibility.

The site survey also includes an assessment of views from the summit of Nephin Beg and Maumakeogh, representing views from the mountain ranges to the north and south of the proposed wind farm site.

Protected views and prospects, walking routes, cycling routes, and visitor attractions (Céide Fields, Ballycroy National Park, Proposed Nephin Wild Project) were considered in the survey.

Views of the proposed Oweninny Wind Farm can generally be classified into four visual zones: the Primary Principal Visual Zone is the core visual zone up to 14km from the wind farm site. The Secondary Principal Visual Zone, is outside the core visual zone divided into areas: to the west of the wind farm site between approximately 11 and 29 km distance; the Northern Mayo Drumlin Zone, which is east and southeast of the wind farm between approximately 12 and 30 km distance; and the Mountain Range Zone, views from elevated areas, summits or slopes facing the wind farm site to the northwest, north, south and east as well as relevant river valley within this zone between approximately 8 and 30 km from the centre of proposed wind farm site. The majority of elevated areas, including mountain tops are unpopulated and only accessible on foot.

The extent of the Principal Visual Zones within the study has been mapped.

Photomontages and associated wireframes illustrate the proposed structures of Oweninny Wind Farm from selected viewpoints located at different distances and elevations within the study area. For each of the photomontages there is a description of the view, of the visual effects, and of the landscape effects. There is also a description of the cumulative effects of the development together with Dooleeg Wind Farm (1 permitted turbine), adjacent to south-western site boundary, separated by N59; Corvoderry Wind Farm (10 permitted turbines), located within land surrounded by the eastern section of the proposed Oweninny Wind Farm site; and Cluddaun Wind Farm (48 proposed turbines PA0031), located approximately 3.5km north, northeast of the proposed Oweninny development.

The majority of cumulative effects will be experienced within the Primary Principal Visual Zone for prolonged stretches along public roads, scenic roads and walking routes as well as from higher ground such as hill or mountain summits located to the south, west and north of the wind farm. This is due to the close proximity of the proposed and permitted developments to each other and their location within or on the slopes of a large flat or gently undulating landscape basin lacking often in significant vertical vegetation.

The majority of cumulative effects, will be in combination i.e. two or more features are seen together at the same time from the same place, in the same (arc of) view where their visual effects are combined. For the majority of available views, one or all proposed or permitted wind farm development will be seen as belonging to one large wind farm unit when seen together with Oweninny Wind Farm. Cumulative effects in succession i.e. where two or more features are present in views from the same place (viewpoint) but cannot be seen at the same time, together because they are not in the same arc view – the observer has to turn to see new sectors of view whereupon the other features unfold in succession, will be possible but can only be experienced from a limited number of locations when the observer is located between two neighbouring developments.

It will be possible to view the proposed Oweninny Wind Farm and other proposed and permitted wind farms in sequence, (i.e. where two or more features are not present in views from the same place (viewpoint) and cannot, therefore, ever be seen at the same time, even if the observer moved round the arc of view, the observer has to move to another viewpoint to see the second or more of them, so they will then appear in sequence. The frequency of occurrence in the sequence may be highly variable, ranging from frequently sequential when the features keep appearing regularly and with short time lapses between (clearly speed of travel influences this as well as distance between the viewpoints) down to occasionally sequential where there may be long time lapses between appearances, because the observer is moving very slowly and / or

there are large distances between the viewpoints (even if not between the features), along some roads within the study area. For example when travelling east from Bangor along the N59, Oweninny Wind Farm will become visible. The proposed Corvoderry and Cluddaun Wind Farm as well as the wind turbine at Dooleeg will become visible as one proceeds further east towards Bellacorick and Crossmolina. Similar effects will be experienced when travelling south from Ballycastle along the R315 where Cluddaun Wind Farm will be visible at first (Photomontage 25) and Oweninny Wind Farm will become visible when travelling further south along the R315 (Photomontages 1 & 24). Intervening topography and vegetation will prevent or allow for intermittent views of the proposed wind farm development. The main cumulative effects arising from Oweninny Wind Farm will occur from the public road network within the Primary Principal Visual Zone (Figure 11.6) and from elevated areas within the Mountain Range Zone to the south, west and east within the study area. The majority will be cumulative effects in combination resulting in an increase in density of vertical elements in the landscape and the strengthening of a sustained presence of wind farm development within available views, in which it is mainly not possible to clearly distinguish one development from another. In terms of cumulative effects in combination experienced together with the development at Dooleeg and Corvoderry, the EIS's assessment is that the landscape effects are negligible to low and visual effects are slight. Cumulative effects together with Cluddaun Wind Farm are considered to result in low to medium landscape effects and moderate visual effects.

Six warning lights will be installed at hub height level on turbines located in the south-eastern section of the wind farm (Turbines 99, 100, 105, 107, 109, 110). These lights will flash in red at regular intervals between the months of November and March, and become visible at night or during low light weather conditions. Warning lights installed at height can be recognised over long distances in clear weather conditions at night. The warning lights will introduce a new source of light at height. The general landscape effects of the warning lights are considered in the EIS's assessment to be moderate; the visual effects of the warning lights are considered to be be slight to moderate and intermittent in nature due to their seasonal use, dependence on weather conditions and the time of day.

The EIS states that the visibility of the turbines relates to a number of variables such as meteorological conditions, the mode and speed of viewing, and the nature of the surrounding landscape. The description of the nature of visibility from viewing distances as set out, informs the assessment of the visual effect: between 0 - 2.5 km (radius) - turbines typically form the dominant landscape element in good visibility; between 2.5 – 5.0 km (radius) - turbines are perceived as one element of many within the landscape in good visibility; between 5 - 10 km (radius) - turbines are perceived within the wider

landscape setting in good visibility, the human eye can detect movement at great distances because the natural landscape is motionless; at 2.5 km, motion, rather than size, draws the eye; and at 8 km it highlights the turbines' location within the wider landscape.

The visual effects, landscape effects and cumulative effects of the proposed development as experienced from each photomontage location is summarised in Table 10.10. Within the principal visual zone, (19 photomontages), the area nearest the windfarm, the visual effects are mainly substantial, landscape effects are medium and there are combination cumulative effects in many cases. In the mid range area of the secondary visual zone, (3 photomontages), visual effects are slight to moderate, landscape effects are low to medium and there are no cumulative effects. Within the mountain range visual zone, (6 photomontages), at 4 locations there are no visual effects, no landscape effects and no cumulative effects. Other locations have moderate to substantial visual effects, medium to high landscape effects and combination cumulative effects.

In the northern drumlin zone photomontage locations experience slight to moderate visual effects, low to medium landscape effects and in some cases combination cumulative effects except for one case where there is no cumulative effect.

Use of Photomontages - As expressed in written submissions to the Board following receipt of the application, and as expressed by witnesses at the oral hearing, visual impact is a serious concern to observers. Witnesses at the oral hearing were concerned that the photomontages did not include the existing wind farm which would have made apparent the difference in scale. Mr Sweetman submitted copies of photomontages which he copied from a planning file, (the 2003 permitted development file) at Mayo County Council's offices and which he interpreted as showing the existing wind farm together with the current proposal. This was corrected by Mr Noonan on behalf of the applicant, who stated that it represented a selection of wind turbine heights which had been under consideration prior to submitting the application.

Mr Edward Farrell stated that photomonteages were not the best method of representing the proposed development; other methods should be employed. He contrasted the proposed development with single house applications, in the area, where applicants are frequently requested to erect a pole framework. Baloons were suggested as a method of illustrating the height of the proposed turbines.

Landscape - protected views and prospects from the County Development Plan 2005 – 2014 are identified in the EIS at map 10. It is worth noting that Map 4 of the current

plan (2014 – 2020) is very similar to map 10 of the previous plan in so far as the area examined in relation to this application is concerned.

The **Landscape Appraisal of County Mayo 2008** continues to be a supporting document to the current County Development Plan 2014-2020.

The Landscape Appraisal of County Mayo subdivides the County into 16 Landscape Character Units. Units with similar landscape types have been grouped into 4 Principle Policy Areas. The proposed Oweninny Wind Farm is located within character unit/policy area: Landscape Character Unit: F – North Mayo Inland Bog Basin. Aggregated with other areas with similar visual characteristics of smooth topography, limited shelter vegetation, often steep slopes and prominent ridge lines, rendering this policy unit similar suitability to absorb development, these areas are in policy area 3. to which policies 12 to 17 refer.

Area F: North Mayo Inland Bog Basin is described as:

> *This is a large bog area of some 300 square kilometres surrounded to the north, west and south by mountains giving it the appearance of a lowland basin. It is, however, at an altitude of about 100m a.s.l. It is an exposed plain with little settled agriculture or other human activity, covered predominantly by bog grass types. It does however, include intermittent areas of production forestry, and north of the N59 much of the bog has been cut away to fuel the visually prominent Bellacorrick power station. Wind farms also occupy the northern vista.*
>
> *This character area is perhaps the simplest of all of the areas to define. To the north, west and south the boundary is determined by geology, soils, and slope, while the boundary to the east is clearly demarcated by land cover, geology, soil type, and a change to drumlin topography.*
>
> *Smooth terrain, as is characteristic of this unit, allows vistas over long distances against a planar surface without breaking up fore and middle ground. In such terrain, distances can appear shorter and development closer or larger. As a result development can have a disproportionate visual impact in such terrain, due to an inherent inability to be absorbed, physically or visually.*
>
> *Predominantly low vegetation as represented in this unit by Moorland grasses has similar characteristics to smooth terrain in landscape terms, and the two are often interrelated due to soil attributes. Grassland vegetation is generally uniform in appearance, failing to break up vistas, and allowing long distance visibility. It is this inability to absorb development that identifies low vegetation as a critical landscape factor.*

The impact of a structure can be broken into impacts related to:

Bulk or Intensity, Scale, Design/Appearance, Location or Route Requirement (e.g. mobile masts), Public benefit (public being more acceptable than private)

Landscape Character Impact Potential - the extent to which a particular development type might contrast with, or dominate a landscape, thereby affecting its character; lowest impact forestry, highest wind farms.

It is accepted that areas already compromised or characterised by prior development are less sensitive to, and more able to absorb, new development.

The landscape sensitivity matrix identifies windfarms as the development with the most potential to impact on landscape; policy area 4 is the least sensitive to such development: where the impact is judged to be medium to high. In policy area 3 the impact is judged to be high.

Sensitivity Zoning Key, Appendix A to the appraisal, identifies areas characterised by breakdown of natural processes or pollution (e.g. cut over bogs, old mineral waste areas) as degraded.

Policy Area 3 – Uplands, moors, heath or bogs

Indicative policies for each Policy Area are set out. For Policy Area 3 the following are indicative policies:

Policy 12: Recognise the occurrence of areas of highly valued scenic vistas, uninterrupted by shelter vegetation or undulating topography, which can cover vast areas and are abundant.

Policy 13: Encourage development that will not have a disproportionate visual impact (due to excessive bulk, scale or inappropriate siting) and will not significantly interfere or detract from scenic upland vistas, as identified in the Development Plan, when viewed from areas of the public realm.

Policy 14: Encourage development that will not interrupt or penetrate distinct linear sections of primary ridge lines when viewed from areas of the public realm.

Policy 15: Facilitate developments that have a locational requirement to be situated on elevated sites (e.g. telecommunications and wind energy structures). It is necessary however to ensure that adverse visual impacts are avoided or mitigated wherever possible.

Policy 16: Preserve from development any areas that have not already been subject to development, which have retained a dominantly undisturbed upland/moorland character.

Policy 17: Consider development on steep slopes, ensuring that it will not have a disproportionate or dominating visual impact on the surrounding environment as seen from areas of the public realm.

Assessment of Landscape and Visual Effects

I have viewed each photomontage at the location at which the photograph was taken. I note the usefulness of the photomontages as an aid to visualising the turbines from these locations but I also note that they are of limited assistance when viewing them only as a photograph. It was my experience of these views, especially from locations in the primary principal visual zone, that viewing the photomontage on its own, did not fully reflect the impact of the proposed turbines; but viewing the photomontages at the location from which the photos were taken, afforded a much fuller appreciation of the visual impact.

In relation to the photomontages which have been presented as part of the EIS, it is worth noting that the viewpoints are a selection only. For example 9A and 9B are taken from the same location facing west (9A) and north-west (9B). Turbines within the proposed Oweninny development would be visible in every direction from this viewpoint and therefore views to north-east, east and south-east could also have been provided.

Paragraph 11.2.4 of the EIS includes a definition of visual impact. Tables 11-1 and 11.2 set out the applicants definitions of the degrees of impact, in which they acknowledge that although largely based on objective criteria, an element of subjective judgement is involved. The definition which they have used to represent the magnitude of visual effects, sets out a possible range of magnitude from negligible to severe. Substantial is the second highest impact and is defined as: '*the proposal forms a significant and immediately apparent part of the scene that affects and changes its overall character*'. Severe is defined as: '*the proposal becomes the dominant feature of the scene to which other elements become subordinate and it significantly affects and changes its character*.'

The EIS (11.2.4), defines the magnitudes of effects on landscape character. Medium is partial loss of or alteration to one or more key elements / features / characteristics of the baseline, i.e. pre-development landscape or view and / or introduction of elements that may be prominent but may not necessarily be considered to be substantially

uncharacteristic when set within the attributes of the receiving landscape. High is total loss of / or major alteration to key elements / features / characteristics of the baseline, i.e. pre-development landscape or view and / or introduction of elements considered to be totally uncharacteristic when set within the attributes of the receiving environment.

Visual Effects - In the EIS's assessment of visual effects, most of the views within the primary principal visual zone are ranked as substantial and combination cumulative effects are noted. No effect is ranked as severe. In the assessment of landscape effects, most of the views within the principal visual zone are ranked as medium, two are ranked as medium to high and two as high.

In the secondary principal zone visual effects are ranked as slight to moderate, with no in-combination effects; and landscape effects as low to medium.

In the mountain range zone visual effects, in the two cases where there is any effect are ranked moderate/substantial, and in those two cases there are combination cumulative effects, and medium to high landscape effects.

In the northern Mayo drumlin zone, there are no effects (i.e no visibility) at 4 no. of the locations selected for photomontages. In the two other cases the visual effect is ranked as slight/moderate, with combination cumulative effects in three of the four cases; and low to medium landscape effects.

Landscape and visual effects

The EIS's assessment of landscape effects, ranks most of the views within the principal visual zone as medium, two as medium to high and two as high.

Assessment

On the whole I would not disagree with the assessment of landscape effects. Nor would I disagree with the assessment of many of the visual effects. At some locations however within the principal visual zone, where the view includes a dwelling close to one of the turbines I do not agree that the visual impact goes no further than 'high', I consider the visual effect in such cases to be severe. In these situations the scale of the proposed turbines becomes apparent. At locations where the turbines are not seen in the context of a dwelling, the scale of the turbines is not clear, because the viewing distance is unclear, and the structures being viewed are within a large landscape. I also consider that where the viewpoint is surrounded by turbines the visual impact is severe, as defined at table 11.1 of the EIS.

Perception of landscape impact - Despite the dominating presence windfarms can have in certain landscapes, people have varying reactions to them.

A survey carried out by Sustainable Energy Ireland in 2003 is reported in a document titled 'Attitudes Towards The Development of Wind Farms in Ireland', as highlighting that in total over eight in ten of those questioned are favourable to the construction of more wind farms in Ireland. While a sizeable minority (43%) agreed with a statement that wind farms should not be built in areas of scenic beauty; this was qualified: just one in four feeling that wind farms superimposed on highly scenic landscapes impacted negatively upon the view presented; implying that initial prejudices regarding perceived impact of wind farms on scenic beauty are allayed when presented with an image of what it would look like in reality.

In response to the potential conflict that could arise from this confluence of scenic landscapes and opportunity areas for wind farms, Fáilte Ireland, in association with the Northern Ireland Tourist Board (NITB), decided in 2007 to survey both domestic and overseas holidaymakers to Ireland to determine their attitudes to windfarms.

This survey was published in 2008 titled 'Visitor Attitudes on The Environment – Wind Farms', drew on many aspects of the original SEI survey including the photomontages of windfarms in particular landscape types. The purpose of the survey was to assess whether or not the development of wind farms would impact on the enjoyment of the Irish scenery by holidaymakers. It found that although most visitors are broadly positive towards the idea of building more wind farms on the island of Ireland, there exists a sizeable minority (one in seven) who are negative towards wind farms in any context.

The proportions of those rating the impact of the wind farms as negative increased with the perceived beauty of the location. For instance, there was greater relative negativity expressed about potential wind farms on coastal landscapes (33%) and mountain (27%) or farmland (27%). On the other hand less than one in five were negatively disposed to the construction on bogland (18%) or urban industrial land (13%).

It is worth noting that interviewees were tourists not residents.

Conclusion in relation to landscape and visual effects

In terms of the underlying character of the area: the large open basin topography will be retained, however the emptiness which is characteristic of the area will be removed by the proposed turbines. Because of the topography, there will be limited long distance views. The majority of cumulative effects will be in combination effects resulting in an increase in density of vertical elements in the landscape. In the majority of views, the wind farms will not be distinguishable from one another and will be seen as one unit due to their close proximity to each other. The majority of recreation and tourism routes are located outside of the Primary Principal Visual Zone and will experience slight to

moderate visual effects or no visual effects due to intervening topography and vegetation.

Substantial and in some cases severe visual effects will occur when in close proximity to the wind farm site; where there are views of the windfarm for 360^0 or where a dwelling is viewed close to a turbine(s). These views mainly impact on a stretch of the N59 and on local / cul de sac roads where there are a small number of dwellings, and this is referred to under a separate heading 'Residential Amenity' elsewhere in this report.

It is difficult to mitigate the effects on landscape and visual impacts. One observer has requested the removal of turbines T 77 and T78. The removal of a turbine or a few turbiness would have little impact on the overall effect; and a moderate reduction in height would also have limited impact. In this regard further photomontages were submitted to the Board during the oral hearing, to illustrate the relative visual effect of turbines of 120m hub height and 56m blades, total height 176m (as proposed), and turbines of 95.5m hub height and 56m blade, total height 156m. These comparative photomontages refer to viewpoints: 2, 4A, 5, 9B, 10B, 14, 18, 20, 22 and two additional viewpoints: A - '*view northwest from local road in the townland of Shanvolahan'* and B '*view northwest from private access road in the townland of Shanvolahan*'. The comparative photomontages illustrate that there is little appreciable difference in terms of visual effect, between the two turbine heights. It is also arguable that the impact of the proposed development, which will have fewer turbines but of greater height, will not have significantly more impact than the permitted development, PL16.131260. A comparison can be made between some of the photomontages provided for the permitted development and the subject application, for example photomontage 4A (panoramic) of the subject application can be compared to 8b of the permitted development; and photomontage 6 (panoramic) of the subject application can be compared to 9b of the permitted development.

I consider that there may be certain locations where the natural screening provides mitigation of the visual impact of the permitted development, and where screening is ineffective due to the greater scale of the proposed development. Overall I consider that the change from more turbines of smaller scale to fewer turbines of larger scale does not produce significantly more impact on the landscape. It is difficult to conclude that the proposed development willnot have more impact in terms of local visual effects. Both the permitted development and the proposed development would have significant visual effects in the area close to the turbines, which will be experienced for the most part by residents of the immediate locality.

I have referred under the heading human beings to the emphasis in government policy on renewable energy and in particular the opportunities presented by wind energy, which is of critical national strategic importance. I acknowledge the very considerable visual effect the proposed development will have on the area but I do not consider that the impact on landscape or visual effects are reasons to refuse permission.

10.1.6. Material Assets and Cultural Heritage

Material Assets

The relevant chapters of the EIS are:

Chapter 16 Material Assets

item 30 of the submissions to the oral hearing which accompanied evidence given by Dr Kavanagh in relation to Material Assets; item 9 of the submissions to the oral hearing which accompanied evidence given by Mr Hanley in relation to property values; and item 21 which accompanied evidence given by Mr Dermot McDonnell, observer.

Various others who gave oral evidence to the hearing included in their statements reference to material assets.

Identification of potential effects of the development on Material Assets

There is potential for direct and indirect effects of the proposed development on material assets, arising from the construction works: directly from works on site and indirectly from impact on the public road and other road users.

There is potential for effects of the proposed development on material assets during the operational phase arising from landscape and visual amenity.

Residential Property

Mr Speer's report which includes noise, shadow flicker, and air quality, is attached as appendix 1 to this report.

There are a number of residential properties in the vicinity of the site, some are located on a local road running north from the N 59, which divides the two parts of the site, others are located to the west along local roads, to the south along the N 59 and to the east along local roads. These dwellings have the potential to be adversely impacted in terms of their amenities and the value of these properties.

Gas Main

A high pressure gas main which runs along the south of the site and is crossed by internal roadways within the site. This has the potential to be adversely impacted by construction work on the access roadways and by traffic during the construction, operation and decommissioning phases.

Hazards in relation to turbines

The hazards in relation to ice throw, and failure of the structural integrity of the blades, have potential to impact on material assets.

Air navigation

The Irish Aviation Authority (IAA) has a radar system located at Dooncarton on the northwest Mayo coast.

Energy Supply

There is potential for impact on energy supply.

Tourism

There is the potential to impact on tourism development and income in the area, due to the effect of the proposed development on the landscape of north Mayo.

Roads

The large volumes of additional traffic have the potential to cause congestion on the public road and there is potential for the additional heavy goods traffic to cause damage to the road structure over a network of roads; and for the exceptional loads to damage roads and adjoining structures and to interfere with other road users.

Description of likely impacts of the project and effects on material assets

Residential Property

A number of studies are cited in the EIS to support the applicant's contention that property prices are not affected by a wind farm, or are affected positively.

Mr Hanley gave evidence to the oral hearing in relation to property valuation that the critical issue is that planning permission has already been granted dating back to 2003;

any potential devaluation that might arise from a planned wind farm should have been significantly factored into current values at this location.

Other issues which are of relevance in this regard are air quality, noise, shadow flicker and visual amenity and these are dealt with under separate headings.

Gas Main

The high pressure gas main which runs along the south of the site was identified and mapped as part of the constraints study for the site. Set back distances took account of the location of the gas main. This was also integrated in to the access trackway design for the site which passes over the gas main at three locations. The construction method will be fully compliant with Bord Gais Networks requirements for such road construction works.

Hazards in relation to turbines

Hazards in relation to turbines are referred to at paragraphs 6.5.4 and 6.5.5 of the EIS. A German publication, which provides a formula for calculating safe distances (1.5 x (hub height + rotor diameter)), is cited in relation to hazards from falling ice.

Dr Kavanagh in his evidence to the oral hearing responded to concerns which had been raised in relation to the turbines posing a risk to property and people. In relation to parts of the blades being thrown if a turbine fails, Dr Kavanagh stated that the machines will be designed to withstand gusts of up to 70 m/s (157 miles/hour), which is well above the wind speed applicable to the design of conventional structures in this part of Ireland. The maximum gust recorded at Belmullet between 1981 and 2010 was 94 knotts (109 miles/hour). The extreme conditions represented by the design wind speed are very rare and, if they did occur, would cause widespread destruction to dwellings and infrastructure. Because of the distance to the nearest dwellings, which is greater than 1000m, it is extremely unlikely that even under these conditions the wind turbines would cause additional damage or risk to persons.

Air navigation

The Irish Aviation Authority (IAA) operates a Monopulse, secondary surveillance radar (MSSR) at Dooncarton on the northwest Mayo coast near Ross Port, approx. 18.7km from the subject site. Slieve Fyagh 351m is situated directly between the radar installation and the proposed wind farm location, where the development will be sited at an elevation of c 121m with a maximum tip height of 176m. The proposed development would reach to 297m. The IAA was contacted in the consultation process. The

applicants state that they will comply with any aeronautical lighting and positional data requirements specified by the Authority.

Energy Supply

The demand for electricity fluctuates with change in economic activity, and with seasonal factors, and there is a very significant difference between night time and day time demand. The last two decades have seen significant demand for energy in Ireland and for electricity as a component of overall energy demand. Table 16-4 of the EIS gives transmission demand forecast (in MW) for 2013, 2014, 2015 and 2016 at summer peak, summer valley and winter peak. The 2013 forecasts are: summer peak 3,953MW, summer valley 1,779MW and winter peak 4,941MW. These figures rise to 5,233 for the winter peak in 2016.

It is the applicant's submission that the proposed development will contribute to ensuring that adequate electricity supplies are available to support economic activity and growth in a manner compatible with Government policies.

At a capacity factor of 33% the project is anticipated to generate approximately 1,069,596MWh, avoiding consumption of either 560t/MW of oil or 797t/MW of coal; and yielding annual avoidance figures of either 207,200t oil or 294,890t coal.

Observers questioned the relevance of the government's targets for renewable energy since there have been changes at EU level. Dr Kavanagh responded that the target of 16% to 2020 remains, after that it is unclear; the government has stated that there will be no resiling from commitments.

The 33% capacity factor and the projected energy production came in for detailed questioning by Mr Dermot McDonnell in particular, who made considerable efforts to have raw data from the anemometers on site produced by the applicant. He pointed out differences between the capacity indicated for the proposed turbines and the actual experience at other operational windfarms which have less beneficial wind regimes. He also made the point that after the initial costs have been recouped, any additional energy generated will represent profit for the operator and could contribute to the cost of undergrounding of transmission lines. Mr McDonnell considered that correct estimates of energy production were important to ensure that the state gets the benefit from this natural resource and he urged the Board to seek the raw data, which was not made available at the hearing. In general there was no disagreement between parties that a windfarm development at this location would be able to capture a reasonable or better wind resource and produce a reasonable or better energy output. While the planning process, environmental assessment and the functioning of an oral hearing are best served by the maximum amount of transparency, I do not consider that the Board

requires more detailed information on the estimated energy production of the proposed turbines in order to reach a decision on this application. It is desirable that the state should achieve best value from this natural resource, but that is the responsibility of others.

Tourism

The EIS states that in 2011 the tourism industry was worth €5.7 billion, with €3.2 billion coming from outside the state and a further €0.6 billion spent on fares and carriers, the remainder coming from domestic visitors. The majority of growth in tourism has occurred in the larger cities. Tourism is an important part of the local economy with potential for growth. There are many walking routes and loops in the North Mayo area, as well as cycling routes and driving routes.

The Wild Atlantic Way, which has been well promoted and has had a successful year in 2014, is a 2,500 km driving route which stretches from the Inishowen Peninsula in County Donegal to Kinsale in County Cork. This route follows the R314 along the north coast of County Mayo.

Concerns were expressed from various observers, in their written submissions to the Board, and in their submissions to the oral hearing, that the opportunity to develop tourism in the area would be impacted adversely by the proposed development. One observer queried whether or not there had been any cost benefit analysis carried out considering the loss of property value and loss of tourism potential. Various observers pointed out, that these projects affect communities in the long term, and that the project hasn't taken account of the costs which will be borne by the local community.

Concerns were expressed that the loss of employment in ESB and Bord na Móna has had a severe impact on the area with a shortage of job opportunities, emigration from the area, the amalgamation of two schools which involved the closure of one, the closure of shops and other facilities in Bellacorick, causing great inconvenient to those living in the area, and a general economic downturn in the area which some observers considered tourism has the potential to counter. At the oral hearing Dr Kavanagh responded that findings of a study on the economic impact of wind arms on Scottish tourism in 2011 indicated that from a tourist viewpoint having a number of wind farms in sight at any point in time is undesirable, the loss of value when moving from medium to large developments is not as great as the initial loss – it is the basic intrusion into the landscape that generates the loss. He takes this to mean that in order to minimise the impact on tourism, very large single developments are preferable to a number of smaller developments, particularly when they occur in the same general area.

Concerns were expressed that the applicant was unable to guarantee jobs to local people during the construction. This matter is addressed also under the heading community benefit where it was raised in relation to the possibility of providing training/apprenticeships. The applicant stated that competition legislation prevented them from committing to hiring local workers, but that local services, such as quarries would be used.

Dr Kavanagh stated that wind farms, if they include a dedicated visitor facility, can themselves become tourist destinations, thereby contributing to the development of the local visitor economy, and he cited as examples the Ecotech Centre in Swaffham, West Norfolk which combines sustainability education with entertainment, also Whitelee Wind Farm, near Glasgow which is a base for a range of recreational activities.

The Oweninny visitor Centre will provide a hub for walkers who wish to use the western way and the walking trail will be promoted by Oweninny Power Limited through the provision of additional signage directing walkers to the route. This will encourage walking in the area by those who may otherwise regard the wind farm as an industrial area.

Roads

This issue of roads is dealt with separately under the heading 'traffic and transport' in Mr Speer's report, which is attached as appendix 1 to this report. There is sufficient capacity on the existing road network to cater for the additional traffic generated by the proposed development during construction stage, in combination with the additional traffic generated by other proposed/permitted windfarms in the vicinity. Repair of any damage done to the public road is proposed as mitigation. Exceptional loads will be transported in accordance with the requirements of An Garda Síochána and each local authority involved, and will be timed to minimise impact on other road users.

Assessment Material Assets

Residential Property

The proposed development will accord with the standards set out in the publication *'Wind Energy Development, Guidelines for Planning Authorities',* Department of the Environment, Heritage and Local Government in 2006. Mitigation is proposed in order to achieve the standards set out therein in relation to noise and shadow flicker. These matters are dealt with in detail in Mr Speer's report, which is attached as appendix 1 to this report. It is not possible to mitigate the visual effects. The argument that any potential devaluation that might arise from a planned wind farm should have been significantly factored into current values at this location arising from the planning

permission already granted dating back to 2003 is only partly convincing. The reality of turbines in situ will have a different impact to the knowledge of a planning permission. However, the proposed development must be considered in the context of the existing permission for development at this location, which can still be implemented.

Gas Main

An Bord Gais have wayleaves along their gas main and no development can be carried out without their consent.

Hazards to property in relation to turbines

Mitigation by design has been used and there is no likelihood of impact on adjoining property.

Air navigation

Given the barrier effect of Slieve Fyagh there is no likelihood of impact on the Dooncarton Radar. In accordance with normal practice in relation to high structures, further consultation and compliance with the requirements of IAA should be addressed by means of a condition.

Energy Supply

The impact on energy supply will be positive.

Tourism

The argument that tourists prefer a concentration of wind turbines in one location to numerous windfarms dotted around the landscape and also the argument, referred to elsewhere in this report under the heading ‘landscape’, that there is a greater negative reaction among tourists to windfarms on mountains and in coastal landscapes to windfarms located within an altered landscape such as the subject site, seem reasonable.

Tourists are unlikely to be drawn to the area by the proposed windfarm, but the argument made by the applicant that a wind energy facility can become a visitor attraction in its own right, provides some mitigation to the potential adverse impact on tourism in the immediate area.

I consider that due to the separation distances and the limited visibility, there will not be a significant impact on the major visitor attractions in the general area: Céide Fields, Ballycroy National Park, Nephin, or the Wild Atlantic Way, arising from the proposed development.

Roads

I consider that there will not be a significant impact following mitigation on roads in the area.

Conclusion Material Assets

I consider that there will be significant adverse impact on a number of residential properties in terms of visual amenity. This must be considered in the context of the existing permission for development at this location, which would also have a significant impact on residential property.

With the exception of the dwellings closest to the site where the visual impact is greatest, I do not consider that there will be significant effects on Material Assets.

Cultural Heritage

The relevant chapters of the EIS are:

Chapter 17 Cultural Heritage

and the relevant appendices are:

Appendix 13 Cultural Heritage Correspondence

and the relevant submissions to the oral hearing is:

item 24 which accompanied evidence given by Mr Martin Byrne.

Identification of potential effects of the development on Cultural Heritage

There is potential for direct and indirect effects of the proposed development on cultural heritage, arising from the construction works: directly from works on site and indirectly from impact on structures along the public road.

Description of likely impacts of the project and effects on Cultural Heritage

There are no protected structures historic gardens or designed landscapes in the site or in the vicinity of the site; but exceptional loads being transported to the site have the potential to impact on protected structures including bridge structures, and this is referred to in Mr Speer's report which is attached to this report as appendix 1 to this report.

Four sites of archaeological interest are located in the area and listed in the Sites and Monuments Record (SMR), three of these sites are listed in the Record of Monuments and Places (RMP) for County Mayo. These sites are detailed in the EIS and the

witness statement. One is a Cist grave in Tawnaghmore, which was excavated in 1971, by the National Museum. Another is a Court Tomb in Shanvodinnaun identified in the 1964 Megalithic Survey of Ireland; subsequently a survey in 1996 and a survey carried out in connection with this application, have failed to locate the monument. The third is a ringfort in Corvoderry and positioned on a gravel ridge near the southern boundary of the site comprising a low circular bank with the remains of an external soil-filled fosse, covered by dense heather. There is also a possible roadway in Tawnaghmore (SMR listed only), which was brought to the attention of the National Museum in the late 60's; but no physical evidence was noted in the survey carried out in connection with this application.

The fact that the area of the site which will be developed is largely cut away bog limits the archaeological potential.

Within 1km of the site there are a further 10 monuments.

Twenty three artefacts, all associated with the initial peat excavations, were reported to the National Museum. None were recovered from depths in excess of 1 – 1.5m.

The haul route for exceptional loads must pass through Ballina and may use the Ham (Upper) Bridge, which is a protected structure. Foxford Bridge which is located on one of the possible haul routes is a protected structure. Some haul routes go through the town of Swinford passing beneath the former Railway Bridge (a protected structure) on Main Street which has a restricted clearance.

Assessment Cultural Heritage

Mitigation proposed is archaeological monitoring by a project archaeologist in consultation with the National Monuments Service.

Mr Speer recommends that matters such as the completion of a bridge survey and a detailed appraisal of the road pavement strength along the agreed haul route prior to the commencement of development in order to assess the condition of the route and to identify any areas where road / bridge widening or strengthening etc. may be required, can be addressed by way of condition.

Conclusion Cultural Heritage

Following mitigation no direct impacts are expected to occur on Cultural Heritage.

10.1.7. Interactions

Interactions between the factors mentioned under the foregoing headings is implicit in the range of preceding issues

11. Need and Planning/Policy Context.

It has been determined that the proposed development is strategic infrastructure development.

Dr Kavanagh's evidence (item 1), and Mr Allen's evidence (item 2), to the oral hearing refer to EU policies, Irish Government policies, and the West Regional Authority's, Regional Planning Guidelines with which the proposed development is aligned. They also refer to the Mayo County Development Plan and the Renewable Energy Strategy 2011-2020. The Mayo County Development Plan, which was current at the date of the oral hearing, has been replaced by the Mayo County Development Plan 2014-2020, which was adopted by Mayo County Council on 9th May 2011, and became operative from the 9th June. The Renewable Energy Strategy and the Landscape Appraisal of County Mayo continue to be supporting documents to the 2014-2020 Development Plan. Relevant provisions of the Mayo County Development Plan 2014-2020 have been referred to at paragraph 6.3 above. It is an objective of the Council to implement the Renewable Energy Strategy for County Mayo 2011-2020. The site is designated as a priority area for windfarms. The proposed development does not have a significant adverse visual impact on any of the vulnerable features: skylines, coastline, river banks & lake shorelines; on the scenic routes and scenic views; or on the slopes and ridgelines identified in the landscape appraisal

The need for the wind energy which will be produced by the turbines was challenged at the oral hearing. The relevance of the government's targets for renewable energy was questioned, since there have been changes at EU level; and the benefit of harnessing wind energy was challenged, since the unreliability of the wind resource requires the parallel provision of fossil fuel burning power plants. Dr Kavanagh responded to questions regarding the fluctuation in electricity demand, diurnally, seasonally and in response to economic activity; and referred to projections in relation to growth in demand. Table 16-4 of the EIS refers.

11.1.1. Assessment

I am satisfied that the proposed development accords with national and regional policy and with the policies and objectives of the current Mayo County Development Plan and

as set out in national policy statements a need for the proposed development has been established.

12. Community Gain

Community Gain is issue which merits attention. The relevant chapter in the EIS is chapter 6 Human Beings and submissions to the oral hearing which are relevant are:

item 18 which accompanied evidence given by Mr Gerard Noonan on community benefit and local employment opportunities, and
item 19 which accompanied the evidence given by Ms Rose Walsh on consultation and community gain, and
item 32 Mr Galligan's legal submission.
Community Gain was discussed on day six of the oral hearing during the extended sitting of the oral hearing and many of those in attendance included in their statements reference to community gain.

13. Legal issues

The provisions under which the Board is required to consider the issue of community gain is relatively recent, having been enacted as part of the Planning and Development (Strategic Infrastructure) Act 2006.

> ***37G.***— *(7) Without prejudice to the generality of the Board's powers to attach conditions under subsection (3) the Board may attach to a permission for development under*
> *this section—*
>
> *(d) a condition requiring—*
> *(i) the construction or the financing, in whole or in part, of the construction of a facility, or*
> *(ii) the provision or the financing, in whole or in part, of the provision of a service, in the area in which the proposed development would be situated, being a facility or service that, in the opinion of the Board, would constitute a substantial gain to the community.*
>
> *(8) A condition attached pursuant to subsection (7)(d) shall not require such an amount of financial resources to be committed for the purposes of the condition being complied with as would substantially deprive the person in whose favour the permission operates of the benefits likely to accrue from the grant of the permission.*

Applicant

Mr Noonan gave evidence on behalf of the applicant in relation to community benefit and local employment opportunities. He said that Oweninny Power Limited (OPL) proposes to put in place a Community Benefit Fund for the operational lifetime of the project (as addressed in Section 6.4.3 of the EIS). The amount of money proposed to be put into the fund is €1,000 (index linked) per MW installed per annum; similar to the amount proposed for other windfarm developments in the Republic of Ireland. The total output of the wind farm will be up to 372MW so an annual fund of up to €372,000 per annum could amount to a total fund of over €10 million over the lifetime of the project. Mr Noonan also set out what Oweninny Power Limited would envisage the fund being used for, and how it would be administered. The fund would be used for provision or improvement of: civic amenity facilities, recreation facilities, education facilities, cultural facilities, environmental protection; in the local area.

In relation to local employment Mr Noonan said that at its peak it is anticipated that more than 100 construction jobs will be created with an estimate of 12 full time jobs in operation and maintenance of the wind farm. Maintenance personnel are likely to be based at the site. A further 5 to 10 jobs are expected to be created in the proposed visitor centre. Construction jobs are likely to be created over a 5 to 6 year period. A large quantity of building material will be required for construction and it is anticipated that 25% of the total expenditure of c €600 million will be sourced locally: quarry material and non-turbine supplies, equipment and services.

Bord na Móna, ESB and OPL are subject to compliance with the EU Utilities Directive (and the recently adopted public Procurement Directives) and all contracts for supplies and services must be procured through public, open and transparent tender processes. OPL cannot incentivise local suppliers or favour contractors who employ, or propose to employ labour from local sources as this would constitute discrimination on the basis of nationality and would be a breach of EU legal principles of free movement of workers and freedom of establishment.

The proposed development will also include a visitor centre which will provide insight into the history of power generation from peat, peat production, wind energy development, bog rehabilitation and the social history of the area.

There will also be a significant financial benefit to Mayo County Council in terms of development contributions and ongoing rate payments.

Dr Kavanagh, giving evidence on behalf of the applicant, stated that wind farms, if they include a dedicated visitor facility, can themselves become tourist destinations, thereby contributing to the development of the local visitor economy. The Oweninny visitor Centre will provide a hub for walkers who wish to use the western way and the walking trail will be promoted by Oweninny Power Limited through the provision of additional signage directing walkers to the route.

Mr Lynch told the hearing that Bord na Móna has recently gone through a similar process in two other sites where communities are hosting windfarms. In those areas there are community benefit schemes and the quantum is €2,000 MW *pa; those schemes are up and running.

Observers

The issue of community gain was raised in many of the submissions to the Board, including submissions from Deputies Michelle Mulherin and Dara Calleary. The proposed contribution of €1,000 was considered by many to be unacceptable. No amount less than the amount in the draft conditions by Mayo County Council €2,500 per MW installed would be acceptable, jobs and investment in specific courses for skills required in the renewable energy sector, at the local secondary schools and PLC venues, were also sought.

The contributors to the oral hearing reflected a range of opinions in relation to community gain. Some, who were vehemently opposed to the project, did not want to engage in a discussion about community gain. Others welcomed the opportunity that community gain would provide to community organisations, struggling for funding. The request for the provision of jobs for local people was repeated again and again. Funding of apprenticeships was suggested. Observers outlined the decline in population, services, jobs, school enrolment and the closure of a school, since the Bord na Móna and ESB activities ceased at Bellacorick.

One observer said that if they went back to the concrete towers (for hubs) 200 local jobs would be created; to which the applicant's response was that they have to select on the basis of criteria and can't determine in advance, whether or not it will be concrete towers.

Differing opinions were expressed as to how the fund would be administered. Some people expressed the view that Mayo County Council should not be involved in its administration, others considered that they should be involved and that the developer should not be involved. Most felt that the developer and representatives of local organisations should be involved.

In relation to the communities who should be eligible to avail of the fund, there were different views as to their geographical distribution, but many people felt that spreading the fund around the county would mean that too little would be available to their area.

How the visitor's centre is going to be funded was queried. It is unlikely to be profitable. All the fund could be used up in this way with no benefit to the community in the shadow of the development. Mr Noonan response on behalf of the applicant is that their intention is to engage with the community. Mr Lynch, on behalf of the applicant responded that the visitor's centre will not be funded by the Community Benefit Fund, they want to get into discussions with the community on how it will be managed and run.

Mr Lynch also confirmed that they are happy to consult with the local community regarding how the fund is spent. They are open to apprenticeships; there will be a number of high quality technician jobs in the running of the facility and these could be locally based.

Planning Authority

Renewable Energy Strategy for Co. Mayo 2011 – 2020

POLICY 4 - Community Benefit

It is the policy of the Council to require that renewable energy developments are carried out in a manner that promotes economic and social benefits for the community of Mayo as a whole. The following objectives apply:

Objective 4.1 To ensure that the advantages of renewable energy development outweigh the disadvantages for the majority of the community residing in the area and for the wider environment.

Objective 4.3 Developers are required to incorporate the concept of community benefit into any renewable energy development proposal. Details should be submitted at planning application stage.

The planning authority in their report to the Board dated 3rd September 2013 state, in relation to conditions which may be appropriate,

Mayo County Council recognises that where a particular infrastructure development is required in the greater national interest (and by definition such developments are likely to be long term) local communities accommodating major infrastructure should derive some measure of community gain.

A draft policy on Community Benefit Contributions required for certain major developments was published by the Council and the final policy will be put before the October 2013 meeting of Mayo Co Co for adoption as official policy. The

Community Benefit Contributions will be used to fund projects and services in the local community over and above those required to be provided by the local authority. The life-span of the proposed development is stated to be 30 years or more. The Council considers it reasonable that the developer should contribute towards the cost of environmental, recreational or community amenities which will help mitigate the long term impact of the development therefore a community gain condition is appropriate.

The schedule of conditions drafted by the County Council includes:

The developer shall pay to Mayo County Council a contribution of €2,500 per installed MW per annum towards the cost of the provision of environmental improvements, recreational or community amenities. The identification of such projects shall be decided by the planning authority having consulted with the local community.

Reason: It is considered reasonable that the developer should contribute towards the cost of environmental, recreational or community amenities...

During the section of the oral hearing in relation to Cluddaun windfarm, day 8, the 16th May 2014, Mr Doughlas on behalf of the planning authority gave evidence and submitted a document titled 'policy on Community Benefit Contributions required for certain major developments', which the Council adopted on 14th April 2014. The document is listed as item 45 of the documents filed on the separate Cluddaun oral heading documents file. It refers to the setting up of a Community Fund under section 109 of the Local Government Act 2001 (as amended) whereby developers will be required to enter into an agreement with Mayo County Council to make a contribution to the community fund prior to submitting a planning application for the proposed development; the amount to be contributed, to be calculated in accordance with Table 1 of the document. It also sets out certain matters in relation to the management and operation of the fund. Table 1 contains two columns: one lists developments subject to community benefit and the other headed '*Calculations for Contributions to the Community Fund*', lists the relevant amounts to be charged. The list of developments includes '*an installation for the harnessing of wind power for energy production of more than 5 wind turbines'* – the contribution / amount to be paid annually for the lifetime of the development is €10,000.

Legal Submission

Mr Galligan made a legal submission to the hearing; in its the written form the submission is a joint submission from Mr Galligan and Mr Fitzsimons, which is listed as item 32 of the submissions received at the oral hearing.

Section 37G is cited. Mr Galligan states that Mayo County Council does not have the power to impose a requirement, such as they propose, under the development plan or any other policy document. In relation to the 'Policy on Community Benefit Contributions required for certain major developments', which is stated to be made under section 109 of the 2001 Act, Mr Galligan states that Section 109 of the 2001 Act does not confer on a local authority the power to require contributions to a fund but merely to accept contributions. Requiring contributions to such a fund goes beyond the power of a local authority. Mr Galligan also points out that there is no statutory provision enabling the planning authority to fix a particular level of community benefit for strategic infrastructure development in its development plan. The policy is not one the Board is obliged to have regard to.

Mr Galligan responded to submissions made by observers that the fund be used for business start-ups. It might be possible that section 37G could be interpreted so as to permit this, if it could be argued that this fund is the financing of a facility or service which would benefit the community. The funding of business start-ups is not envisaged by the Council's Community Benefit Policy, which states that projects of services that are funded are to be limited to the provision or improvement of amenity, recreational, cultural or heritage facilities, the protection or enhancement, or programs to promote social inclusion and community development.

Mr Galligan contrasts the Boards power to impose community benefit conditions to the position in the UK where there is no such power but where wind energy promoters have committed to making such a contribution by virtue of their membership of trade associations. The applicant's proposed contribution of €1,000/MW is in line with best practice set by the Irish Wind Energy Association (IWEA).

In relation to Development Contributions, the basis for the contribution is set out in the relevant section of the Planning Act. There are no parameters set and no reference set for community gain contributions.

The applicant reserves its position legally in relation to the constitutionality of section 37G(7)(d) of the Planning and Development Act 2000, as amended, in circumstances where that provision does not provide a reference point or parameters for the extent of the contribution to be imposed by the Board. The Board is at large in relation to the extent of such a contribution. This offends the constitutional principle of proportionality as articulated in Henaey v Ireland (1994) 3 I.R. 593 and (1996) 1 I.R.580 and in subsequent cases. In Heaney, Costello J. states:

> *In considering whether a restriction on the exercise of rights is permitted by the Constitution, the courts in this country and elsewhere have found it helpful to apply*

the test of proportionality, a test which contains the notions of minimal restraint on the exercise of protected rights, and of the exigencies of the common good in a democratic society. This is a test frequently adopted by the European court of Human Rights 9see, for example, Times Newspapers Ltd. V. United Kingdom (1979) 2 E.H.R.R, 245) and has recently been formulated by the supreme Court in Canada in the following terms. The objective of the impugned provision must be of sufficient importance to warrant overriding a constitutionally protected right. It must relate to concerns pressing and substantial in a free and democratic society. The means chosen must pass a proportionality test. They must:

a) *be rationally connected to the objective and not be arbitrary, unfair or based on irrational considerations;*

b) *impair the right as little as possible, and*

c) *be such that their effects on rights are proportional to the objective: Chaulk v R. (1990) 3 S.C.R. 1303 at pages 1335 and 1336.*

The applicant is happy to make a voluntary contribution. The visitors centre is an important element of the overall provision of the infrastructure in the context of the development.

It reserves the right to challenge the constitutionality of the imposition of an involuntary contribution and the vires or power of the Board to do so, in circumstances where the section appears to leave the Board entirely at large as to the extent of the contribution.

Moreover Mr Galligan submits that the Board is not entitled to exercise an unfettered power to levy contributions of this nature as this would be akin to a power of taxation. He refers the Board to Hogan J. in O'Malley Construction Company Limited v. Galway County Council (Unreported, High Court, Hogan J., September 15, 2011). The exercise of such an unfettered power could amount of an arbitrary interference with property rights protected under the Constitution and would be contrary to Article 40.3.1. He also wishes the Board to note that in Ashbourne Holdings Ltd. v. An Bord Pleanála (2003) 2 I.R. 114, the Supreme Court held that the expropriation of property rights in the context of the imposition of a planning condition is not rendered any less ultra vires by virtue of the acquiescence of the applicant /developer to the form of condition.

Other Legislation referred to

Local Government Act 2001
S 109.
(1) In this section ''community initiative'' means any project or programme which in the opinion of the local authority will benefit the local community and includes the provision

or improvement of amenity, recreational, cultural or heritage facilities, the protection or enhancement of the environment and programmes to promote social inclusion and community development.

(2) A local authority may by resolution establish a fund (in this section referred to as a ‘‘community fund’’) for the purposes of supporting community initiatives and may accept contributions to such fund by any voluntary, business or community group, other local authority or public authority or other person and may itself make contributions to such fund.

(3) A community fund shall be separate from the local fund.

(4) (*a*) The accounts of a community fund shall be accounted for separately and be part of the records and the accounts of the local authority or local authorities which established the fund.
(*b*) The accounts of a community fund shall contain separate records for contributions in respect of particular community initiatives as the local authority which established it may consider appropriate.

(5) A local authority may enter into an agreement with any person making contributions to the fund as regards the application of money towards a particular community initiative.

(6) A local authority may undertake itself or assist any other person in such fund-raising activities as it considers appropriate for the purposes of a community initiative.

(7) A community fund may be established jointly by resolution of 2 or more local authorities subject to such arrangements as may be agreed by the authorities concerned.

(8) The functions conferred on a local authority by this section or by *section 110* shall—
(*a*) be subject to the exclusion of such matters, and
(*b*) be exercisable subject to such terms and conditions, as the Minister may, with the consent of the Minster for Finance, prescribe by regulations.

Assessment

It is not a matter for the applicant to determine the amount of the contribution. That is a matter for the board, taking account of the other advice in the foregoing paragraphs. I consider it appropriate that a condition requiring the payment of an annual contribution in respect of community gain, in the sum of €2,500 per MW installed, be attached to any permission.

Legal issues

The relevant submissions to the oral hearing are:

item 23 compliance documents (incomplete)
item 29 compliance documents (complete)
Mr Galligan's legal submission
item 32 Mr Galligan's legal submission
item 33 Mr Browne's submission on behalf of An Taisce.
item 35 Mr Sweetman's submission – Land Registry Documents
Legal issues were referred to in written submissions to the Board and by observers during the course of the oral hearing.

Ownership issues /Grazing rights

Townagh Group comprisingTom McHugh, Patrick M Cuffe, Seamus Gaughan, Brendan Gallagher, Paddy Gallagher, Eamon Fergus and Kevin Cambell made a written submission to the Board following receipt of the application; and were represented at the oral hearing. The issue of grazing rights was raised on day 1, in questions to Dr Kavanagh; on day 6 during an extended sitting to facilitate contributions from the community; and on day 8 in legal submissions from Mr Galligan and in responses from observers

Townagh Group stated that they have established grazing rights on 375 ac east of the Sheskin road; that this was raised in the previous oral hearing in 2003, and that Bord na Móna did not ask them to remove their animals.

Corvoderra Group comprising Martin Walsh, Tom O'Donnell, John Gallagher, Patrick Lynn, Michael Moyles and JJ McLoughlin made a written submission to the Board following receipt of the application; and were represented at the oral hearing. They allege that they have retained grazing rights. Item 35 of the documents submitted at the oral hearing refers

Dermot McDonnell made a submission on behalf of John Fergus and Eamonn Fergus, Tawnaghmore, Bellacorrick, in relation to the compulsory purchase of their lands and the sale of these lands by Bord na Móna.

Mr Galligan referred to legal interest in his submission - Item 32 refers, (paragraphs 4 to 9): that if any person has rights in the land, such rights are protected by section 37(H)(6) '*a person shall be not be entitled solely by reason of a permission under 37(G) to carry out any development'*; and that no significant adverse effects could arise as a consequence of granting planning permission.

Validity of existing permission

The permission granted by An Bord Pleanála for a 180 turbine wind farm on this site, Ref. No. PL16.131260, had a period for implementation which expired 19th December 2013. An application to extend the duration of that permission was made to Mayo County Council, by Bord Na Mona Energy Limited, on 25th November 2013.

A decision to extend the appropriate period to 18th December 2018, was made on the 27th January 2014, following a recommendation from the Senior Planner that substantial works had been carried out.

Observers have raised the validity of this extension of duration, for reasons including that a number of prior to commencement conditions were attached to the permission Ref. No. PL16.131260.

Mr Galligan refers to compliance with existing permission (paragraphs 98 and 99 of his submission), stating that evidence has been submitted to the Board of the compliance submissions to Mayo County Council and the planning authority responses, which indicate their satisfaction that there has been substantial compliance with the requirements of the conditions, to the extent that is required at that stage of development; and he quotes legal precedents in relation to prior to commencement compliance.

Some of the compliance conditions refer to roads issues and have been addressed by Mr Speer in his report which is attached as appendix 1 to this report. Mr Speer's advice is that:

> *as regards the status of those works already carried out on site and the ability of the applicant to avail of the grant of permission issued for ABP Ref. No. PL16.131260, it is my opinion that such matters are beyond the remit of the Board which has no function in terms of enforcement. Accordingly, I would suggest that the Board would be within its rights to assess the subject proposal on the basis that there is a 'live' permission on site and that the Planning Authority has acted appropriately both in its enforcement of the applicable planning conditions and in its determination of the application for the extension of the duration of the relevant permission.*

EIA and Appropriate Assessment

Appropriate Assessment

Mr Browne in his closing submissions on behalf of An Taisce includes legal submissions on the requirements of Part XAB of the Planning and Development Act 2000 on appropriate assessment.

Mr Browne states that the competent authority for carrying out appropriate assessment of a proposed strategic infrastructure development is the Board, (Paragraph 6 of Mr Browne's submission). '*It is arguable that the actual final appropriate assessment must be carried out by the decision-making corpus of members within the Board rather than an appropriate assessment conducted by the Inspector in an Inspector's report'*. He quotes (Paragraphs 7 & 8), from C-127/02, Wadanzee that, '*all aspects of the plan or project which can by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field.*' He quotes (Paragraph 11), from C-258/11, Sweetman, that an appropriate assessment '*cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned*.' He quotes (Paragraph 12), from C-239/04, Castro Verde '*under …Article 6(3) … it is not sufficient … to prove ex post facto that a project had no negative impact. On the contrary, any reasonable scientific doubt as to the absence of adverse effects on the integrity of the site must be removed before the project is authorised*.'

It is not the prerogative of the applicant for development consent to carry out screening for appropriate assessment but rather the competent authority, (Paragraph 16). The purpose of screening is *'to assess, in view of the best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site.'*

In the event that screening for appropriate assessment has not been carried out by the Board prior to the application having been submitted, it is incumbent on the Board to carry out the screening in order to remedy this defect, (Paragraph 19).

It the Board has residual concerns about the Natura 2000 sites that were screened out as part of the screening exercise carried out, the Board should satisfy itself that the correct test for screening is applied, (Paragraph 21). Advocate General Sharpson in her Opinion in the Sweetman case, stated that a full appropriate assessment is required if the project is '*likely to have a significant effect',* which test she said *'is set at a lower level and that the question is simply whether the plan or project concerned is capable of having an effect. It is in that sense that the English 'likely to' should be understood.*

The Board should satisfy itself that the correct test is applied and that potentially affected Natura 2000 sites are not screened out on the basis of distance necessarily, (Paragraph 25).

If there is a concern raised following the submission by Prof. Paul Johnson on behalf of the National Parks and Wildlife Service (NPWS), this should be considered as part of the appropriate assessment process and further information sought.

An Taisce notes the concerns raised by Dr Fossitt on behalf of NPWS and in particular the conclusion that the appropriate assessment that will be carried out by the Board must include the relevant SPAs and bird populations which are not currently covered by the NIS as well as the recommendation that monitoring may not be used to address data gaps or deficiencies in information required to carry out appropriate assessment.

Mr Browne quotes (Paragraphs 31 & 32), from C-183/05, the Lough Rynn Case; that there is a requirement for adequate monitoring programmes or systems to ensure the effective implementation of the system of strict protection for all species listed in Annex IV of the Habitats Directive. The Advocate General in his Opinion on that case states that development which has been authorised in Ireland '*shows that the species listed in Annex IV (a) to Directive 92/43 and their breeding sites and resting places are subject to disturbances and to threats which the Irish rules do not make it possible to prevent*.' This decision is generally relied upon as authority for the assertion that necessary information on species protection including detailed surveys, must be submitted prior to the application for consent (Paragraph 33).

In relation to whether priority habitats are afforded general or de jure protection, there is an argument to be made that in certain circumstances this may arise. In relation to 'shadow protection' he quotes (Paragraphs 49 to 57), Charleton J in Sandymount and Merrion Residents Association v An Bord Pleanála, citing C-340/10, the Palimini Lake case, *'the duty of effective cooperation which devolves on all Member States pursuant to the Treaty of the Europen Union infers an obligation to positively search out and identify areas that are suitable for conservation, and therefore for notification to the Commission. Where this requirement is not met, and sites which host priority species are actively destroyed, then the protection required under the Directive will be applied notwithstanding that there has been no notification to the Commission*.' In this regard he also quotes C-308/08, Iberian Lynx case. It is not possible to authorise intervention for a site which exhibits the ecological characteristics for sites eligible for notification to the Commission under Article 4 and Annex III to the Habitats Directive in circumstances where there has not been an adequate scrutiny of the site by the Respondent or the national authorities responsible for identifying sites suitable for protection. An Taisce highlights this issue to alert the Board to legal uncertainty as to whether priority habitats

which have not been designated as SACs are entitled to de facto or shadow protection and in particular whether there is a de minimis threshold.

Mr Galligan on behalf of the applicant offers advice to the Board in relation to Requirements of the Habitats Directive & Irish Legislation (paragraphs 41 to 58 of his submission). He states that the Board must carry out the screening exercise pursuant to Section 177U and the appropriate assessment pursuant to S 177V.

EIA

Mr Browne's closing submissions refer to EIA.

The new EIA requirement requires the Board to 'identify, describe and assess' the direct and indirect effects of the proposed development on the criteria outlined in Articles 4-11 of Directive 2011/92/EU (the consolidated EIS Directive). Furthermore, the Dept. has published 'guidelines for planning authorities and An Bord Pleanála on 'Carrying out Environmental Impact Assessment', which require the decision-making body or competent authority to carry out the EIA and to document the effects and determination of that assessment in order to comply with the requirements of article 3 of directive 2011/92.

Phase 3 (60% of projected capacity) of the proposed development is predicated on a subsequent grant of planning permission for a new 400kV sub-station when the grid connection is available. An Taisce is concerned that phase 3 is premature and contingent on another grant of planning permission which is by no means guaranteed.

The EIS has been submitted on the basis of all three phases proceeding and the EIA will be carried out on the application as submitted. It is difficult to disaggregate the EIA between phases 1 and 2 which can proceed immediately and phase 3 which is dependent on a further grant of permission.

An Taisce considers that the Board is being asked to determine the sustainability of the proposed development relative to the grant of planning permission in 2003.

Mr Galligan offers advice to the Board in relation to Requirements of the EIA Directive & Irish Legislation (paragraphs 10 to 40 of his submission); and in relation to the role of the Board and the requirements of EIS and EIA.

He points out that the Board is required under Section 172 (1D) of the 2000Act to determine '*Whether an environmental impact statement submitted under this section identifies and describes adequately the direct and indirect effects on the environment of the proposed development'*.

Other Legal Issues

Mr Galligan offers advice to the Board in relation to considerations under the heading '*Proper planning and sustainable development'* (paragraphs 59 to 87 of his submission).

Mr Galligan refers to the relevance of the existing permission, to the assessment of the application by the Board (paragraphs 83 to 86 of his submission). He states that when the Board is considering the environmental impact of the current proposal, the permitted development and its impacts forms a relevant baseline for such assessment.

He also refers to the need for consistency, citing relevant case law.

Assessment

Legal interest

There is a conflict of evidence in relation to ownership and I consider it to be beyond the competency of the Board to make any determination in relation to the issues which have been raised. I agree with Mr Galligan's submission that section 37(H)(6) of the Planning and Development Act as amended, will protect any such property rights as may exist. I do not think that the issue of property rights should be a reason to refuse planning permission nor do I think that additional information on this issue should be requested.

Validity of existing permission

I agree with Mr Speer that the Board should assess the subject proposal on the basis that there is a live permission on the site.

Other Legal Issues

I have taken account of the other legal issues raised and recommend them for the attention of the Board.

14. Recommendation

I recommend that permission be granted for the Reasons and Considerations set out below and subject to the attached Conditions.

14.1. REASONS AND CONSIDERATIONS

Having regard to:

(a) national policy with regard to the development of sustainable energy sources,

(b) the "Wind Energy Development Guidelines" – Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government in June, 2006,
(c) the character of the landscape in the area and the topography surrounding the site,

(d) the policies of the planning authority as set out in the current Mayo County Development Plan 2014 – 2020 and the Renewable Energy Strategy for County Mayo 2011-2020
(e) the distance to dwellings or other sensitive receptors from the proposed development,
(f) the Environmental Impact Statement submitted,
(g) the Appropriate Assessment Screening Report for Habitats Directive Assessment submitted,
(h) the extensive submissions made in connection with the planning application, and
(i) the evidence given at the oral hearing.

it is considered that, subject to compliance with the conditions set out below, the proposed development would not have a significant adverse impact on the landscape or upon its archaeological or cultural heritage of the area, would not give rise to any significant impacts on the natural heritage of the area or affect the integrity of any European site or any protected species, and would be acceptable in terms of traffic safety and convenience of road users. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

14.2. Conditions PA0029

1 The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, except as may otherwise be required in order to comply with the following conditions. Where such conditions require points of detail to be agreed with the planning authority, these matters shall be the subject of written agreement and shall be implemented in accordance with the agreed particulars.

In default of agreement, the matter(s) in dispute shall be referred to An Bord Pleanála for determination.

Reason: In the interest of clarity

2 All new powerlines within the site shall be placed underground.

Reason: To protect avian ecology.

3 Turbine T16 shall be omitted from the development.

Reason: To avoid impact on the adjoining bog remnant and the nearby Natura site.

4 The period during which the development hereby permitted may be carried out shall be ten years from the date of this order.

Reason: Having regard to the nature of the proposed development, the Board considered it appropriate to specify a period of validity of this permission in excess of five years.

5 This permission shall be for a period of 30 years from the date of commissioning of the wind farm.

Reason: To enable the planning authority to review its operation in the light of the circumstances then prevailing.

6 Prior to the commencement of development the developers (and their successors in title) shall enter into legally binding agreement(s) with the planning authority under S 47 of the Planning and Development Act, 2000. The agreement(s) shall provide for the following:

(i) payment to the planning authority of all costs incurred by Mayo Co Co in relation to the repair, maintenance and rehabilitation of the road network arising form the construction of the development, determined by the Road and Bridge survey to be carried out prior to and post construction in accordance with a further condition of this permission; the amount of such costs shall be as agreed between Mayo Co Co and the developer or, in default of agreement, shall be determined by An Bord Pleanála.
(ii) Restoration of the lands to the satisfaction of the planning authority following the cessation of the operation of the windfarm, including the demolition of process items of equipment and removal of facilities to grade level.
(iii) Full implementation of the Traffic Management Plan in the EIS submitted to An Bord Pleanala and any subsequent amendments arising from reviews of that Traffic Management Plan approved by the Project Monitoring Committee.
(iv) Payment of the planning authoritys' reasonable costs in engaging transportation personnel to monitor implementation of the Traffic Management Plan and the provision of office accommodation and telecommunications facilities on site for such personnel.

(v) Payment of the authoritys' reasonable costs in engaging environmental personnel to monitor implementation of the Environmental Management System, required by way of further condition, and the provision of office accommodation and telecommunications facilities on site for such personnel.

Reason: To ensure satisfactory control of the development in the interests of the proper planning and sustainable development of the area.

7 This permission shall not be construed as any form of consent or agreement to a connection to the national grid or to the routing or nature of any such connection.

Reason: In the interest of clarity.

Environmental

8 The developer shall ensure that all construction methods and environmental mitigation measures set out in the Environmental Impact Statement, Natura Impact Statement and associated documentation are implemented in full, except as may otherwise be required by the attached conditions.

Reason: In the interest of protection of the environment

9 Prior to commencement of development, a Project Monitoring Committee (PMC) shall be established to monitor:

geotechnical risks set out in the Geotechnical Risk Register,

the ecological monitoring plan, which shall include corpse searches for birds and bats,

the environmental monitoring plan, including invasive species control,

surface water runoff,

drainage control,

implementation of the restoration and landscape plan and

other environmental issues contained in the EIS submitted to An Bord Pleanala,

traffic management and road maintenance and

other matters relating to the overall management of the project.

The PMC shall comprise representatives from Mayo County Council and the Developer/applicant and may include representatives from the following: DAHG, IFI, EPA and An Taisce. The PMC shall have the right to co-opt other members as required. The Mayo County Manager or his/her nominee shall chair the PMC. Details of the mode of operation for the committee, including frequency of meetings, and reporting and liaising arrangements with other persons and bodies, shall be agreed with the planning authority initially before development commences and may be varied from time to time.

Reason: To ensure effective monitoring during construction and operation in the interests of the proper planning and sustainable development of the area.

10 Before development commences on the site, the developer shall obtain the agreement of the planning authority for a monitoring plan in relation to surface water, ground water, dust, and continuous noise. Such monitoring shall be carried out by the developer throughout the construction of the windfarm (to the date of commissioning of the 3rd and final phase of the windfarm. The monitoring plan shall, as a minimum, include:

a) A list of all monitoring locations
b) Description and specification of equipment to be used
c) The identity and qualifications of persons responsible for monitoring
d) Parameters to be used
e) Monitoring intervals.
f) Averaging times
g) Proposals for the presentation of data
h) Codes of practice to be used, and
i) Details of right of access to Mayo Co Co appointed staff to carry out environmental monitoring checks as required, or as requested by the Project Monitoring Committee.

Costs incurred by the planning authority in carrying out any necessary monitoring checks, inspections and environmental audits, shall be reimbursed by the developer.

Reason: In the interests of clarity, and the protection of the environment during the earthworks and construction phase.

11 Prior to commencement of development, the developer shall obtain the agreement of the planning authority for an Ecological Monitoring Plan to ensure that all mitigation measures proposed in the Environmental Impact Statement submitted to An Bord Pleanala relating to the protection of habitats, flora and fauna are, carried out; and in addition shall include the carrying out of corpse searches for both bats and birds to increase the body of knowledge on the effect of windturbines on these species; and hydrological monitoring, to include tests for water quality, in the vicinity of Bellacorick Iron Flush for a period to at least 5 years post construction. Monitoring shall be carried out by a suitably qualified ecologist who shall liaise with the Project Monitoring Committee.

Reason: In the interests of protecting the environment.

12 The developer shall appoint a suitably qualified and experienced Environmental Officer for the period of the construction of the windfarm. As part of their duties, the Environmental Officer shall liaise with the Project Monitoring Committee in relation to implementation of the required environmental monitoring, and shall be responsible for reporting to that committee and the planning authority.

a) Any malfunction of any environmental system,
b) Any occurrence with the potential for environmental pollution,
c) Any emergency

Which would reasonably be expected to give rise to pollution of waters. The Environmental Officer shall maintain a record of any such occurrences and action taken; this record shall be available for public inspection on the planning authority's file and at the developer's offices at Bellacorrick during normal office hours.

Reason: In the interest of proper environmental control during the earthworks and construction phase.

13 A plan for the management of invasive shall be prepared and agreed with the project monitoring committee. This shall include a programme for the removal of self-seeded Lodge Pole Pine and Rhododendron Ponticum; and measures to prevent the spread of invasive species as a result of works being carried out on this site.

Reason: To protect the ecology of the area.

14 Any in-stream works shall be carried out in consultation with Inland Fisheries Ireland. Any in-stream works should be carried out between May and October during dry weather conditions.

Where possible turbines shall be located a minimum of 100m from any watercourse.

The Forestry and Water Quality Guidelines must be strictly adhered to and felling shall not be carried out during wet weather conditions.

Where possible brash shall be removed from the site.

IFI shall be included as a notifiable body in the Emergency Response Plan in the event of a major spill or other significant discharge of polluting matter to surface waters.

Reason: To protect rivers and aquatic ecology.

15 All surface water discharges from the disturbed area of the site shall be channelled through settlement ponds. Prior to commencement of development, the developer shall agree with the planning authority precise details of a monitoring programme for the settlement ponds and their discharge, and a maintenance programme for the ponds.

Parameters to be monitored shall include:

a) Temperature
b) Turbidity
c) Dissolved oxygen
d) Electrical conductivity
e) Orthophosphate
f) Total phosphorus
g) Nitrate
h) Ammonia (as N)
i) Suspended solids

and any other parameter required by the planning authority. The frequency and methods of monitoring shall be agreed in advance of the operation of the settlement ponds with the planning authority. Any alterations to the agreed monitoring regime or maintenance programme shall be subject to agreement with the planning authority, following consultation with the Project Monitoring Committee.

Reason: In the interest of environmental protection and the proper planning and sustainable development of the area.

16 Prior to the commencement of development, the developer shall obtain the agreement of the planning authority for an Environmental Management System (EMS), specific to the construction of the windfarm. The EMS shall include as a minimum the following:

a) Management and reporting structure
b) Schedule of environmental objectives and targets, including objectives for the minimization of all silt and settlement pond flow discharges during periods of high precipitation.
c) An environmental management programme
d) Corrective action procedures
e) Awareness and training programme
f) Communications programme

The developer shall implement the agreed EMS for the duration of the earthworks and construction phase of the development. On written request by the planning authority, the developer shall submit a report on any specific environmental matter and/or an environmental audit as specified by the planning authority.

Reason: In the interest of environmental protection and the proper planning and sustainable development of the area.

17 The EMS shall be the subject of an annual review by the planning authority, following consultation with the Project Monitoring Committee. The developer shall modify the EMS in accordance with any reasonable requirement of the planning authority, at any stage.

Reason: In the interest of environmental protection and the proper planning and sustainable development of the area.

18 The developer shall adhere to the Wildlife Acts 1976 to 2000 in relation to protected wild animals and shall liaise with the local wildlife ranger or the Department of Arts, Heritage and the Gaeltacht (DAHG) in this regard.

Reason: To ensure the protection and conservation of protected wild animals.

Public Access to Information

19 All agreements with the planning authority, required by way of the conditions in this permission, shall be in writing and copies of such agreements shall be made available for public inspection during normal office hours at the planning authority's offices, and at the developer's offices in Bellacorrick. Monitoring results required under the conditions of this permission shall be submitted, at agreed intervals, to the planning authority electronically and in hard copy form, and shall be made available for public inspection on the planning authority's file, and at the developer's offices in Bellacorrick. The developer shall develop a computerised database for the recording and transfer of monitoring data; the design of the database shall be subject to agreement with the planning authority.

Reason: In the interest of clarity and transparency, and to facilitate ease of interpretation of all monitoring data collected and recorded.

Prevention of Water Pollution

20 All tank and drum storage areas on the sites shall, as a minimum, be bunded to a volume not less than the greater of the following:

110% of the capacity of the largest tank or drum within the bunded area, or

25% of the total volume of substance which could be stored within the bunded area.

Reason: To prevent water pollution.

21 All fuel storage areas and cleaning areas, particularly for trucks, shall be rendered impervious to the stored or cleaned materials and shall be constructed to ensure no discharges from the areas.

Reason: To prevent water pollution.

22 The developer shall maintain on the sites for the duration of the construction period, oil abatement kits comprising of booms and absorbent materials. The precise nature and extent of the kits and the locations at which they are to be kept shall be agreed in writing with the planning authority prior to commencement of development.

Reason: To prevent water pollution.

Noise Mitigation

23 During construction and haulage, noise levels shall be kept to a minimum. Any activity that will result in a significant increase in the ambient noise levels, for example, piling or rock breaking, shall be notified to the Project Monitoring Committee (PMC) in advance. Advance notice of the schedule of such activity shall be made available to the general public by way of public advertisement, if required by the PMC.

Reason: In the interests of public health and residential amenity.

24 Noise mitigation measures outlined in the environmental impact statement received by the Board on the 4th day of July, 2013, shall be carried out in full. The following conditions shall be complied with:

a) Noise levels emanating from the proposed development following commissioning, by itself or in combination with other existing or permitted wind energy development in the vicinity, when measured externally at third party noise-sensitive locations, shall not exceed 43dB(A)L90, 10 min; or a fixed lower limit of 37.5dB(A) at lower wind speeds in those low noise environments identified as Noise Sensitive Locations H36-H46 inclusive in Table 7-15 of the environmental impact statement.
b) All noise measurements shall be made in accordance with I.S.O. Recommendations R1996/1, 2 & 3 “Acoustics – Description and Measurement of Environmental Noise”.
c) The developer shall arrange for a noise compliance monitoring programme for the operational wind farm. Details on the nature and extent of the monitoring programme, including any mitigation measures such as the de-rating of particular turbines, shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.

Reason: In the interest of residential amenity.

Mitigation of Shadow Flicker

25 Shadow flicker shall be managed to protect the amenities and health of residents of the area:

a) Turbine Nos. 45, 51, 66, 67, 68, 78, 79, 82, 87, 91, 92, 101 & 111 shall be fitted with appropriate equipment and software to suitably control shadow flicker at nearby

dwellings, in accordance with details which shall be submitted to, and agreed in writing with, the planning authority prior to the commencement of development.

b) Shadow flicker arising from the proposed development, by itself or in combination with other existing or permitted wind energy development in the vicinity, shall not exceed 30 hours per year or 30 minutes per day at existing or permitted dwellings or other sensitive receptors.

c) Shadow flicker from the motion of overlapping blades shall not occur, at any time, at any existing house within ten rotor diameters of a turbine,as a result of the proposed development and appropriate equipment and software shall be fitted to the relevant turbines, to ensure compliance with this requirement.

d) A report shall be prepared by a suitably qualified person in accordance with the requirements of the planning authority, indicating compliance with the above shadow flicker requirements. Within 12 months of commissioning of the proposed wind farm, this report shall be submitted to, and agreed in writing with, the planning authority.

e) A shadow flicker compliance monitoring programme for the proposed development shall be submitted to, and agreed in writing with, the planning authority prior to the commencement of development.

Reason: In the interest of residential amenity.

Complaints Register

26 A Complaints Register shall be maintained by the developers at their offices in Bellacorrick, this shall relate to all written complaints made regarding any aspect of the earthworks and construction phase of the development. The register, which shall be available for public inspection on request during normal office hours, shall include the following:

a) The name of the complainant
b) The nature of the complaint
c) The date and time of the complaint
d) Actions taken as a result of the complaint

Reason: In the interests of proper monitoring of the development

Waste

27 No waste material, other than material being transferred to a licenced waste facility, generated on the site during the construction phase shall be removed off the site without the prior agreement of the planning authority.

Reason: To provide for the appropriate management of waste and in the interests of protecting the environment.

28 Prior to the commencement of development, the developer shall submit, and obtain the agreement of the planning authority to a plan containing details for the management of waste (and, in particular, recyclable materials) within the development including the provision of facilities for the storage, separation and collection of waste and, in particular, recyclable materials, and for the ongoing operation of these facilities.

Reason: To provide for the appropriate management of waste and in particular, recyclable materials in the interests of protecting the environment.

Site Development Works

29 All site development works shall be carried out to a standard not below the minimum specified in Best Practice for Wind Energy Development in Peatlands, issued by the Department of the Environment, Community and Local Government.

Reason: In the interests of proper planning and sustainable development of the area.

30 Details of the turbine design, and colour shall be submitted to, and agreed in writing with, the planning authority, prior to commencement of development.

a) Cables from the turbine to the substation shall be run underground within the site.
b) The wind turbines shall be geared to ensure that the blades rotate in the same direction.
c) With the exception of the road serving the proposed visitors centre, the access tracks within the site shall be surfaced in gravel or hardcore and shall not be hard topped with tarmacadam or concrete.

Reason: In the interests of the amenities of the area.

Mitigation of Impact on Communications Services

31 Prior to the commencement of development the developer shall agree a protocol for assessing any impact on radio or television or other telecommunications reception in the area. In the event of interference occurring, the developer shall remedy such interference according to a methodology to be agreed with the planning authority, following consultation with other relevant authorities and prior to commissioning the turbines.

Reason: In the interests of residential amenity.

32 Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. Subsequently the developer shall inform the planning authority and the Irish Aviation Authority of the co-ordinates of the as-constructed positions of the turbines and the highest point of the turbines (to the top of the blade spin).

Reason: In the interest of air traffic safety.

Archaeology

33 A project archaeologist shall be appointed for the duration of the archaeological works associated with the development. The Project Archaeologist shall ensure that the archaeological works are carried out in accordance with provisions of the policy and advice notes on archaeological excavations issued by the Department of Arts, Heritage and the Gaeltacht.

A detailed archaeological walkover assessment of all areas of development activity shall be completed by a suitably qualified archaeologist prior to the commencement of construction works.

The scope of the archaeological walkover assessment shall be agreed by the Project Archaeologist with the Department of Arts, Heritage and the Gaeltacht and shall include all areas where development activity will take place such as geotechnical investigations, permanent and temporary construction areas, spoil storage areas, temporary compounds, borrow pits, crane stands and river crossings. This work area shall be carried out under licence to the Department of Arts, Heritage and the Gaeltacht with provision for pre-development archaeological testing/sampling to establish the extent and nature of any potential archaeological material where such is identified.

Having completed the archaeological walkover assessment, the archaeologist shall submit a written report to the Planning Authority and to the Department of Arts, Heritage and the Gaeltacht. The report shall comment on the degree to which the extent, location and levels of all development activities will affect the archaeological remains. This should be illustrated with appropriate plans, sections, etc.

Where archaeological material is shown to be present, further mitigatory measures will be required; these may include redesign to allow for preservation in-situ, excavation and /or monitoring.

Preservation in-situ, must allow for the maintenance of current hydrological conditions (water levels, stable ph and oxidation levels) to be achieved at the particular site, where organic materials survive. The provision of dipwells to record the water, ph and oxidation levels to ensure preservation in-situ should be facilitated.

Where it is not feasible to fully avoid material of archaeological significance, arrangements must be made in advance of the commencement of development works for the preservation by record or archaeological excavation of this material in line with the Policy and Guidelines on Archaeological Excavation' 1999 (D.A.H.G) allowing sufficient time and resources for this to be achieved prior to the commencement of construction works.

The developer shall be prepared to be advised by the Department of Arts, Heritage and the Gaeltacht with regard to any necessary mitigation actions.

No site preparation or construction work shall be carried out until after the archaeologist's report has been submitted and permission to proceed has been received in writing from Department of Arts, Heritage and the Gaeltacht.

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation of any remains which may exist within the site.

34 Prior to the commencement of construction works, a temporary buffer area of 50m shall be established and fenced around Ch-4 and Ch-3. No development works of any kind shall take place within the buffer areas.

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation of any remains which may exist within the site.

Roads and Traffic

35 All construction traffic shall access the site via the 3 No. existing site access points located on the N59 (Crossmolina – Bangor) National Road. No access to the site for construction purposes is permitted from any of the local roads adjoining the site.

Reason: In the interest of traffic safety.

36 Prior to the commencement of the development:

a) Full details of the upgrading works to the existing site access arrangements and the associated road improvement works to be undertaken along the public road, including any road widening, the provision of deceleration lanes, signage and road markings designed to facilitate the proposed development shall be submitted to and agreed in writing with the planning authority.

b) The developer shall have completed, to the written satisfaction of the planning authority, the upgrading works to the existing site access arrangements and the associated road improvement works along the public road in accordance with point (a) above.

The provision of the required upgrading of the existing site access arrangements and the associated road improvement works on the public road shall be undertaken at the expense of the developer.

Reason: In the interest of proper planning and sustainable development and in the interest of pedestrian and road traffic safety.

37 Details of the proposed closure of an existing site entrance and its subsequent use for emergency access purposes only, shall be submitted to, and agreed in writing with, the planning authority prior to the commencement of development.

Reason: In the interest of traffic safety.

38 Prior to commencement of development, details of the following shall be submitted to, and agreed in writing with, Mayo County Council and, where relevant, with Sligo County Council:

i) a Transport Management Plan, including details of the road network/haulage routes, the vehicle types to be used to transport materials on and off site, and a schedule of control measures for exceptional wide and heavy delivery loads.
ii) a condition survey of the roads and bridges along the haul routes to be carried out at the developer's expense by a qualified engineer both before and after construction of the wind farm development. This survey shall include a schedule of required works to enable the haul routes to cater for construction-related traffic. The extent and scope of the survey and the schedule of works shall be agreed with the planning authority/authorities prior to commencement of development.
iii) detailed arrangements whereby the rectification of any construction damage which arises shall be completed to the satisfaction of the planning authority/authorities.
iv) detailed arrangements for temporary traffic arrangements/controls on roads.
v) a programme indicating the timescale within which it is intended to use each public route to facilitate construction of the development.

All works arising from the aforementioned arrangements shall be completed at the developer's expense, within 12 months of the cessation of each road's use as a haul route for the proposed development.

In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: To protect the public road network and to clarify the extent of the permission in the interest of traffic safety and orderly development.

39 An independent road safety audit, Stage 3 in accordance with current NRA HD 19-12 Road Safety Audits incorporating HA 42 (June 2012), shall be undertaken by the developer. All mitigation measures identified in this audit shall be undertaken in full by the developer prior to any works commencing on site.

Reason: In the interests of traffic safety.

40 All vegetation within the sight visibility line at all the entrances shall be cut back and maintained by the developer.

Reason: In the interests of traffic safety

41 A wheel wash facility shall be installed at all three site entrances to prevent the transportation of mud/dust onto the public road network.

Reason: In the interests of traffic safety.

42 No micrositing is hereby permitted. The location of any turbine shall not be altered without a prior grant of planning permission.

Reason: To ensure effective control over the propsed development.

43 On full or partial decommissioning of the wind farm or if the wind farm ceases operation for a period of more than one year, the masts and the turbines concerned (including foundations) shall be removed and all decommissioned structures [and any access roads] shall be removed within three months of decommissioning.

Reason: To ensure satisfactory reinstatement of the site upon cessation of the project.

Community

44 Prior to commencement of development a community liaison committee shall be established to liaise between the applicants and the local community. The membership of this committee shall reflect membership of the local community of Bellacorick and neighbouring areas. Membership shall be restricted to eight persons under an independent chairperson and include one member and one official from the planning authority and two representatives of the applicant company. The community liaison committee shall have responsibility for the administration of the community gain fund account to be set up in accordance with condition number 46 and for decisions on projects to be supported by the fund in addition to acting as a liaison committee with the local community in relation to ongoing monitoring of the operation of the proposed development.

Reason: To provide for appropriate ongoing review of operations at the site in conjunction with the local community and to provide for the allocation of resources from the community gain fund in accordance with the requirements of the local community.

45 The developer shall pay into a community gain fund a contribution of € 2,500 per installed Mw per annum towards the cost of the provision or financing of a facility (or facilities) or service(s) which would constitute a substantial gain to the local community.

Reason: It is considered reasonable that the developer should contribute towards the costs of facilities or services of benefit to the community, which will help to mitigate the impact of the development on the local community.

Development Contributions and Bond

46 The developer shall pay to the planning authority a financial contribution as a special contribution under section 48(2)(c) of the Planning and Development Act, 2000 in respect of the repair and maintenance of public roads damaged by construction and maintenance traffic. The amount of the contribution shall be agreed between the planning authority and the developer or, in default of such agreement, the matter shall be referred to the Board for determination. The contribution shall be paid prior to the commencement of the development or in such phased payments as the planning authority may facilitate and shall be updated at the time of payment in accordance with changes in the Wholesale Price Index – Building and Construction (Capital Goods), published by the Central Statistics Office.

Reason: It is considered reasonable that the developer should contribute towards the specific exceptional costs which are incurred by the planning authority which are not covered in the Development Contribution Scheme and which will benefit the proposed development.

47 Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of public roads which may be damaged by the transport of materials to the site, coupled with an agreement empowering the planning authority to apply such security or part thereof to the satisfactory reinstatement of the public road. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

Reason: In the interest of traffic safety and the proper planning and sustainable development of the area.

48 Prior to the commencement of development, the developer shall lodge with Mayo Co Co a cash deposit, a bond of an insurance company, or other security to secure the

satisfactory reinstatement of the site, upon cessation of use of the windfarm coupled with an agreement empowering Mayo Co Co to apply such security or part thereof to the satisfactory reinstatement of the site. The form and amount of the security shall be as agreed between Mayo Co Co and the developer or, in default of such agreement, shall be determined by An Bord Pleanála.

Reason: To ensure the satisfactory reinstatement of the site.

49 The developer shall pay to the planning authority a financial contribution in respect of public infrastructure and facilities benefiting development in the area of the planning authority in accordance with the terms of the Development Contribution Scheme made under section 48 of the Planning and Development Act 2000. The contribution shall be paid prior to the commencement of development or in such phased payments as the planning authority may facilitate and shall be subject to any applicable indexation provisions of the Scheme at the time of payment. Details of the application of the terms of the Scheme shall be agreed between the planning authority and the developer or, in default of such agreement, the matter shall be referred to the Board to determine the proper application of the terms of the Scheme.

Reason: It is a requirement of the Planning and Development Act 2000 that a condition requiring a contribution in accordance with the Development Contribution Scheme made under section 48 of the Act be applied to the permission.

_____ _____

Dolores McCague Date

Inspector

15. Appendices

Appendix 1 Reporty of Robert Speer

Appendix 2 Conditions recommended by Robert Speer.

Appendix 3 Photographs taken at the time of site inspection and key map.

Appendix 4 Report of the Oral Hearing

Appendix 5 Submissions received at the Oral Hearing

Appendix 6 Extracts from the Mayo County Development Plan 2014-2020

Appendix 7 Extracts from the Renewable Energy Strategy for County Mayo 2014-2020

Appendix 8 Extracts from the NPWS web site showing protected sites in the vicinity of the site, labelled.

Appendix 9 Extracts from the NPWS web site showing Bellacorick Bog Complex

Appendix 10 Site Synopsis Bellacorrick Bog Complex cSAC

Appendix 11 Extract from 'Migration routes of Whooper Swans and geese in relation to wind farm footprints', Griffin et al