An Bord Pleanála

Strategic Infrastructure Application under Section 37E of the Planning and Development Act 2000 (as amended)

Ref:	**07.PA0036**
Development:	Wind farm of 29 no. turbines (output 87 MW) and all associated works in the townlands of Killaguile, Letter, Uggool, Arderroo and Finnaun, Co. Galway.
Applicant:	Arderroo Windfarm Ltd.
Planning Authority:	Galway County Council
Prescribed Bodies:	National Roads Authority Geological Survey of Ireland Health Service Executive An Taisce
Observers:	Forbairt Pobail Mhaigh Cuilinn Teoranta Conor O'Brien Peter Sweetman & Associates Patrick McKeown Martin Walsh Roswell & Susan Stanley John Rushe & Annette Collins Seán Ó Muirí & Máire Ní Raghallaigh Sean Hester Ronan and Eilidh Browne
Inspector:	Sarah Moran
Dates of site inspection:	9th December 2014, 21st and 22nd June 2015.
Date of Oral Hearing:	14th – 15th July 2015

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1.0 PRE-PLANNING CONSULTATION WITH AN BORD PLEANÁLA

1.1 As provided for under section 37B of the Planning and Development Act 2000, (amended by the Planning and Development [Strategic Infrastructure] Act 2006), McCarthy Keville O'Sullivan, agent on behalf of Enerco Energy Ltd, entered into discussions with An Bord Pleanála in relation to the proposed development, ref. **07.PC0159**. Meetings were held between An Bord Pleanála and the agent for the applicant on 4th July 2013, 9th December 2013 and 2nd May 2014.

1.2 The threshold set out in the 7th Schedule for wind turbine developments is:

"*An installation for the harnessing of wind power for energy production [a wind farm] with more than 25 turbines or having a total power output greater than 50MW.*"

1.3 By order dated 7th July 2014, the Board decided that the proposed development of a windfarm at Arderroo Co. Galway was strategic infrastructure. The applicant was also advised to address the following matters in any application that might be made:

(a) Archaeology, having regard to the potential for features of archaeological or architectural heritage interest to be located within the subject landholding, including the potential for clachans or field systems, and having regard to historical 6" and Cassini 6" mapping for the area, to the archaeology update submitted to An Bord Pleanála on 28th November 2013, and to the planning history in the vicinity, including planning appeal register reference number PL07.239053,
(b) The potential for cumulative shadow flicker and noise at nearby houses, having regard to the extant permissions for other wind farms in the vicinity, and to the proximity of permitted turbines to the same houses,
(c) Particular care and attention should be given to the assessment of peat slippage risk, which should incorporate, inter alia, an integrated qualitative assessment of peat depth, site slopes, proximity to watercourses, shear strength values, downslope proximity of other peat slippage risk locations or convex slopes, and any relevant peat slippage history or characteristics at the subject site, having regard also to planning appeal register reference number PL07.239053,
(d) Having regard to the proximity of upland lakes to the subject site, it is considered that the proximity of the proposed development to potential flightlines for wintering wildfowl should be addressed in bird surveys, and
(e) Having regard to the proximity of the Connemara Bog Complex SPA, it is considered that the potential impact of the proposed development on the qualifying interests of the SPA should be appropriately addressed.

1.4 The subject application to An Bord Pleanála is made on foot of that decision.

2.0 SITE LOCATION AND DESCRIPTION

2.1 The site is located in a rural area north west of Galway city, circa 2-3km west of the junction of the N59 Galway/Oughterard road and approximately 5.9km south of Oughterard. It is located within the Connemara Gaeltacht. The site is accessed from the N59 via the Letter-Doon local road (L53453), which is surfaced for approx..1km and then becomes a forest track road, passing across the site and serving lands

further to the west. The surrounding lands are generally uplands, hills and dotted with lakes. Much of the area is bogland. There are residential areas to the north and east of the site, associated with local roads off the N59 and including the settlement of Doon. There is a cluster of telecoms masts and associated structures on top of Buffy Hill to the north of the site.

2.2 The site is part of an area is known as the 'Galway Wind Park' due to its status in the Co. Galway Wind Energy Strategy (WES). Several wind farms have already been permitted in the vicinity (see planning history below). The following wind energy developments are adjacent to the development site:

Name	**Location**	**Ref. Nos.**	**Status**	**No. of Turbines**
Uggool	To immediate west of site. Also accessed via the Doon road.	11/1735	Permitted Under construction	16
Cloosh	To south west, partially overlapping with subject site but no turbines in the overlapping area. Accessed via Doon road and an existing forest track at the western boundary of the subject site.	10/303	Permitted	22
Seecon	North west of subject site, beyond Cloosh development.	PL07.239118 11/429	Permitted	23
Lettercraffroe	North west of subject site, adjacent to Seecon.	10/1454	Permitted	8
Knockranny	To immediate east of subject site, accessed via a separate local road to the south.	PL07.243094 13/829	Proposed Current appeal	11
Arderroo	Subject site.	PA0036	Proposed	29
		Permitted		**69**
Total No. of Turbines		**Permitted + Proposed**		**109**

Permission has been granted to upgrade the Doon road from the N59 to facilitate the permitted wind energy developments (13/658) and an electricity substation is permitted at Letter within the development site (PL07.VA0016). Both of these permitted developments were under construction when the site was inspected in June and July 2015.

2.3 The development site includes the townlands of Ardderroo, Killaguile, Letter, Uggool and Finnaun, Co. Galway. It has a stated area of 1,707 ha. This is an upland area with most of the site above the 70-80m contour with uplands reaching a height of 227m at the northern end of the site. The site is mainly bogland, which is planted with commercial coniferous forests and owned by Coillte (about 85% of the site according to the EIS). There are areas of felled woodland in some places, particularly at the southern end of the site. Aside from the Doon road bisecting the site, the area is served by a network of existing forestry roads. There are the remains of a private landholding within the site, located on the northern side of the Doon road, which

comprises a dwelling, 'Letter Lodge' and some outhouses including a small yard fronting directly onto the road. The permitted substation was under construction on the northern side of the Doon road when the site was inspected in June 2015. Blanket peat is the dominant soil type with areas of poorly drained, peaty soil present among rock escarpments in the northern part of the site. The site is drained by two rivers, i.e. the Owenboliska River to the west and the Ardderroo River to the east, as well as a network of ditches and streams. The Ordinance Survey map indicates 5 no. substantial, named lakes within the site, i.e. Loch na BhFaoileán Beag, Lough Fadda, Lough Naweelen, Tullagharone Lough and Lough Oughter. There are also several smaller unnamed lakes and localised areas of waterlogged peat and surface water ponding throughout the site. The 'Slí Chonamara' marked walking route runs through part of the southern end of the site, leading to a local road to the south. It is currently closed and disused and is blocked by felled trees in several places.

2.4 The development site is not within a Natura 2000 site. The closest designated site is the Connemara Bog Complex SAC (site code 002034), SPA (site code 004181) and pNHA. The SAC is to the immediate south of the development site while the SPA area is located within the SAC. The boundary of the pNHA is just over 200m from the site boundary at its closest point. There are several other designated sites within a 15km radius of the site including the Lough Corrib SAC (site code 000297) SPA (004042) and RAMSAR site (No. 846). The area is drained by the Ardderroo River (Abhainn na nArd-Doiriú) which is part of the Owenboliska River (salmonid). There is one Recorded Monument within the site boundary, ref. GA067-021, an enclosure located close to Letter Lodge.

2.5 The site notices (in English and Irish) were present at site inspection on 9th December, 2014. Revised site notices were present when the site was reinspected on 21st June 2015.

3.0 PROPOSED DEVELOPMENT

3.1 The proposed wind farm development comprises:

- 29 no. wind turbines with a maximum ground to blade tip height of up to 156.5m, foundations up to 19.1m in diameter and associated hard standing areas;
- A permanent meteorological mast up to 110m in height, located on the western side of the site below the site access road;
- A 110 kV electrical substation with 2 no. control buildings, staff facilities and associated cabling, wastewater holding tank and ancillary works, located on the Doon road. This aspect of the development originally involved the demolition of an existing agricultural shed, however the revised proposal submitted as further information involves retaining the shed and constructing a new substation compound 180m to the east in order to address concerns about a Lesser Horseshoe Bat roost within the shed;
- Upgrade of approximately 17.32km of existing roads and tracks within the site (including 4.86km already permitted as part of the Doon road upgrade and 1.56km permitted as part of the Cloosh wind farm). Widening of remaining 10.9km of existing roads to a total 'running width' of c. 6m. Construction of c. 12.24km of new access roads, also new turning areas at turbine nos. 1, 2, 3, 5, 7, 8, 13, 21 and 26. Both 'excavate and replace' and 'floating' type roads are to be used depending on ground conditions. Associated drainage control systems;

- 3 no. borrow pits, to be used as the source of the majority of bedrock and hardcore material required for construction; 2 of these are to be located on the northern side of the Doon road and one at the south western corner of the site, adjacent to a road permitted as part of the Cloosh wind farm. The borrrow pits are to be reused as peat disposal areas when exhausted;
- 2 no. temporary construction compounds. One located on the southern side of the Doon road and one at the south western corner of the site, opposite Borrow Pit no. 3. The Doon road compound is to be reused as a car park for the proposed recreation and amenity walk;
- Letter Lodge is to be maintained but unoccupied during the operational phase of development.

3.2 The proposed development has a total stated footprint of 46 ha. It involves tree felling at the proposed turbine locations, site compounds, borrow pits and access roads as well as turbulence felling around proposed turbine locations (56.1 ha in total). There will also be compensatory replanting elsewhere as required by the Forestry Act. Normal forestry activities would continue in unchanged parts of the site. A 10 year permission is sought, with a 25 year operational life from the commissioning of the entire wind farm.

3.3 The development has an installed capacity of 87 MW. It would connect to the national grid via an underground cable from the proposed substation to the permitted Letter 110kV substation within the site. The applicant has obtained Gate 3 authorisation from Eirgrid as part of the West Galway subgroup, via the Letter substation. The Letter substation connects to further permitted electricity infrastructure in the area, see planning history below.

3.4 The development proposes the creation of a recreation and amenity walk as a community gain. This would involve upgrading the existing tracks within the site and creating new walkways as marked trails with associated signage, including the existing disused Slí Chonamara walkway in the southern part of the site. There would be 3 separate marked trails, i.e. a 'Hill Climb' on the northern side of the Doon road, a 'Lake Loop' south of the Doon road at the centre of the site and a 'Lowland Loop' at the south western end of the site. One of the temporary construction compounds would be converted into a permanent amenity car park with a toilet/shelter building with associated waste water holding tank. The Community Impact Statement proposes additional community gain provisions including financial support for a strategic project and an environmental and tourism initiative to benefit the wider and local community; a dedicated annual 'renewable energy fund' for local residents; an annual "community and voluntary group fund" and a one off financial contribution of €150,000 towards the construction of the Connemara Greenway. It is proposed to dedicate a portion of the fund to the enhancement and protection of the fisheries resource in West Galway, also a once off dedicated fund for the protection and enhancement of the fisheries resource during the construction phase and a further €500 per turbine per annum during the operational phase.

3.5 The application is accompanied by the following documentation:
- Environmental Impact Statement (EIS),
- Natura Impact Statement (NIS),
- Planning application cover report,

- Community Impact Statement, which outlines the recreation and amenity proposals.

3.6 In addition, the applicant set up a dedicated supporting website at:

http://www.ardderroowindfarm.com/

4.0 PLANNING HISTORY

4.1. The following proposed and permitted wind farms and associated infrastructure are located in the immediate vicinity of the site (see enclosed map), combining to create an area known as the 'Galway Wind Park'.

4.2 Knockranny Wind Farm Current Appeal on Adjacent Site

4.2.1 This site lies to the immediate east of the subject site but is accessed from the N59 via a separate local road. Under **PL07.239053 (11/375)**, the Board refused permission for a wind farm at the site for 2 no. reasons related to (1) archaeological impacts, in particular impacts on the recorded monument GA067-029 and (2) potential geotechnical/peat slippage risks. There is a current appeal before the Board relating to a wind farm at Knockranny comprising 11 turbines, mast, 110 kv substation, new entrance, roads and site works, ref. **PL07.243094 (13/829)**.

4.3 Uggool Wind Farm

4.3.1 This site lies to the immediate west of the proposed development and is served by a continuation of the Doon road. Permission was granted to Provento Ireland Plc under **03/6992** for wind farm comprising 20 turbines of hub height 70m and rotor diameter 80m, a 70m meteorological mast, a control building incorporating a transformer substation and associated site roads. Part of the permitted site boundary overlaps with the western side of the subject site (17.4 ha according to the EIS). Permission was granted to Comhlacht Gaoithe Teoranta to extend the duration of 03/6992 under **09/1987**. Permission was granted to SSE Renewables Ltd for a redesigned wind farm of 16 turbines with a tip height of up to 140.5m under **11/1735**. Further minor amendments were permitted under **13/460** and **14/971**. Construction works have commenced on this site.

4.4 Cloosh Wind Farm

4.4.1 Relating to an area to the south west of the proposed development, accessed via the Doon road, which partially overlaps with the western boundary of the subject site. Under **06/5626**, Finavera Renewable Ltd sought permission to construct a 34 turbine wind farm at Finnaun, on a site that included an area on the south western corner of the subject site. Galway County Council refused permission. Coillte Teoranta were subsequently granted permission under **10/303** to construct a wind farm of 22 no. turbines, each with a total tip height of 140.5m, along with associated works including a permanent meteorological mast, a substation, expansion of 3 no. existing borrow pits and 2 new borrow pits, new internal access roads. The permitted development overlaps the south western side of the subject site by 178 ha, however none of the proposed turbines within the subject development are located in the overlapping area.

4.5 Seecon Wind Farm

4.5.1 Relating to a site to the west of Uggool and Cloosh wind farms, approximately 2 km to the west/northwest of the Letter substation and also served by the Doon road. The Board granted permission under **PL07.239118 (11/429)** for a wind farm consisting of 23 turbines (each with a total tip height of 140.5m) and associated works including 2 permanent 90m meterological masts, a substation, expansion of one existing borrow pit and 3 new borrow pits, new internal access roads. Under **14/533**, permission was granted for relocation of one permitted permanent meterological mast at Cloosh wind farm and of another such permitted permanent meterological mast from Seecon wind farm to Cloosh wind farm.

4.6 Lettercraffoe Wind Farm

4.6.1 Relating to a site to the northwest of Seecon wind farm. Under **06/5623**, permission was sought by Western Power for a 14 turbine wind farm, this was refused. Permission was subsequently granted to Western Power Ltd for an 8 turbine wind farm under **07/5148**, however this was overturned on appeal, ref. **PL07.231437**. Permission was granted to SSE Renewables Ltd for an 8 turbine wind farm and associated infrastructure under **10/1454**. Minor amendments were permitted under **13/375**.

4.7 Letter Substation and Other Electricity Infrastructure

4.7.1 Under **PL07.VA0004**, the Board granted permission to ESB networks in 2009 for an upgrade of the Screeb 38 kV substation in the townland of Glencoh to a 110/38 kV substation and to erect a new 110 kV overhead electricity line from Lenabower to Screeb, a distance of c. 48km. This line runs generally parallel to the N59 to the north and west of the subject site and c. 1.8km from the nearest turbine location.

4.7.2 Under **PL07.VA0016**, the Board granted permission to Eirgrid PLC in 2013 for the construction of a 110/38 kV substation at Letter, on the northern side of the Doon road. The permission included the construction of a loop connection comprising 2 no. 110 kV XLPE underground cable circuits linking the substation to the permitted Screeb-Salthill 110 kV overhead line where it crosses the Doon road, circa 2km to the east of the subject site, also 3 no. material deposit sites in the northern part of the subject site. This development is currently under construction.

4.7.3 Under **ED13/29**, Galway County Council granted a section 5 declaration of exempted development to SSE Renewables in October 2013 in respect of a 110 kV underground cable between the permitted Uggool substation on the Doon road to the west of the development site, heading northeast, joining the N59 and travelling along the road corridor for approximately 13.6km to the Galway City administrative boundary. The cable is to run within the Doon road carriageway and along the N59, a total distance of approximately 20.5km.

4.8 N59 and Doon Road Works

4.8.1 Under **13/658**, permission was granted to SSE Renewables for modification and improvements to existing roads and tracks for access to the permitted windfarm developments to the west of the site. The permission comprises improvements to the

N59 junction with the L53453 Doon road in the townland of Doon; widening, strengthening and regrading of approx. 7.2km of the existing forestry track continuing from the Doon road in the townlands of Doon, Letter, Uggool and Finnaun; widening, strengthening and regarding of approximately 1.875km of the L1311 Shannapheasteen road in the townlands of Seecon and Lettercraffroe. Permission had already been granted for the N59 Moycullen bypass in November 2012 under **PL07.HA0036** and in December 2013 for upgrade works to the N59 between Maam Cross and Oughterard under **PL07.HA0041**.

4.8.2 SSE Renewables is currently seeking permission for further works at the N59 Doon road junction, ref. **15/813**. The proposal involves the creation of a 'Doon Residential Area Bypass' with the retention of an existing 975m long construction access road, parking area and a temporary junction with the N59. The planning authority requested further information on 27th August 2015 in relation to the need for the proposed route, also issues relating to drainage and peatland impacts, roadside boundaries, traffic impacts on the N59, ecological impacts/revised NIS, source of construction materials, visual impacts. This application remains pending at the time of writing.

4.9 Other Wind Farms in the Vicinity

4.9.1 Aside from the Galway Wind Park sites, there have been several applications for smaller individual wind farms on sites further to the south and east of the subject site (see enclosed map).

4.9.2 Lealetter Wind Farm

Permission was granted to Cruachan Wind Energy Ltd for a 9 turbine wind farm under **05/199** but refused on appeal, ref. **PL07.214698**. Permission was granted to the same applicant for a 6 turbine wind farm under **07/4365** but again refused on appeal, ref. **PL07.229362**. Permission was granted to the same applicant for a 4 turbine wind farm under **09/1698**, however this was again overturned on appeal, ref. **PL07.236195**.

4.9.3 Knockalough Wind Farm

Permission granted to Knockalough Wind Farm Ltd. under **11/1573** for a wind farm comprising 12 turbines with an overall maximum height of up to 126m, anemometry mast and associated works. The Board granted permission for 7 no. turbines on appeal, ref. **PL07.240612**.

4.9.4 Shannagurran Wind Farm

Permission granted to Enerco Energy Ltd under **PL07.238762 (10/1225)** to construct a wind farm comprising 7 turbines, each with a total tip height of 119m, anemometry mast of 80m and associated works.

4.9.5 Lettergunnet Wind Farm

Permission granted to Coir na Gaoithe Teo for an 8 turbine wind farm under **03/4656**. The same applicant received permission for turbine amendments to increase hub height from 60m to 64m under **PL07.235051 (09/1326)**. Permission was granted to the same applicant for a 10 turbine wind farm under **10/1214**.

5.0 POLICY CONTEXT

5.1 National Policy

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

This is a Government White Paper published by the Department for Communications, Marine and Natural Resources. The stated overriding policy objective is to ensure that energy is consistently available at competitive prices, with minimal risk of supply disruption. In the absence of significant additional hydro resources and given the statutory ban on nuclear generation, Ireland's dependence on natural gas for power generation would be 70% by 2020 without policy intervention. While it is acknowledged that natural gas will continue to be of importance as a fuel for the foreseeable future, the government is committed to proactively pursuing 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. Within the actions to ensure security of energy supply, Strategic Goal 3: Enhancing the Diversity of Fuels for Power Generation states a target of 33% of national energy consumption to be from renewable energy sources in 2020 (target increased to 40% in Government budget speech of 2009). Wind energy is to provide the pivotal contribution to achieving this target.

5.1.2 DECNR Strategy for Renewable Energy 2012–2020

This is the most recent policy statement on renewable energy, published by the Department of Communications, Energy and Natural Resources in May 2012. 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. 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 supporting energy infrastructure. The strategy sets out 5 no. strategic goals. Strategic Goal 1 is as follows:

Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets.

The strategy sets out a list of key actions to achieve this goal.

5.1.3 DECNR Ireland's Second National Energy Efficiency Action Plan to 2020 (March 2013)

This Plan sets out strategy to reduce Ireland's dependence on imported fossil fuels, improve energy efficiency across a number of sectors and ensure a sustainable energy future. The current generation capacity in Ireland in 2013 was some 30% high-efficiency combined-cycle gas turbine (CCGT); 37% condensing steam-cycle (mostly older plant); 10% open-cycle gas turbine peaking plant; 7% dispatchable hydro and almost 13% wind. Over the next 7 years, 1,300 MW of older plant will potentially be replaced by about 850 MW of efficient CCGT and increased wind capacity. It is

foreseen that gas will constitute about 45% of the fuel mix for electricity generation by 2020, with oil being phased out as a primary fuel type.

5.1.4 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. Potential negative impacts resulting from concerns about visual amenity, health and safety are to be mitigated through the consultation process and, where appropriate, community gain measures. The planning process is to provide the necessary framework for ensuring that all necessary standards are met and that comprehensive statutory and non-statutory consultation is built into the process.

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

GRID25 provides an outline design for how the transmission network will be developed in the long-term to meet the challenges ahead. The overall goal of GRID25 is to develop the network economically to reliably meet anticipated transport needs of users of the grid. In achieving this goal GRID25 supports the Government's priority actions of increasing the penetration of renewable energy technologies and of improving energy efficiency and energy savings. Generation from renewable energy sources is a key plank in the Strategy to meet the government target of meeting at least 33% of electricity demand from renewable generation by 2020. Significant reinforcement of the grid will be required to cater for the new power flows from renewable generation. Wind is expected to make up most of the renewable portfolio, the amount of conventional generation capacity must be adequate to ensure a reliable power supply for those hours when wind generation output is low. The 'North West' region where the site is located is expected to make up 35% of national renewable energy capacity. Area B of the region, i.e. Galway, is expected to have up to 880 MW of wind generation.

5.1.6 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 their economic resources. It refers to the need for a reliable, secure and cost competitive energy supply. Section 3.7.2 states, in relation to energy, that particular emphasis shall be placed on the reinforcement of the grid in western counties.

5.1.7 Guidelines for Planning Authorities on Wind Farm Development and Wind Energy Development DoHCLG 2006 and Proposed Revisions

Section 3.1 of the Guidelines states that the development plan must achieve a reasonable balance between responding to overall Government Policy on renewable energy and enabling the wind energy resources of the planning authority's area to be harnessed in a manner that is consistent with proper planning and sustainable

development. The assessment of individual wind energy development proposals needs to be conducted within the context of a 'plan led' approach.

Section 3.7 states that consideration of any wind energy development in or near designated areas of natural heritage must be subject to Ireland's obligations under the Habitats Directive and the EU (Birds) Directive. Section 3.8 notes that the visibility of a proposed wind energy development from designated views or prospects would not automatically preclude an area from future wind energy development but the inclusion of such objectives in a development plan is a material factor that will be taken into consideration in the assessment of the planning application. Section 3.9 states that wind energy developments are not incompatible with tourism and leisure interests, but care needs to be taken to ensure that insensitively sited wind energy developments do not impact negatively on tourism potential.

Chapter 5 provides guidance on environmental implications. It is recognised that natural heritage may be impacted by wind energy development but that in coming to a decision the planning authority should also consider the importance of the development of wind energy projects including those proposed on designated sites, in view of their strategic importance in contributing significantly to the achievement of the targets by decreasing dependence on fossil fuels, with subsequent reductions in greenhouse gas emissions. Birds may be impacted by wind energy arising from disturbance, collision mortality, barrier to movement and direct loss or degradation of habitats for breeding, feeding and or roosting purposes. Ground conditions, including a landslide and slope stability risk assessment for all stages of the project, should be considered.

Section 5.6 discusses noise impacts, which should be assessed by reference to the nature and character of noise sensitive locations i.e. any occupied house, hostel, health building or place of worship and may include areas of particular scenic quality or special recreational importance. In general noise is unlikely to be a significant problem where the distance from the nearest noise sensitive property is more than 500m.

Section 5.12 notes that careful site selection, design and planning and good use of relevant software can help to reduce the possibility of shadow flicker in the first instance. It is recommended in that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day. The potential for shadow flicker is very low at distances greater than 10 rotor diameters from a turbine.

Chapter 6 discusses aesthetic considerations and the siting and design of wind farm developments. Consideration is also given to landscape character types as a basis for practical application of siting and design guidelines. Section 6.5 provides guidance on cumulative effects.

Proposed Revisions to the Guidelines were introduced by the Department of Environment, Community and Local Government in December 2013, to deal with limited aspects of wind farm developments. A consultation period was allowed – up to 21st February 2014 (which time has now passed). The proposed revisions are:

- A more stringent absolute outdoor noise limit (day and night) of 40 dB for future wind energy developments, to apply to the combined sound level of all turbines in

the area, irrespective of which wind farm development they may be associated with.

- A mandatory setback of 500m between a wind turbine and the curtilage of the nearest dwelling, for amenity considerations.
- A condition to be attached to all future planning permissions for wind farms to ensure that there will be no shadow flicker at any dwelling within 10 rotor diameters of a wind turbine. If shadow flicker does occur, the wind energy developer/operator should be required to take necessary measures, such as turbine shutdown for the period necessary to eliminate the shadow flicker.

5.1.8 National Landscape Strategy for Ireland 2015-2025

The National Landscape Strategy was recently published by the Department of Arts, Heritage and the Gaeltacht. The strategy sets out Ireland's high level objectives and actions with regard to landscape. It was developed to implement the European Landscape Convention in the Irish context by integrating landscape into our approach to sustainable development. It aims to provide a policy framework for the protection, management and planning of the Irish landscape. There are 6 no. core objectives, i.e. recognise landscapes in law; develop a national landscape character assessment; develop landscape policies; increase landscape awareness; identify education, research and training needs and strengthen public participation. There are 19 no. actions to implement these objectives.

5.2 Regional Planning Guidelines for the West Region 2010-2022

5.2.1 The Guidelines note that the West region has the potential to harness opportunities in wind energy and related technologies. There are several policies to support the development of the wind energy sector and the grid network, ref. policies EDP20, 21 and 22. Objective ED08 aims to support the deployment of renewable energy infrastructure in appropriate locations. Policy EDP71 aims to promote a green economy in the region through the sustainable development of renewable energy resources. Objective EDO23 aims to support eco projects, renewable energy and green business development in appropriate locations.

5.2.2 Infrastructure policy set out in the Guidelines states the following with regard to wind energy, ref. section 5.5.4:

The West Region contains Ireland's premier wind resource and holds the potential for the region to become a sustainable exporter of renewable energy. 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 Department of the Environment, Heritage and Local Government's Wind Energy Development Guidelines 2006.

5.2.3 Objective IO54 aims to support the sustainable development of wind energy schemes through the initiation of a regional policy on wind farm location.

5.3 Local Planning Policy

5.3.1 Galway County Development Plan 2009 – 2015

The previous Galway County Development Plan was in force when the subject application was lodged with the Board on 16th September 2014. Section 7.6 of the Plan sets out policy on energy infrastructure. Objective IS18 states:

Facilitate wind farm developments in suitable locations, having regard to any designations of areas of the County for this purpose, government guidelines and the need to protect, inter alia, designated heritage sites, designated sensitive rural landscapes, visually vulnerable areas, scenic routes and scenic views. The planning authority will have regard to DoEHLG guidelines for Planning Authorities on Wind Energy Development, 2006, in the assessment of any proposals for wind energy production.

Map IS1 of the plan shows the areas with wind farm potential in the county, however this was superseded by the county Wind Energy Strategy (WES) in 2011.
Section 9 of the plan relates to heritage, landscape and environmental management. Section 9.2.5 deals with Archaeological Heritage with policies HL22 to HL30 and archaeological objectives HL17 to HL21. Natural Heritage is dealt with at section 9.3 with policies HL31 to 35 and objectives HL22 to HL24.

Section 9.4 of the plan deals with landscape conservation and management with policies HL93 to HL97 and objectives HL44 and HL45 set out. Map HL2 shows the Focal Points/Views, Map HL3 shows the Landscape Value Rating and Map HL4 shows the Landscape Sensitivity and Character Areas. Map HL24 indicates the upper part of the subject site with the classification 'High' landscape sensitivity and the lower part of the site with the classification 'moderate' landscape sensitivity.

Chapter 11 of the plan sets out development management standards for wind farm developments. DM Standard 25: Wind Farm Development states:

Wind farm development will generally be considered favourably in the areas designated as suitable, subject to acceptable visual and environmental assessment and availability of connections to the National Grid (Map IS1).

The provision of electricity generation from wind energy shall be subject to the following:

1. Guidelines Compliance with the DoEHLG Wind Energy Development Guidelines 2006 and having regard to the Best Practice Guidelines for Wind Energy Development published by the European Wind Energy Association and the Best Practice Guidelines for the Irish Wind Energy Industry 2008 published by the Irish Wind Energy Association.
2. Landscape Areas Be located in the landscape areas shown as suitable for such development (Map IS1), subject to visual and environmental impact assessment, including consideration of designated environmental sites.
3. Residential Amenity Be so located as to avoid injury to existing residential amenity due to noise or flicker effect.

4. Landscape Sensitivity Avoid where possible interconnecting with the electricity grid either overground or underground across the landscape where sensitivity rating is Class 5 – Unique.
5. Public Roads Shall provide appropriate securities towards the strengthening and maintenance of public road that serve the development.
6. Redundancy Shall be decommissioned on it becoming redundant and the plant removed from the site and restoration works put in place.

5.3.2 Galway County Development Plan 2015-2021

The current County Development Plan was adopted on 26th January 2015 and is effective from 23rd February 2015. The new plan carried forward many of the policies set out in the previous County Development Plan. Chapter 7 sets out policy on energy and renewable energy. Section 7.2 states a strategic aim to reduce the county's dependency on imported fossil fuels and to provide alternative energy sources by harnessing the county's potential for renewable energy sources. Section 7.4.2 notes the adoption of the county WES and states a policy to maximise wind energy development in areas designated as Strategic Areas, Acceptable in Principle Areas, and areas Open for Consideration in the WES, on a case by case basis subject to meeting specific requirements and guidance contained within the Strategy.

Objective ER 5 - Wind Energy Developments states:

Promote and facilitate wind farm developments in suitable locations, having regard to areas of the County designated for this purpose in the County Galway Wind Energy Strategy. The Planning Authority will assess any planning application proposals for wind energy production in accordance with the County Galway Wind Energy Strategy, the DoEHLG Guidelines for Planning Authorities on Wind Energy Development, 2006 (or any updated/superseded documents), having due regard to the Habitats Directive and to the detailed policies, objectives and Development Standards set out in the Wind Energy Strategy.

Objective ER 6 states that the policies, objectives and development management guidelines/standards set out in the WES shall be deemed to be the policies, objectives and development management guidelines/standards for the purpose of the County Development Plan.

Section 9.10 sets out landscape policies and objectives. The landscape designations are unchanged from the previous plan.

Development management standard 30 Wind Farm Development requires wind energy developments to be in compliance with DoEHLG Wind Energy Development Guidelines 2006 (including any new guidelines when issued) and the County Galway WES.

5.3.3 Galway Wind Energy Strategy

The WES was originally adopted by Galway County Council on the 26th September 2011 as a variation to the Galway County Development Plan 2009-2015. It was then adopted with minor updates as Appendix IV to the subsequent Galway County Development Plan 2015-2021.

The WES identifies the following hierarchy of areas according to their suitability for wind energy development, based on criteria including the available wind resource, access to grid, environmental and ecological designations and population / settlement patterns:

SA Strategic Areas Large areas in the most suitable locations for wind farm development and without significant environmental constraints, based on strategic level analysis. Wind farm developments will be encouraged in this area subject to detailed environmental and visual assessment and appropriate layout and design. Objective WE1 states that wind energy projects within this area must:

- Demonstrate conformity with existing and approved wind farms to avoid visual clutter;
- Be developed in line with the Planning Guidelines for Wind Energy Development (DoEHLG 2006) (and any updated document) in terms of siting, layout and environmental assessment;
- Be accompanied by a HDA under Article 6 of the Habitat Directive where they may result in adverse effects on any Natura 2000 site;
- Be developed in a comprehensive manner avoiding the piecemeal development of the land designated as Strategic Areas.

There is an objective to suitably manage land use and infrastructure development within this area to protect its scope for wind energy projects. The indicative target for wind energy generation from Strategic Areas is 220 MW but this is not a limit that cannot be exceeded.

AP Acceptable in Principle Areas Smaller areas in suitable locations for wind farm development and without significant environmental constraints, based on strategic level analysis. Wind farm developments will be facilitated in these areas subject to detailed environmental and visual assessment for appropriate layout and design. Objective WE2 states that wind energy developments within this area must:

- Demonstrate conformity with any existing and approved wind farms to avoid visual clutter;
- Be developed in line with the Planning Guidelines for Wind Energy Development (DoEHLG 2006) (and any updated document), in terms of siting, layout and environmental assessment;
- Be accompanied by a HDA under Article 6 of the Habitat Directive where they may result in adverse effects on any Natura 2000 site.

The indicative target for wind energy generation from AP areas is 100 MW but this is not a limit that cannot be exceeded.

OC Open for Consideration Areas Areas with some locations that may have potential for wind farm development due to variable wind speeds or clustering with Strategic Areas but with significant environmental constraints, based on strategic level assessment. Wind farm development in these areas will be evaluated on a case by case basis subject to viable wind speeds, environmental resources and constraints and amenity, safety and cumulative impacts.

NP Not Normally Permissible Areas Areas generally not suitable for wind farm development due to their overall sensitivity and constraints arising from landscape, ecological, recreational, settlement, infrastructural and/or cultural and built heritage resources, based on strategic level assessment. Wind farm developments in these

areas will be discouraged unless project level HDA and EIA can demonstrate to the satisfaction of the planning authority that environmental and other impacts can be successfully avoided, minimised and/or mitigated.

LW Low Wind Speed Areas Areas with wind speeds less than 8m/s that would generally not provide viable locations for commercial wind farm developments.

The total land area proposed as Strategic Areas is 5,390 ha (unchanged from the previous WES), and the area proposed as Acceptable in Principle is 6,994ha (6,510 ha in the previous WES). Together, these areas constitute around 2% of the total County area. The majority of the subject site is located in a Strategic Area, with the remainder being within an Open for Consideration area.

Policy WE7 states:

Proposals for wind energy development can be considered in all areas subject to meeting the specific requirements outlined in this Wind Energy Strategy. However, it is anticipated that most development proposals will be located in the Strategic Areas, Acceptable in Principle Areas and areas Open to Consideration and it is the policy of the Council to maximise Wind Energy development in all three of these areas on a case by case basis subject to meeting the specific requirements of this Wind Energy Strategy and taking account of any guidance contained in the Strategy.

Table WE8 of the WES (WE11 in the previous WES) provides guidelines for separation distances for turbines in wind farm developments. This includes preferred minimum distances such as 500m from noise sensitive property, outside Natura 2000 sites subject to HDA and advice from NPWS; 100m from CAMP telecommunications masts; 100m from water's edge of lakes and waterways; 100m from recorded monuments on RMP.

The WES provides details of potential impacts of wind energy development on habitats, birds, bats, freshwater species and habitats, peat, ground conditions and landscape susceptibility, amenity, landscape and settlement, transport, infrastructure and safety, construction and built heritage. Section 5.2.12 refers to the cumulative impact of wind farms and notes that the cumulative impact in particular in areas close to Natura 2000 sites will be carefully monitored over the lifetime of the strategy. Increases in the density of wind farm development within or adjacent to Natura 2000 sites will only be considered where it can be shown following AA that the development will not have an adverse effect on the conservation management objectives of the site. Section 5.3 deals with wind farm layout, design and construction. There are a series of maps which show the strategic area and other areas acceptable in principle and open for consideration in relation to landscape character areas, views, prospects etc.

5.3.4 Gaeltacht Local Area Plan 2008 – 2018 (amended 2013)

Most of the site lies within the boundary of the Gaeltacht LAP, which sets out development control guidelines and standards for the Gaeltacht area of Co. Galway, known as Gaeltacht na Gallimhe. The site is located in the District D subdivision of the LAP, the 'Cois Fharraige' district of Connemara, which stretches from the western fringe of Galway City along the northern coast of Galway Bay to Baile na h-Abhann and Ros an Mhíl (Rossaveal). Section 5.4.3 of the LAP sets out community objectives

for the area. The following Population and Human Health objectives of the LAP are considered particularly relevant to this case.

PPH2: In the case of significant road realignment, electricity network lines or wind farm development, the impact of the disposal of surplus material and the abstraction of material from quarries or sand pits shall be fully addressed.

PPH3: Proposals for development of electricity lines and wind farms should involve a constraints study/ecological assessment, a visual impact study and consultation with the NPWS.

6.0 GALWAY COUNTY COUNCIL SUBMISSION

6.1 The submission comprises a report prepared by the planning department of Galway County Council. This sets out the background to the project, including adjacent planning history, and outlines the legislation governing SID developments. It also summarises relevant national, regional and local planning policies, including the Galway WES. The submission notes internal reports by the Environment Section and Roads and Transportation Section of the Council, which may be summarised as follows.

6.2 Environment Section Report

6.2.1 The report is prepared by the Senior Engineer. The following points are noted:

- The area drains in a southerly direction to Loch Na hArd-doiriú and an unnamed lake downstream, part of the Owenboliska catchment which drains to the sea at Spiddal. These waters are assigned Good and High status by the EPA and the Western RBMP objective is to maintain Good and High status waters.
- The principal risk of impact on the water environment would occur during the construction phase. There would be a risk of water pollution through sedimentation, nutrient enhancement or contamination in the absence of site controls and mitigation measures.
- Recommendations for control measures are provided in a Peat Management Plan and the in the EIS Chapters 4 and 8. They present detailed and prescriptive proposals of the measures to be taken to address drainage management and maintaining the stability of the peat during construction.
- The applicants have identified possible risks to the environment associated with this project and have formulated a detailed and considered response to these risks. If the proposals were to be granted permission, conditions should be included to implement the mitigation measures outlined in the EIS and associated documentation.
- The applicants have indicated plans for public access to the area and provide a drawing of a sample information board. Given that the site is within the Gaeltacht, they should be advised to provide suitable text in Irish on these information boards.

6.3 Roads and Transportation Report

6.3.1 The report is prepared by a Senior Engineer of Galway County Council. The following main points are noted:

- The proposal involves very substantial haulage of material over a short period partly on the local road network. The effect of this on the road fabric is ameliorated by the upgrade of the road as part of other wind farm developments. A substantial bond in lieu of road and bridge/culvert damage should be provided.
- There is a need for clarity with regard to sourcing of infill material from onsite sources or elsewhere as this may be subject to the determination of the planning application. If such material is to be sourced off site then this will certainly impact further on the road network. This will require a separate bond as if an onsite source is involved it may involve contractual supply issues which will not be resolved until after the construction phase.
- Scheduling of the major haulage programs will need to be agreed with the Roads authority, i.e. Galway County Council. The transport of the abnormal loads i.e. turbine parts, blades, etc., will be subject to licence.
- The linkage of the site/substation to the National Energy Grid needs to be clarified and definitively outlined.

6.4 Planning Conclusion and Recommendations

6.4.1 Planning Report

The planning authority concludes that the development is acceptable with regard to the following:

- The proposed development is compliance with the Galway WES in terms of turbine numbers and wind energy output. The applicants have obtained a Gate 3 grid offer connection. The project would contribute up to 24% of the West Galway target capacity under Gate 3.
- The majority of the site is designated as a 'Strategic Area' for wind farm developments in the WES, i.e. the most optimal location for wind energy developments in the county. A total of 22 of the 29 no. proposed turbines are located within a 'Strategic Area' and the remaining 7 no. turbines are located within an 'Open to Consideration' area.
- The site is located outside any Natura 2000 site. A significant number of surveys and observation of flora and fauna were carried out in the EIS for the site.
- There have already been several permissions for wind farms in the area. Permission has been granted to upgrade the access road. Permission has been granted to Eirgrid for an 110/38 kV substation to the east of the site, which will connect the proposed and permitted wind farms to the national grid.
- The EIS and NIS included with the application were considered acceptable, subject to mitigation measures being implemented and monitored.
- The site is in a remote area where there are few houses within 2km. There is only 1 house within 500m of a turbine, however this landowner is a contributor to the project.
- The visual impact of the development is not considered significant from the local road network.
- The community gain proposals are considered generally acceptable to the planning authority.

6.4.2 Planning Conditions

The planning authority recommends that the implementation of the permission is limited to 10 years from the date of the final grant of permission, and for a period of 25 years from commissioning of the turbines, after which they shall be decommissioned unless retention for a further period is granted. In addition, the development should not commence until the permitted road upgrade works have been carried out. The report also recommends conditions relating to development contributions and bond and an alternative night roost for the Lesser Horseshoe Bat. The remaining conditions recommended are generally standard for this type of development.

6.5 Amendments by Elected Members

6.5.1 The report was presented to the Elected Members of the Council on the 24th November 2014. The Members generally considered it to be acceptable, subject to the following:

1. The community gain fund to be increased to €200,000 per annum.
2. The community gain fund does not include a 'match fund' element with the local community or Galway County Council.

7.0 PRESCRIBED BODIES

7.1 Bodies Notified by the Applicant

7.1.1 The applicant notified the following prescribed bodies on the advice of the Board:

- Department of the Environment, Community and Local Government
- Department of Communications, Energy and Natural Resources
- Department of Arts, Heritage and the Gaeltacht
- Udaras na Gaeltachta
- National Roads Authority (NRA)
- An Chomhairle Ealaíon
- Failte Ireland
- An Taisce
- Inland Fisheries Ireland
- Irish Aviation Authority
- The Heritage Council
- Health Service Executive (HSE)
- Commission for Energy Regulation
- Department of Transport, Tourism and Sport
- Environmental Protection Agency

7.2 Responses Received

7.2.1 The responses received may be summarised separately as follows.

7.2.2 An Taisce

- The majority of the total area of the site lies within the Oughterard District Bog NHA (site code 002431). It is An Taisce's opinion that the high impact and large

area of the proposed works are unsuitable for this area due to the majority of the site being within a very important protected blanket bog habitat and the associated sub habitats and protected species therein. Blanket bog is also protected under Annex I of the Habitats Directive.

- This bog complex is extremely sensitive to changes in land use practices and planting woodland, even native species, could have a significant impact on the hydrology of the site, as well as rare and vulnerable flora and fauna. This NHA has already been damaged by mechanical peat cutting, over-grazing and forestry.
- Oughterard District Bog NHA contains some of the last remaining active blanket bog in the county, which is an Annex I habitat. The site contains low and upland blanket bog, pools, lakes, flushes and heaths, all of which in combination support a wide diversity of protected and unprotected plant and animal species.
- Red Grouse has been recorded on the site which is a Red Data book species.
- The situation of the site, close to the Atlantic Ocean, but supporting upland peatland habitat, has resulted in some rare flora establishing itself on the site, the habitat of which will be lost within the NHA under the current proposal.
- Potential adverse impact on surface waters from construction and drainage operations. There is a particular problem in peaty soils as nutrients are released from the soil. Soil erosion is an important transport mechanism as nutrients bound to soil particles may be released in receiving waters. In some cases phosphorous enrichment can produce algal growths, resulting in oxygen fluctuations and disruption of the aquatic ecosystems. Peaty soils with a depth of over 30 m have a particular risk of nutrient release following cutting and drainage as the peat is easily eroded and nutrients can leach from the affected areas. Mobilisation of fine sediment has many negative consequences downstream, particularly for the public water supply where the cost of treatment can be significantly affected by water quality as well as the effects on wild fisheries.
- The complete loss of over 40ha and permanent loss of 33ha of upland blanket bog habitat and the protected biodiversity contained within the Oughterard District Bog NHA is a huge loss for Ireland, which has already lost the majority of peatland habitats. The NHA has already been damaged by mechanical peat cutting, over-grazing and forestry at the site.
- The drainage required to install the wind turbines will destroy the blanket bog and also damage the remaining bog outside the wind turbine sites. Loss of water filtration that improves quality of local surface water.

7.2.3 NRA

- The site accesses the secondary road network prior to access to the N59. The DoECLG *Spatial Planning and National Roads Guidelines for Planning Authorities* (2012) sets out planning policy considerations for development affecting national roads outside the 50-60 kph speed limit zones. As the development accesses the non-national road network, matters relating to road safety and traffic impact are most appropriately addressed by Galway County Council as the relevant planning and roads authority and, in relation to strategic infrastructure development applications, by the Board.
- Section 13.1.7 of the EIS contains a route assessment of the turbine component proposed delivery route. The assessment of the N59/L53453 junction was undertaken on the basis of a proposed improved junction with the improvement works subject to a separate planning permission, i.e. 13/658. It therefore relies on

the permitted improvement works being carried out. The Knockranny wind farm proposal currently before the Board, ref. PL07.243094, also appears to rely on this improved junction for access.

- The NRA requests that the permitted improvement works are carried out prior to the commencement of any of the proposed development, in the interests of clarity and for the purposes of maintaining the efficiency and safety of the national road network. In the interests of clarity, a scheme promoter and/or applicant/developer should be responsible for the costs associated with the upgrade works to the national road to facilitate private development.
- Section 13.1.6.1 of the EIS, which considers cumulative traffic impacts, only considers the turbine delivery phase of the scheme and does not consider any other cumulative construction impacts. The EIS states that there will be no cumulative impacts as the turbine delivery process will begin once the adjacent wind farms are complete and operational.
- The NRA considers that there has been no assessment of cumulative impacts of the developments proposed in this area. It recommends that any decision by the Board should seek to confirm that the subject development and the development of other wind farms in this location would not run simultaneously.
- The NRA accepts that the cumulative impacts of the subject development will be temporary in nature and related primarily to the construction phases of the development. It recommends that a Traffic Management Plan should be required by condition if permission is granted.

7.2.4 Department of Arts, Heritage and the Gaeltacht

General Points:

- If permitted, the proposed development would result in an easterly extension of Galway Wind Park (incorporating the permitted Uggool, Cloosh, Seecon and Lettercraffoe wind farms and associated infrastructure), an overall wind energy development that would extend roughly 9km x 9km and would comprise in excess of 100 wind turbines.
- The Board should satisfy itself that the existing quarries/extraction areas that are targeted for further use and expansion as part of the proposed development are authorised and fully compliant with planning legislation in relation to quarries including section 261 of the PDA. Due consideration should be given to any requirements for retrospective or remedial assessments.
- The EIS states that a total area of 53ha of forestry must be replanted to address losses arising from the current project. The areas to be reforested are not identified and there is no assessment of the likely effects of this requirement and aspect of the overall project.
- The Department notes that habitat enhancement and bog restoration is proposed in section 6.5.2.1.1 of the EIS and that a detailed habitat enhancement plan is to be prepared in consultation with the NPWS prior to the commencement of construction. As this appears to form part of the project and is a mitigation measure, all necessary details of such proposals should be available to the Department and the Board for review at the current application stage.
- In general, no significant details of a project should be deferred to be decided or developed at the post consent stage as this may mean that the full extent of a project and its likely residual effects are not known when the EIA and AA are being carried out.

- The Department advises that further information is required to address the issues outlined below but notes that other issues may arise in relation to the EIA and the AA that have yet to be carried out by the Board.

Appropriate Assessment:

- The subject site is not covered by any nature conservation designations but is bordered by the Connemara Bog Complex SAC and the Oughterard District Bogs NHA and is located close to the Connemara Bog Complex SPA and Ross Lake and Woods cSAC. Most of the site and all parts of the development footprint drain towards the Owenboliska system and the Connemara Bog Complex cSAC. On a wider scale, the site occupies a location between Loughs Corrib and Mask to the east and north, Galway Bay to the south and the mountains and peatlands of Connemara to the west.
- The Department considers that there are significant deficiencies in the NIS, which should be taken into consideration. The Board will be aware that case law of the CJEU has established that the assessment carried out under Article 6(3) of the Habitats Directive 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 a project on a European Site (Case C-258/11, Sweetman and others).
- The screening exercise in the NIS only considers sites within 15km of the application area. This is done without explanation or justification and without due consideration of the likely effects of a wind farm, on its own and in combination with other plans and projects, particularly other wind farms and forestry management in this case. Of the 8 European sites initially considered, only 2 no. SACs are subject to assessment in the NIS. Potential effects on other sites, notably all SPAs, are discounted, without specific reference to the conservation objectives of these sites.
- The primary concerns are in respect of impacts on the following:
  - Birds, including flightlines, bird migration, displacement, and loss and fragmentation of habitats;
  - Surface waters, including aquatic Annex I habitats and Annex II species and qualifying interests of the Connemara Bog Complex SAC downstream.
  - Potential impacts on Lesser Horseshoe Bats, an Annex II species and qualifying interest of Ross Lake and Woods cSAC.
- The NIS does not present the necessary scientific evidence or data but refers to information and findings in the EIS. These should be examined in the context of the full scope of the conservation objectives of the sites. The existing environmental baseline and trends are not considered for habitats and/or species. There is insufficient consideration of the likely effects of the project, particularly with regard to ground disturbance and excavations, peat disposal, deforestation, drainage and directional drilling, which are all a threat to surface waters. Water quality samples in the EIS do not correspond to good or high status. The general requirement for Annex I lake habitats, which occur in the SAC downstream, is to restore these to high status. The Bat survey is incomplete and needs to be done over a longer period of time.
- The NIS must demonstrate that the incorporation of mitigation or adherence to guidance, e.g. in the case of forestry management practices, will remove the specific impacts and threats identified. The final assessment is of the residual effects and whether there will be adverse effects on the integrity of a site. At

present, there is insufficient information and analysis in the NIS on which to base a robust AA. Accordingly, the implications of the project on its own, or in combination with other plans and projects, for the conservation objectives of European sites are not fully known.

EIA – Birds:

- The Department has particular concern about potential direct, indirect and cumulative impacts on birds, their habitats, flightlines and migratory routes. It considered that the EIS contains limited information about birds in the receiving environment and that the assessment of potential effects is largely limited to an analysis of collision risks for key species.
- The submission recommends that the Board requires further information to carry out an EIA of the impacts on birds including far more detailed and specific results of the bird surveys carried out, data covering the autumn migratory period; assessment of the importance of the site for passage migrants and analysis of available data from bird surveys and monitoring at adjoining sites in Galway Wind Park. The EIS should include a robust assessment and analysis of the likely direct, indirect and cumulative effects of the development on birds, including as a result of displacement, habitat loss and fragmentation and disturbance as well as collision risk. There should be specific mitigation to avoid disturbance and displacement of breeding birds, particularly during construction.

EIA – Bats:

- Further information is required with regard to the bat roost identified at the site, which is in a building that is to be demolished. The species using the roost, the Lesser Horseshoe Bat, is protected under Annex II and IV of the Habitats Directive. It is a qualifying interest of the nearby SAC, impacts also to be assessed in the context of AA.
- Annex IV species and their breeding sites and resting places are strictly protected under the European Communities (Birds and Natural Habitats) Regulations 2011. A derogation licence from the Department will be required for the demolition of a bat roost, further consideration should be given to this requirement as part of the current application. For a derogation to be granted, it must be demonstrated that there is no satisfactory alternative, and that the impacts will not be detrimental to the maintenance of the population of the species.

7.2.5 <u>Geological Survey of Ireland (Department of Communications, Energy and Natural Resources)</u>

- The submission does not make any specific comments relating to the proposed development or the subject site.
- It notes that the GSI has datasets on bedrock geology, quaternary geology, mineral deposits, groundwater resources, geological heritage, landslides and the Irish sea bed. There are particular maps/datasets which may assist with EIA of 'Soils & Geology' and 'Surface Water & Groundwater'.
- The submission provides further information on data available.
- The Board is requested to contact the GSI if a geological heritage site is identified within the site. It requests copies of geological data collected during any EIA.

7.2.6 HSE

The submission comments on environmental health aspects of the development. It acknowledges that the HSE has received no complaints in relation to the site. The points made are categorised as follows:

General:

- The proposal is part of a very large development of wind farms in close proximity to one another. The possible negative cumulative impacts on the environment need to be carefully assessed.
- Relevant guidance documents are set out.
- The public consultation with residents and the wider community appears minimal.

Hydrology/Surface Water/Water Quality:

- Concerns about receiving waters and the possible public health implications of additional water volumes, suspended solids, phosphate mobilisation from peat soils (tree removal and soil disturbance) etc. into the catchment water basins. Lough Boliska is the source of the Spiddal water supply.
- All water mitigation measures set out in the EIS should be implemented in full.
- Mitigation measures must be fully implemented against the possibility of water draining in the direction of Lough Buffy and the Corrib Catchment area.

Wastewater Disposal:

- This will be a long term development that will need adequate disposal of effluent on site. The proposal of providing a holding tank and regular emptying of effluent is a temporary arrangement. It is recommended that suitable waste disposal facilities are provided on site.

Noise, Vibration and Shadow Flicker:

- No noise limit is proposed at the properties of landowners with a financial interest in the project. No scientific or health grounds are made for making this conclusion. All impacts on human health (both direct and indirect) should be addressed with no differentiation between people who have or have not an economic interest in the project.
- Recommends compliance with the following guidelines:
  - DoEHLG Wind Energy Development Guidelines 2006
  - Irish Wind Energy Association (IWEA) Best Practice Guidelines for the Irish Wind Energy Industry, 2008.
  - World Health organisation Night Noise Guidelines for Europe relating specifically to Noise Impact Assessment.
- Noise at the construction stage must be controlled, using specific working hours as a condition of planning. All households along the minor country roads (including the route to be used) shall be given written notification of construction commencement and an approximate timescale/date of works.
- It is stated that there will be no significant vibration impact associated with the day to day operation of the site. Issues around possible adverse vibration levels affecting local residents, particularly during the construction phase, require further investigation and additional remedial measures as necessary.
- In line with good practice, it is recommended that noise and vibration monitoring is repeated during the construction and operational phases of the project.

8.0 THIRD PARTY OBSERVATIONS

8.1 A total of 10 no valid third party submissions were received. These may be subdivided as follows.

8.2 Submissions by Local Residents

8.2.1 There were a total of 7 no. submissions by local residents, all of which objected to the development. The main grounds of objection may be classified and summarised as follows.

General Points

- The developers stated at public consultation stage that there would be 27 turbines, however the application is now for 29 no. turbines. In addition the site notice was in a remote, obscure location where there is very little traffic.
- The public consultation was misleading and a 'box ticking exercise'. Concerns raised about visual impacts at that stage have not been addressed in the current application.
- The proposed 29 turbine wind farm is much larger than any of the granted/proposed neighbouring wind farms. It therefore should be judged as having much more dominant visual and ecological impacts.
- Signage and documentation should also be in Irish as the development is located in the Gaeltacht.
- The development should also be considered in the light of the refusal of a wind farm development at the adjoining Knockranny site.

Cumulative Impacts

- A large number of wind turbines have already been permitted in the vicinity. The proposed development would result in this rural area becoming over industrialised. This is one of the most densely populated areas of Connemara and it is totally unsuited to this level of industrialisation.
- The Board must have regard to the cumulative impacts of so many turbines in one area, in particular the current adjoining proposal at Knockranny, also the Galway Wind Park. The combined wind farms would result in the largest single development of 109 wind turbines in Ireland and the 5th largest wind farm in Europe, located in a mountainous area of high scenic value.
- There is a history of non-compliance with conditions of permission for wind farm developments in the area. There have been multiple complaints to the enforcement department of Galway County Council, Inland Fisheries Ireland and the EPA, but to no avail. There could be more breaches of planning conditions if permission is granted for the proposed development, with consequent irreversible damage to the environment.
- Cumulative traffic impacts should be considered, particularly with regard to potential impacts on Doon village and a potential traffic hazard for pedestrians at that location. Concrete should be imported from a quarry as close to the site as possible.

Inadequacy of EIS

- There are several contradictions within the EIS.
- Lack of consideration of alternative sites.

Noise Impacts

- Irish noise guidelines are out of date and relate to turbines that are a third to a quarter the size of those currently proposed.
- The proposed higher turbines would generate large long wavelength, low frequency noise, which can travel for up to 10 miles and gather in certain places due to the effects of local topography. This type of noise causes damage to the nervous system, nausea and sleep deprivation.
- Problem of 'amplitude modulation', i.e. the noise is constantly changing in strength or modulation, which results in a startle reaction.
- Cumulative noise impacts from the proposed development and existing/permitted neighbouring turbines.
- Noise impacts from crushing or rock breaking during the construction phase of the development.

Visual and Recreational Amenity

- DoEHLG guidelines are that turbines must blend in with the area, whereas these turbines are too high at approximately 156 m.
- The application underestimates the cumulative visual impact of the development along with other existing/permitted wind farms in the vicinity.
- The submissions dispute the judgement of the EIS that visual impacts are 'slight' and consider that they are instead 'profound'. The model used in the EIS to calculate visual impact ratings is questioned. It is submitted that the rating criteria and the classification terms are highly subjective and speculative and that the EIS underestimates the visual impact of the development. It is submitted that the visual impact from viewpoint 14 is 'profound' rather than 'slight, similarly the impact from viewpoint 15 is 'profound' rather than 'significant'. It is submitted that a survey of attendees at the public consultation would have yielded a more realistic (and negative) assessment of the visual impact.
- Turbines nos. 1-8 located north of Letter are too high and very prominent on the skyline. They contravene policy HL94 of the County Development Plan, which states that development should not protrude above the existing ridge lines on order to maintain long distance views of the Connemara mountains. They would also contravene policy CS25, which aims to protect the scenic amenity of the Oldtown area. The submission of John Rushe & Annette Collins refers to ABP decision on the Cloghan wind farm in Offaly (PL19.242354). It is submitted that, due to the elevated location of turbines nos. 1–8, the development would have a similarly negative impact on the amenity of areas adjacent to the subject site.
- The development would contravene policies in the Galway County Development Plan and the Gaeltacht LAP with regard to the preservation of scenic views. It would have an adverse visual impact on several protected views, i.e. CDP views 78, 79 and 80 over the East Connemara mountains. The development would be visible from the Moycullen to Spiddal tourist route.

- Photomontage 9 indicates that turbines 2, 4 and 5 visually dominate houses to the east of the site. Photomontages 10 and 13 illustrate that turbines will be visually dominant from viewpoints to the east of the site. Photomontage 14 indicates that the turbines will be visually dominant relative to other permitted turbines in the area.
- The wind farm site is unsuitable as a recreational amenity. The lakes within the site are regularly fished for recreation, Slí Connemara is a very popular walking route for families and visitors. The site attracts bird watchers and photographers. Many running groups use the area for training. The mitigation measures will not return this loss of amenity.

Impacts on Designated Sites and Protected Species

- EIS does not adequately address the potential adverse impacts on protected sites, also cumulative impacts in conjunction with adjacent existing and permitted wind farms.
- Drainage impacts on the Connemara Bog Complex SAC and the Corrib Lakes Complex.
- Concern that the development would not comply with conditions requiring mitigation measures. It is submitted that the construction of a wind farm at Shannagurraun/Truskaunnagoppul (10/1225) by the above named applicant resulted in a massively increased sediment load and pollution of local surface water. Mitigation measures were ineffective. It is submitted that complaints to the enforcement department of Galway County Council, the EPA, the NPWS and the IFI have received little attention.
- The proposed development adjoins a SAC that also has permission for a wind farm, i.e. Knockranny. There are several Annex I protected species in this area, including the Greenland White Fronted Goose, the Hen Harrier, the Downey Emerald Dragon Fly and the rare Marsh Fritiliary butterfly. The habitat for these species would be severely disrupted by both of these proposals.
- The bat survey submitted is incomplete and needs to be done over a long time.
- Several submissions refer to the High Court judgement in the Kelly v An Bord Pleanála, also the CJEU cases *Waddenzee* and *Sweetman*.
- The development would involve the removal of 51.6 ha of forestry within and around the site. This felling would result in an unacceptable mobilisation of phosphorous into the receiving landscape and sensitive watercourses. The Owenboliska river system within the Connemara Bog Complex SAC is already under enormous strain from as far away as Cloosh wind farm development. In documents obtained under Feedom of Information in relation to the Finnaun development, Cloosh valley in 2007, water quality data presented confirmed that even then there were high phosphorous levels in two sampling locations. The potential cumulative impacts of that wind farm and other activities in the area remained a serious concern for the NPWS. The entire site is within the Owenboliska catchment area HA21. A very small area on the north of the study area extends into the Lough Corrib regional catchment HA30. Concerns about flood zones within the Owenboliska system. Risk to brown trout rich lakes Loch Fhada and Loch na Ngeibhe. Inadequate consideration has been given to in combination impacts and salmon stocks in the Ardderroo River. Turbines 1, 2, 5, 6 are located adjacent to the source of this river and turbines 13, 19, 20 and 25 are located near the river on the eastern site boundary. There is no proof that there

will not be a negative impact on this river, the salmon stocks and the habitat, which are conservation objectives of the Connemara Bog Complex.

- The site and adjoining lands are sensitive for birds. In documentation received under Freedom of Information, a senior ecologist involved in the Cloosh wind farm noted that the local NPWS ranger alerted those concerned that he had seen a foraging male Harrier within a few km of the site. Given the suitable forestry/bog habitat in the general area, it may be possible that breeding Hen Harrier are coming back into this location. The site is important for wintering wild fowl, Loch na Ngeibhe translates as the lake of the geese and the flight paths for the Greenland White Fronted Goose (an Annex I species) are adjacent to here. The species has been spotted on Loch na Ngeibhe. This may be due to displacement of geese from traditional feeding and roosting sites due to disturbance from construction in the Galway Wind Park. The significance of the displacement depends of the availability of alternative habitat. The Connemara flock have been particularly loyal. Suitable habitats for geese and other wild fowl have become very scarce in Connemara through cumulative impacts of land loss, fragmentation and disturbance. The Red Grouse is also present at the site and the Woodpecker has just spent a summer in the adjacent site. no proper assessment of in combination impacts of all the wind farms on the bird population. Section 6.5.2.2.1 of the EIS states that birds will be killed under certain circumstances but does not elaborate what these conditions are. The EIS does not suggest any mitigation for bird kill. It is difficult to see what mitigation could be suggested if this situation arose.
- No ecological study was carried out on the Downy Emerald Dragonfly, which is present on adjacent sites.
- Turbines T1, T2, T5 and T6 are located close to the source of the Arderoo River while turbines T13, T19, T20 and T25 are located near a river on the eastern boundary of the site. The Board should consider if the development would have negative impacts on the Ardderroo River and the salmon stocks/habitat, which is a conservation objective of the Connemara Bog Complex SAC.

Archaeological Impacts

- Development would contravene archaeological policies HL22 to HL30 of the County Development Plan.
- Knockranny is part of a larger archaeological landscape as can be seen in the Cassini 6 inch maps. One of the refusal reasons at Knockranny, ref. PL07.239053, related to the significant archaeology in the area and the intervisibility of the ring cairn on the top of Knockranny hill. Impact on clear views between it and other hill top cairns near the site. The Board stated in the Knockranny refusal that the proposal would be seriously detrimental to the archaeological and cultural heritage of the site. The subject development, due to its geographical proximity, topography, environmental and ecological linkage to the Knockranny site, has the potential to adversely impact on a site that has already been the subject of a Board refusal.
- The development would severely disrupt intervisibility between hilltop cairns. The submission of Roswell & Susan Stanley includes a diagram showing the line of sight between hilltop cairn monuments across the wind turbine site. It suggests that this problem could be addressed by omitting the 8 turbines north of the Letter road.

- The archaeology report in the application is deficient. The borrow pit and the monuments within the site need to be investigated more thoroughly. The archaeological survey of the Ardderroo site is incomplete, e.g. the area at turbine no. 20 was not surveyed at all. It is believed from oral tradition that this may be the site of Geibhinn na hArdoiriu. The EIS states that the site of turbine T20 was not inspected. This has a house cluster on Tullatree Hill known locally as "Géibhinn na hÁrdoiriú" (the Arderoo jail). There was a jail at this site according to local folklore. This site should have been surveyed. It is only 500m from the Knockranny archaeological complex, there is a possibility that a connection could be made by professional archaeologists.
- The EIS does not mention the stepping stones that are found on the Cassini Maps. Many other buildings of vernacular architecture which should have been included and are clearly visible on the Cassini maps have not been included.
- A 30m buffer zone around the registered monument within the site, ref. GA067-021 is not adequate to "preserve and protect" in accordance with current legislation the National Monuments Acts.
- There is a stone building close to the north of the site on the Doon road, which has not been considered in the EIS. This building is also on the Cassini 6 inch map showing that it is vernacular architecture, it should have been included.
- The house cluster at Letter, which is shown on submitted maps, is known locally as the 'Moran Homestead'. It was the site of a shop at one time. There is no consideration of local folklore or of the similarities with house clusters of the neighbouring Cloghvally, Knockranny site, which is the registered site of a Bronze Age 'Fulacht Fia', a Bronze Age 'Ring Cairn' including a 'Cist' and a registered 'Cilín" (childrens burial ground).
- The Lough Naweelan translated "The Lake of the Mills", is not considered. It may be significant considering that the nearby lake Lough Atayamore in Liathleitir has a registered water mill horizontal wheeled GA081-038 and a promontory fort GA081-037001. Lough Naweelan could be the site of a water mill, proper study would be necessary to discover this.
- Ronan Browne submits photographs of drainage at the Shannagurraun/Truskaunnagoppul wind farm site.

<u>Peatland Impacts</u>

- The creation of 3 borrow pits on the hillside and the construction of turbines at the highest part of the site could result in a landslide with catastrophic consequent impacts on water quality. Particular concerns that the borrow pit at T6 would weaken the stability of the structure and allow it to move down the hill causing danger.
- The applicant has not supplied sufficient details of the proposed construction methods, which could have impacts on soil structure and water quality.
- Potential impacts due to roads construction.

<u>Additional Submission by Martin Walsh</u>

This is an addendum to the original observation. The following additional points are made:

- The site locations of the Galway Wind Park development, the Knockranny proposal and the subject proposal will, if permitted, create an enjoined single

development of 109 turbines. According to information obtained from the European Wind Energy Association, this would make the linked development the 5th largest wind farm in the whole of Europe, behind the developments at Fantanele and Cogealac (Romania), Whitelee (Scotland), Clyde (Scotland) and Alto Minho (Portugal). The single enjoined development would be significantly larger than the largest wind farm developments in every other European country.

- The planning proposals for the Galway Wind Park were granted without regard to potential cumulative effects. The EIS in each case failed to deal with the potential cumulative impacts. This failure is inconsistent with the requirements of Irish and European planning legislation.
- The subject site forms part of the East Connemara mountain area and is of 'high' landscape value. The proposal is for a 'large wind farm' on elevated land in a highly scenic area. The EIS attempts to understate the aesthetic and visual effects of the development and fails to address the cumulative visual impacts.
- It is submitted that the development proposal is fundamentally flawed and contrary to best planning practice.
- The submission is accompanied by the grounds of appeal of PL07.243094.

8.3 Peter Sweetman & Associates

8.3.1 The main points made may be summarised as follows:

- The Board is advised that on the basis of the information submitted it is not possible to make a finding of no significant impact under the Habitats Directive as clarified in case 258/11 Sweetman v An Bord Pleanála and further clarified in Kelly v An Bord Pleanála.
- The documentation submitted states with regard to mitigation by Environmental Management Plan (EMP), an EMP will be in place prior to the start of the construction phase and a preliminary EMP has already been prepared and included within the EIS which accompanies the planning application. That is a lacuna.
- The NIS concludes that no significant or indeterminate impacts are likely as a result of the proposed project on the conservation objectives or overall integrity of any Natura 2000 site in the vicinity of the site of the proposed development. It is submitted that the Board cannot rely on mitigation measures in making a finding under Article 6.3 of the Habitats Directive. Moreover, it cannot rely on mitigation measures not yet in place in making a finding of no significant or indeterminate impacts under Article 6.3 of the Habitats Directive.

8.4 Forbairt Pobail Mhaigh Cuilinn Teoranta (FMPC)

8.4.1 This submission is made by FMPC, a local voluntary organisation based in Moycullen, which works with the local community to expand and protect the Irish language. The submission is made in Irish and has been translated. The main points made may be summarised as follows:

- Most of the subject site is in the Gaeltacht but the applicant has taken little notice of this apart from the newspaper notice.
- Adverse environmental impacts on plants, birds and animals in and around the site including many protected species.
- Cumulative impacts of the development, creating an industrial aspect to the landscape.

- The submission disputes the community impact statement in the EIS. It is submitted that the 'community' should be defined by the area covered by FMPC sports and cultural clubs and societies. The locals depend on Moycullen as a central cultural, educational, sport and services area and it should be included.
- Adverse visual impacts on a scenic area, especially in combination with the other wind farm developments. The development would be visible over a wide distance.
- The development would not create any local employment. No locals are currently employed at the wind farms at Inveran and Lettergunnet. The wind farms are of no benefit to the local economy.
- FMPC considers that the proposed community and voluntary group fund is an advantage to the community, however it is very important that it is organised correctly. Representatives from local organisations and clubs should be members who understand the region. FMPC considers that Galway County Council or politicians should not be involved in the implementation of the scheme. The submission requests an Oral Hearing in order to discuss the organisation and funding of the proposed community and voluntary group fund.
- FPMC has several questions in relation to the community gain proposal relating to the source/amount of funding and to the composition and duration of the committee. There should be a local representative on the committee. The submission questions what would happen if the company is sold or the applicant refuses to pay.
- The recommendations of EIS sections 4.2.1 are recommended.
- All proposed signage, trails, etc. should be in Irish as the site is located in the Gaeltacht. The applicant has paid no heed to the location of the site in the Gaeltacht. Udarás na Gaeltachta accepts that Moycullen is a specific Gaeltacht area.
- The Connemara Way currently cannot be used due to the overgrown nature of the path, part of which is also under water.
- There is an existing agreement between the manager of Galway County Council and the applicant r.e. financing for the Connemara Greenway. It is submitted that this decision was not taken democratically and that the community had no opportunity to voice their opinion.
- FMPC gives support to fishing, the environment and tourism. It is in favour of financing for people living close to the wind farms.
- Discrepancies are noted in drawings nos. 0117-33, 0117-36, 0117-37, 0117-50.
- Concern about traffic impacts on Moycullen, particularly with regard to transporting material and turbine parts to the site during construction. The size of the vehicles involved would result in traffic congestion in all directions. Local roads and junctions/roundabouts are unsuitable for vehicles of this size. This would be further complicated if proposed road works to the east of Moycullen go ahead. The proposed changes to the junction of Doon road and the N59 would affect general traffic. The schedule of works shows that most of the traffic would be between January and the end of July, therefore it would affect tourist traffic.
- The public consultation notice was not published in *Moycullen Matters*, the most popular publication in the area. There was insufficient local advertising. FPMC would prefer any discussions with the applicant to be carried out in Irish.

8.5 Kilroys Solicitors on Behalf of Conor O'Brien

8.5.1 This submission relates to land ownership issues. It makes the following points on behalf of the observer:

- The observer has an interest over lands comprising the Doon Commonage, over which the proposed development would be accessed. The observer is not aware of any agreement having been reached with the applicant to facilitate such access.
- The proposed development involves works to the existing roads serving the site and works to the N59/Doon road junction. The applicant has failed to disclose that the access road goes through private lands, the Doon Commonage, which is owned by 25 shareholders. The applicant does not have permission from the owners to access this road.
- The application states that under permission ref. 13/658, permission was granted to upgrade approximately 4.8 km of the access road, no further works are proposed to that section of the Doon road. It is submitted that the relevant permission obtained all the landowners consent only for SSER to construct their specific wind farm.
- The Board is requested to address this issue with the applicant and its consultants.

9.0 FURTHER INFORMATION REQUEST, RESPONSE AND COMMENTS

9.1 Further Information Request

9.1.1 The Board issued a further information request in accordance with section 37(F)(1) of the Planning and Development Act, 2000 (as amended) on 18th February 2015. The applicant was advised that, following a preliminary appraisal of the file, the Board had concerns about the matters raised in the following documents, which might not have been adequately addressed in the documentation supporting the application:

1. The Board Direction dated 7th July 2014 under 07.PC0159, items (d) and (e) in particular.
2. The submission made to An Bord Pleanála by the Department of Arts, Heritage and the Gaeltacht on the 7th November 2014.

9.2 Response of Applicant

9.2.1 The applicant submitted a response to the Board on 15th May 2015, which comprised the following:

- Additional drawings
- Peatland Assessment, Habitat Enhancement and Bog Restoration Plan
- Assessment of Proposed Replanting
- Revised NIS
- Addendum to EIS

9.2.2 The response revised the original development by moving the proposed electricity to a new location c. 180m to the east of the original location, also on the northern side of the Doon road. This is in order to address the concerns of the DoEHLG about an existing Lesser Horseshoe Bat roost within the agricultural building that was to be

demolished to facilitate the original substation That structure would now be retained. This involves the following changes to the original proposal:

- An additional 1,800m^3 of peat to be excavated and managed on site.
- Revised shorter grid connection route.
- Increase in area of tree felling by approximately 1.32 ha. The EIS addendum states that a mapping error overestimated the area to be felled in the original EIS. A total of 35.8 areas are now to be felled around the development footprint with an additional 14ha of turbulence felling, i.e. a total of 49.8ha.

9.3 Comments by Third Party Observers

9.3.1 A total of 4 no. new submissions were received in response the further information submitted. The main points made in each submission may be considered separately as follows.

9.3.2 John Rushe and Annette Collins

Birds Impacts:

- The applicant has not addressed the stated concerns of the Board and the Department of the Arts, Heritage and the Gaeltacht with regard to potential birds impacts.
- The applicant does not adequately detail how Red Grouse will be affected by the proposed development in the areas of the site that are not under forestry.
- The applicant does not adequately deal with potential impacts on Merlin, there are contradictory statements in the EIS in respect of this issue.
- The applicant does not adequately consider potential impacts on the small but important population of Whooper Swan who winter at the site.
- The applicant does not consider that White Tailed Eagle will fly thought the combined Arderroo and Cloosh or Finnaun sites. No analysis of potential impacts on flight lines are detailed.
- The EIS Addendum does not clarify under which conditions birds will be killed. The EIS and EIS Addendum do not provide any mitigation for bird kill. It is difficult to see what form of mitigation could be provided if this issue arose.
- The applicant has not provided the level of analysis of birds impacts required by the Department of Arts, Heritage and the Gaeltacht. On this basis it is difficult to see how the Board can make a robust assessment of the proposed development.
- The development will have a significant negative impact on the bird population (visiting and resident) at the site, this impact will be exacerbated in the context of other wind energy developments in the vicinity. The EIS Addendum and revised NIS do not adequately address potential birds impacts.

Impacts on Aquatic Habitats and Species:

- The revised NIS does not fully consider that the Ardderroo River rises within the development site and flaws adjacent to the eastern site boundary and through the Connemara Bog Complex SAC.
- The development will not help to achieve the general requirement to restore Annex I lake habitats downstream of the site to high status, as specified by the Department of Arts, Heritage and the Gaeltacht.

Visual Impacts;

- Repeats points made previously in relation to turbines nos. 1-8 and impacts on designated views, also inadequacy of EIS visual impact assessment.

9.3.3 Aine Fogarty and Michael O'Reilly.

This submission was made in Irish. The following main points, as translated, are noted:

- Adverse impacts on aquatic habitats and species. Contravention of policies PB9 and PC2 of the Gaeltacht LAP 2008-2014.
- Adverse birds impacts due to height of turbines. Low populations for many species in the area. Contravention of policy PB7 of the Gaeltacht LAP.
- Most of this site is in the Gaeltacht and therefore it is necessary to be aware of the people of the area, the language, the traditions and rich culture. Little consideration of the Gaeltacht location of the site in the EIS/EIS Addendum. This wind farm has no connection with spreading the Irish language or protecting the local culture and the lack of debate in EIS and Addendum shows the lack of interest the applicant has for the people of the area and their culture. The development will not help Irish speakers to remain in the area but the opposite. Development would contravene Gaeltacht LAP policies to protect the Irish language and culture.
- Issues of health impacts, noise and shadow flicker.
- Contravention of LAP policy PT1 relating to cultural heritage. The cairn at the top of Knockranny is close to this site. This is an important monument from the pre-history times with views to other hill tops. This development will interfere with the cross-visibility between these monuments. Also contravention of policy PT2. Some of these old buildings on the site affect the history and folklore of the people. Inadequate archaeological assessment of the development. It is vital that an in depth archaeological examination is done on this site especially when recently 6 – 8 wooden spears were found in Ugool site.
- Tourism impacts. Gaeltacht LAP refers to the relationship between the language and tourism. The proposed development will interfere with the peaceful and vulnerable beauty of this area.
- A National Strategic Environmental Assessment should be made on this site to give a true indication regarding the national implications of the development.

9.3.4 Martin and Treasa Reilly

- The EIS was not provided in the Irish language.
- Lack of a strategic national assessment of the impacts of the Galway Wind Park.

9.3.5 Sean O'Muirí and Maire Ní Raghallaigh

- The further information provided is incomplete and does not fully address the questions raised by the Board.
- The Board, as the "competent national authority" cannot be certain, on the basis of the best scientific knowledge in the field, that the development by itself or in combination with other plans or projects will not adversely affect the integrity of protected sites.

- The submission repeats many points made previously in relation to overall cumulative impacts, birds impacts, visual and landscape impacts, archaeological impacts, Irish Language, lack of a national assessment. The following additional points are noted.

Birds impacts:
- Lack of full bird impact assessment in the EIS addendum. The addendum has inconsistences in relation to potential impacts on Merlin, the Whooper Swan. Incomplete consideration of impacts on the flight lines of the Golden Plover and White Tailed Eagle. No mitigation for bird kill in the EIS.

Hydrology:
- Proposed aquatic buffer zone of 50m is only applied where possible, this is not good enough.
- Risk to brown trout rich lakes within the site.

In Combination effects:
- EIS is inadequate with regard to the Sweetman, Kelly and Waddenzee cases as it does not properly address this issue.

Archaeology:
- Recent significant finds at the Uggool site, 6 to 8 wooden spears were found. Collective archaeologically rich landscape stretching from the Bronze Age ring cairn at the summit of Knockranny hill to Uggool.

Martin Walsh:
- No new comments.

9.3.6 Dr Padraig O'Cathain

This submission relates to peatland impact. The observer has BA, MLitt and PhD degrees in Mathematics from NUIG and carries out research in the algebraic theory of the design of experiments. He has previously commented on peat stability assessments in several other wind farm cases, including the case at Knockranny refused by the Board and a case at Straboy, Co. Donegal in 2012. The submission contests the findings of the AGEC peatland impacts report submitted with the EIS. The following main points are noted:
- The AGEC report is filled with inaccuracies. It describes the site as "predominantly flat", however the site rises over 200m with slopes exceeding 20° in places.
- Factor of Safety is a discredited method of assessing peat stability. It was developed in the 1930s for mineral (granular) soils and is not an appropriate tool for use with peat (fibrous) soils. This is not acknowledged in the peat stability report or the main EIS. There is no attempt to use modern modelling or simulation techniques.
- The submission refers to a report by Boylan et al, *Landslides in Ireland*, which states that peat has significant fabric and structural differences that make the direct application of traditional soil mechanics strength models doubtful. This report also comments that the use of shear strength testing can be misleading and that, due to various uncertainties and difficulties, slope stability analysis of peat cannot be relied upon. It is also submitted that experts found that FoS calculations

were of little use in predicting the landslide in the Derrybrien case. Boylan et al suggest a minimum FoS of at least 1.4 for most purposes, other experts suggest values as high as 2.

- The values used for the formulae in the assessment were chosen based on averages collected from literature. Peat failures occur at localised weak spots and an average case analysis is inappropriate. Insufficient detail has been submitted to understand the modelling procedure.
- There is no attempt to characterise the peat at each turbine site. This is unacceptable since a single region of weak peat could lead to a bog burst.
- AGEC claim that, in areas of borderline stability, draining the peat and loading additional peat on top will increase the factor of safety, while in stable areas it will decrease the stability. The submission contests this, arguing that it is paradoxical and has not been discussed in the report. It throws doubt on all AGEC's findings.
- The observer provides his own calculations for drained peat. It is submitted that the AGEC report used arbitrary choices of constants and does not provide adequate details of how the drained analysis was conducted.
- The AGEC report fails to identify key risk areas. There is no distinction between an area with an FoS value below 2 and another with an FoS value above 50. The observer attempted to recreate AGEC's FoS values for T19. AGEC claim that draining this site and loading it with additional peat will increase the FoS values, however the observer was unable to recreate this finding and his calculations suggest that the site is only marginally stable and hence unsuitable for construction. This is worrying since the turbine is directly above a lake.
- AGEC does not understand international best practice in assessing peat stability. Scottish guidelines recommend a balanced use of the FoS and qualitative examinations. AGEC rule out the use of these subjective judgements. The risk assessment carried out is vastly inadequate. It does not take into account the presence of forestry at the site, a known contributor to the slope failure at Derrybrien.
- The AGEC report does not distinguish between peat stability at the site at present (where the observer agrees that a landslide is unlikely to occur) and the stability of the site during construction and operation. The submission notes the previous refusal on peatland impacts at Knockranny. This refusal indicates that it is inappropriate to conclude that no peat slippage will occur during the construction or operation of a wind farm based solely on analysis of the site in its current state. The absence of cracking or other visible signs of stress in undisturbed bog cannot be taken as an indication that major construction works will not trigger a peat slide.
- The minimum required peat analysis of the site should involve excavation of the bedrock of sample sites and extensive testing to determine the response of peat on site to loading during construction and vibrations associated with a wind farm.
- The submission refers to the Straboy case, which refused permission for a wind farm near Glenties in Co. Donegal. Peat stability concerns were key to this decision. The applicants in this case similarly have failed to adequately demonstrate that the development would not have an impact on watercourses surrounding the site.

10.0 ORAL HEARING

10.1 The Oral Hearing commenced on 14th July 2015 and was held at the Connaught Hotel, Galway. The hearing lasted for two days, i.e. the 14th and 15th July 2015. The

proceedings may be summarised as follows, in the order in which they took place. This summary makes particular reference to any new points that arose in the course of the proceedings and does not repeat points already made in the documentation on file.

10.2 Day One July 14th 2015

12.2.1 The Inspector formally opened the Oral Hearing at 10.00am. After a short introduction the Inspector invited the applicant to commence the formal submission.

12.2.2 Applicant's Opening Submission and General Response to Third Party Comments on Further Information

The applicant was represented by Eamon Galligan, Senior Counsel and Tom Flynn, Barrister. Eamon Galligan chaired the applicant's team and introduced the team of technical experts. Brian Keville of McCarthy Keville Planning Consultants made a brief submission outlining the proposed development, the application site and its surroundings, the site selection and development design process, relevant planning policy and planning history, residential properties, roads and electricity infrastructure in the area, including information and amendments submitted in response to the further information request. Mr Keville also made a submission in response to third party comments, which may be summarised as follows,

Principle of Development:

- Development is in accordance with national policy on renewable energy, previous and current Galway County Development Plan policy on renewable energy. Refers to two key objectives of the new County Development Plan, i.e. ER5 and ER6 relating to the county WES. Development would assist with the delivery of Co. Galway, national and EU renewable energy targets.
- The Planning Authority submission found the development to be in compliance with the relevant policy documents.
- Details of the applicant's Gate 3 offer were provided, as per the EIS. The site is adjacent to one of only 2 locations where grid connection nodes have been permitted in West Galway.

Landscape and Visual Impact Issues:

- The site was selected to avoid high ground to the north of the site at Buffy Hill. It is screened by a horseshoe of hills and ridges to the north.
- The development complies with landscape character policy as per the WES and the County Development Plan. Wind farms are already a feature of the landscape in the area with reference to existing and permitted developments. The visual impact assessment in the EIS gives an overall impact of 'slight to moderate' for the development.
- Third party submissions refer to section 3.28 of the Co. Galway Landscape Character Assessment 2002, which states that development should not protrude above existing ridge lines. This is just an advisory/supporting document of the County Development Plan. The current County Development Plan and WES do not have any policy regarding development protruding above ridge lines. These are the key policy documents. The more recent and detailed landscape capacity assessment in the WES is noted.

- Third party submissions refer to Policy PL1 of the Gaeltacht LAP and to impacts on views 78, 79 and 80 of the County Development Plan. The EIS found no significant impact on peaks south of the N59. Views of the proposed development from this location would be in the context of existing/permitted wind farms and electricity infrastructure. The new 2015 County Development Plan policy FPV1 states that impacts on views shall be balanced against the need to develop strategic infrastructure and meet key aims of the plan.
- Issue of visual dominance raised in submissions from the Oldtown area of Knockranny. There is a 3-4 km distance between these residences and proposed turbines nos. 1-8. Refers to viewpoint 14 of the EIS taken specifically from the Oldtown area. 8 of the proposed turbines are visible in the distance. The size of these turbines is in keeping with the scale of the landform and landscape, turbines are visible but do not impede, limit or dominate the view.

Ecology:

- Site and surrounding area were subject of a detailed ecological assessment over a 19 month period.
- The site is not located within an NHA, despite an incorrect statement to this effect in the An Taisce submission.
- Closest proposed turbine is 250m from the boundary of the Connemara Bog Complex SAC, opposite side of an existing forestry road.
- Now no demolition of the building containing the bat roost therefore no direct impacts. The proposed development will not be detrimental to the maintenance of the species.
- White tailed eagle species not recorded during winter and summer VP watches at the development site. 2 no. pairs white tailed eagles were recorded at other sites in Connemara 15 and >40 km form the development site, very rare likelihood of collisions.
- Merlin were seen during VP surveys in Feb and March 2013. None during breeding season or in 2014. Birds may pass through or be briefly present at the site during winter or passage periods.
- No direct mitigation for bird collision because no significant impacts are expected. Ongoing monitoring intended for recording of collisions only.
- Cumulative impacts addressed in the EIS, NIS and amended NIS. Conclusion that proposed development will cause no significant residual impacts individual or cumulative on the conservation objectives or the overall integrity of the Natura 2000 sites, no significant residual impacts on flora or fauna.

12.2.3 Michael Gill, Hydro Environmental Services (HES) Submission on Behalf of Applicant Relating to Site Drainage

Mr Gill gave a slide presentation for the benefit of the third parties, which gave an overview of the proposed site drainage design. He also made the following points in response to third party comments:

- There will be no discharge to any natural watercourse. All discharge to natural ground outside a 50m buffer to watercourses. Pre-emptive and proactive drainage management system with ongoing inspection, water quality monitoring and maintenance.
- Assessment of Boliska Lough Public Water Supply Scheme, located 5km downstream of the site. Appropriate mitigation measures including avoidance and

best practice engineering design measures are proposed to protect downstream water quality. The drainage design does not rely on assimilative capacity of steams or lakes to reduce impacts on water quality downstream. Proposed drainage management measures as set out in the EIS will ensure no impacts on downstream water quality. In addition, the lough itself has a natural assimilative capacity. No impacts on the public water supply scheme in terms of water quality or water quantity.

- Designated sites impacts are addressed in the EIS. All proposed turbines are downstream from Oughterard NHA boundary. No groundwater flow path connection to Connemara Bog Complex between proposed turbine locations and the SAC. Groundwater within the site flows to local streams and lakes, therefore there can be no impact on the SAC. Proposed drainage design will result in surface water run off of high quality that would not result in adverse impacts downstream.
- Tree felling impacts on water quality are addressed in the EIS. Development involves minimal tree felling in the context of the extent of existing forestry coverage at the site. Forestry will continue at the site if the proposed development goes ahead. Buffer zones ensure no need for tree felling near surface water features. Tree felling mitigation measures are included in the EIS.

Mr Gill made a comment in relation to conditions nos. 12(e), (f) and (g) and condition 15 of planning authority recommendation, which stated that these issues have already been addressed in the EIS. Requirements of condition 12 (e), (f) and (g) are already incorporated into the proposed site drainage plan, including a specification size for culvert crossings. Condition no. 15, a detailed site drainage management plan, has been prepared and forms a fundamental component of the project design.

12.2.4 Paul Jennings of AGEC Submission on Behalf of Applicant Relating to Peatland Impacts

- AGEC has been involved in 80+ windfarms in Ireland and UK. Also other projects in the area of the site, such as the Shannagurraun and Lettergunnet wind farms and the Connemara 110kv line reinforcement project. Also neighbouring Galway wind park project. Investigated several peat failures, Derrybrien and Pollatomish.
- The findings of the peat stability assessment show that the site has a low susceptibility to peat failure and the site is considered safe and acceptable for the proposed works. Particularly for the following reasons:
    - AGEC experience in the area indicates that conditions are suitable and there has been an absence of peat failures on similar terrain.
    - No recorded historical peat failures in this terrain.
    - Results of stability assessment further demonstrate this low susceptibility.
    - EIS combination of stability analysis and qualitative factors. FoS approach is an industry standard that is recommended in the Scottish Executive Best Practice Guide 2007, recognised approach to assessment of peat stability. This guide notes that the FoS approach provides the most informative results.
    - Qualitative factors provide information on peat stability risk. The EIS analysis does not just rely on FoS approach.
    - Undrained peat stability is short term, this is the most important during construction period.

- Drained analysis examines potential for natural peat failure during an extreme rainfall event and is not related to the impact of the development on peat slopes. It is independent of the presence of the development and is based on generalised peat strength and groundwater conditions.
- Site investigation 1,330 peat probes at the site, about every 23m. This complies with the guidance given in Eurocode 7, part 2, appendix B3 for linear structures.
- The peat stability assessment findings are compatible with the walkover assessment.

- Mitigation and control measures will be adopted as per the EIS. They recognise localised areas of deeper peat in lowlying, flat areas of the southern part of the site. These areas do not represent a peat slide risk.

12.2.5 Damien Kelly, AWN Consulting Noise Issues on Behalf of Applicant

- All noise predictions presented in the EIS consider the cumulative impacts of all other wind energy developments in the wider area. All houses within 2.5 km of site were assessed. All predicted levels within relevant criteria, except for house no. 1 within the Uggool site, as per the EIS.

12.2.6 Michael Gibbons on Behalf of Applicant Response to Third Party Submissions on Archaeology and Cultural Heritage

- Mr Gibbons has extensive publications in the area of archaeology of Connemara. Team leader of Galway Archaeological Survey (UCG and OPW), Director of National Archaeological Survey Programme for 10 years. Archaeology Committee of Heritage Council 5 years. Currently a Council Member of Folklore Council of Ireland. A Connemara native with specialist knowledge of this particular area and upland peatland landscapes on the western seaboard. Has worked for local community groups. Knows the site surroundings and local landscape very well. Discovered 2 of the tombs on the surrounding hills, carried out an extensive aerial survey programme with Marcus Casey in this area.
- Considered archaeology and cultural heritage chapter of EIS, this is satisfactory. The EIS reflects the local landscape with a large concentration of archaeological sites in the lowlands to the north of the development site between Oughterard and Galway. However, on the granite uplands to the south from Cois Farraige to the uplands, the low level of monument survival reflects a sparse, episodic settlement of the area over a long period of time. The 19th century settlement component as identified in the EIS is consistent with the findings at other sites in the area. Satisfied with the archaeology methodology applied in the EIS.
- Mitigation measures in EIS are above standard practice with regard to possible presence of monuments. There are occasional finds in bogs throughout Connemara in areas where settlement is not expected but the mitigation measures proposed take this into consideration.
- The conclusions the of EIS emerge from the reality of the landscape, which is in accordance with his knowledge of the history of the area. Agrees that there would be a low impact on the cultural heritage of the area.
- Intervisibility of hilltop cairns. There is a series of very small monuments on the hills to the west, northwest and east of the site. There is a large hilltop tomb further east at Oughterard over 5m high, which dominates the hill and was built to be

seen. However, those around the site are low visibility, are peat covered and do not appear in folklore. They probably date to the Bronze Age but could be considerably later, up to Iron Age. They are on top of hills as they are burial monuments, which were built close to heavenly gods, but were not built to be seen, therefore intervisibility not an issue. They are a local response, probably associated with local Bronze Age settlements to the north. Very small visual signature, many such sites are not visible from the surroundings. They are assessed to be of local significance. Most of this area was forested during the Bronze Age, the cairns may have been built in small glades or clearances. May not have been visible when built. Unlikely that the visibility would have been important given their small form, they were probably not built to seen unlike larger 'megatombs'. Development will not have any direct or indirect impact on these tombs.

- Considered the submission of Rosewll & Susan Stanley, reference to a buffer zone >30m from archaeological sites. This would be a generous buffer zone considering there is no direct impact. The proposed project would be hundreds of metres from these sites and downhill from them. There would be no direct impact on the archaeology or setting of the monuments, or the possibility of associated settlement.
- The Stanleys' submission also refers to a relict in the vicinity of T7. Connemara had a very high population density in the 19th century, one of largest in Western Europe. Many clustered settlements, clacháns, developed during this time, often on marginal sites and were subsequently abandoned. There are hundreds of such abandoned settlements throughout Connemara, many survived, including some in Knockranny near the site. There is a series of abandoned 19th century settlements in the area, they were planted with forestry in the 1950s and are now covered in forestry. They are not archaeological monuments. They have no relationship to historic monuments built thousands of years earlier. The project has been designed to avoid them and would have no impact.
- House clusters at Letter and Tullatree Hill, submissions state that this is known locally as "Géibhinn na hArdoiriú' (Ardderroo jail). Possible relationship with older relicts or presence of other antiquities at these sites. A 'príosún' in Connemara can refer to a natural hollow or a swampy area, could be a pre-existing name. Occasionally there is a presence of an older features incorporated within a later settlement. No definitive historic sites on, under or near these later settlements. No archaeological connection to any older monuments at these clusters.
- Lough Naweelan, possible 'Lake of the Mills'. First record of this lake was in the 19th century by John O'Donovan. The first mid 19th century mapping refers to the lake of the bhFaoilean, the seagulls, according to this location relatively close to the coast. This is the accepted Ordinance Survey name for the lake. There is no evidence that there were mills at this site. Even if there were, the proposed development would have no impact as the turbines or approach roads would not have any negative impact.
- The proposed mitigation measures are best practice and are adequate.

12.2.7 <u>Brian Keville on Behalf of Applicant r.e. Traffic and Transportation, Response to Third Party Submissions</u>

- The delivery of turbines can be accommodated on roads between the Port of Galway and the development site, without improvements to the road network.

Existing junctions in Galway city can cater for the turbine delivery vehicles, as per the EIS.

- Turbine deliveries are to take place at night but not at the same time as deliveries to other permitted Galway Wind park projects in the vicinity.
- The Moycullen bypass, which would facilitate the development, is already underway. The proposed roundabouts at both ends of this bypass could accommodate the largest turbine delivery vehicles.
- The Doon road upgrade is already underway, including improvements to the junction with the N59.
- There is a current proposal before Galway County council to create a new access from the N59 that would bypass residential properties on the first 1km of the Doon Road.

12.2.8 Brian Keville r.e. Omissions of Appendices on the Electronic Copy of the EIS Addendum

- Information inadvertently omitted in appendices to the electronic EIS addendum submitted to ABP was submitted elsewhere with the application, details provided. The website was updated within 2 hours when the applicant was notified of the omission. Printed copies of this documentation available at the hearing for review.

12.2.9 Brian Keville r.e. Cumlative Impact Assessment

- A total of 10 plans were considered ranging from NSS to LAPs.
- Potential in combination impacts with other projects were considered in EIS. 7 infrastructure projects and 9 individual wind farms were considered in this cumulative impact assessment.

12.2.10 Michael Gill r.e. Drainage Design and Roads Construction

- Some of the existing road infrastructure is close to the smaller lakes at the site. Buffer zones are only crossed at existing roadways. Existing roads were used as much as possible, with their existing drainage infrastructure enhanced by placing silt fencing between road and lakes during construction, also existing drainage system.
- Recommended separation distances have been maintained for new roadways and buffer zones on constraints map have been applied.

12.2.11 Paul Jennings r.e. Peatland Impacts Chronology of Construction

- 3 large proposed new borrow areas. Material from them will be used for construction. The borrow areas are to be excavated on site and excavated material placed to the side in safe locations until bedrock is reached.
- The bedrock at borrow areas is granite. The borrow areas at adjacent Galway Wind Park developments were inspected. They did not encounter any issues or difficulties and met fresh, unweathered granite suitable for engineering purposes.
- The exposed rock will be removed by blasting. The blasted rock will fragment and will need secondary breaking, to be carried out using hydraulic breakers, then crushed/screened.

- Crushed stone to be used in roads, cable ducts backfilling, turbine bases and hardstandings.
- Once sufficient stone for road construction is removed from the borrow pits, peat storage cells will be created within the excavated pits. The peat management plan details peat storage in borrow pits.
- Sequential approach – area of borrow pit exposed, rock removed and peat put in. Peat is put in as rock is removed. Construction is scheduled such that excavated peat is moved to the borrow areas.

12.2.12 Michael Gill r.e. Potential Cumulative Peatland Impacts

- The EIS cumulative assessment of peatland included other permitted, proposed, constructed and operating wind farms and other developments within the Owenboliska catchment and local to the development site, ref. section 8.4.7 of the EIS.
- The main potential cumulative peatland impacts would occur during the construction phase of the proposed development.
- There are 3 permitted developments that have significant infrastructure within the Owenboliska catchment, which could cause cumulative peatland impacts, i.e. Cloosh, Uggool and Seecon wind farms. There is ongoing construction on these sites. It is likely to overlap with the beginning of construction of the Ardderroo project subject to consent. This would result in a total of 89 turbines within an overall catchment of c. 97 km^2, resulting in a total turbine density of approximately 1 turbine per km^2. (table 8.13 of EIS 109 turbines locally, 60 of these are within the Owenboliska catchment). The road infrastructure and size of the proposed development is very small in proportion to the overall catchment. Mr Gill is satisfied that there will not be cumulative impacts, subject to the imposition of the proposed drainage controls at all sites to ensure that impacts on water quality will be negligible.

12.2.13 Eamon Galligan r.e. Additional Details of Proposed Alternative N59 Access

- The proposed alternative access would link the upgraded Doon Road to the N59 to serve the wind farms in the area. It would bypass the part of the Doon Road with residential properties.
- The applicant refers to a modification of a condition on Doon Road permission, this may be addressed by the planning authority.

12.2.14 Valerie Loughnane, Senior Executive Planner and James Russell, Executive Planner, Galway County Council

- The planning authority has prepared a report on the proposed development (prepared by James Russell), which is on file. This was presented to the Elected Members on 24th November 2014, minutes are available.
- Clarification that there is a new County Development Plan, came into effect 23rd February 2015.
- Development complies with the current Co. Galway WES, which was adopted as part of the new County Development Plan. The planning authority report recommended approval subject to 25 conditions. This was supported by the Elected Members subject to 2 provisions, (i) the community gain fund is not to be

matched by Galway County Council and (ii) the community fund is increased to €200,000 per annum.

- No comment about the additional information submitted, however the planning authority recommends that condition no. 8 relating to the demolition of the agricultural building would need to be amended.

The planning authority responded to a question by the Inspector regarding the current operation of the Lettergunnet and Shannagurraun wind energy developments. Valerie Loughnane stated that both of these to date agreed conditions with roads, available on public record. There was an issue relating to a submission on noise, otherwise no ongoing issues of significance. The planning authority confirmed that the applicant has made an application under S146A for clarification on noise condition to Board, this is confirmed by the PA.

12.2.15 Martin Walsh Observer Submission

- The NIS and EIS are intended to promote the applicant's interests and lack impartial objectivity, subjective approach. The applicant does not present any potential negative impacts to the Board.
- The size and scale of the proposed development would significantly affect the landscape character of the highly scenic Connemara mountains. Refers to an Eirgrid lead consultant report on the substation (PL07.VA0016) (October 2012), which states that the area will change and the wind farm will be the dominant feature of the area. Combined Galway Wind Park would be the largest on shore wind farm in Ireland and the 5th largest on shore wind farm in Europe. The applicant does not recognise this. National Landscape Strategy 2015-2025. No attempt by developer to assess the compatibility of the development with this strategy and its interaction with the European Landscape Convention.
- The developer does not adequately consider cumulative impacts with other permitted developments in the area. Refers to Kelly case, in combination impacts must be identified in the light of the best scientific knowledge in the field. Galway Wind Park is currently at the early stages of construction, this is a significant development at regional and national scale. Its full environmental impacts cannot be assessed until the already permitted developments are fully complete. A precautionary approach should be taken. The developments within the Galway Wind Park were permitted sequentially and the Board has not carried out a full cumulative EIA. Pending Knockranny case still under consideration by the Board, could result in 109 turbines in this highly scenic area. Refers to details of the applicant. The developer has the resources to properly assess cumulative impacts of the proposed development. The Board can only grant permission if there is no adverse impact on protected sites, Kelly judgement, cumulative impacts also apply. The application does not address this.
- Development is premature in advance of the construction of the already permitted developments in the Galway Wind Park.
- The EIA is partial, inaccurate and incomplete.. Fails to properly address environmental concerns and contrary to proper planning and sustainable development and to the principles of national and European law.

12.2.16 Mark Killelea Solicitor, Legal Representative of Observer Conor O'Brien

- The subject application is invalid as there is no documentary evident of the applicant's entitlement to use a right of way from a public road over private lands to the development site. This must be submitted if the site does not adjoin a public road.
- James Russell of Galway County Council has indicated that the first part of the access route is a public road and the remainder is a private track road open to the general public.
- The private access traverses lands known as the 'Doon Commonage', which are owned by 25 individual people. Commonage land is a holding which is held by 2 or more people, access is restricted to the owners who have the legal right to exclude others not having the rights. The developer should have sought and obtained the individual consents of the landowners to allow the developer access. Held under Folio 111236F of Co. Galway.
- The EIS section 3.5.1 states that access via the Doon road is to be shared, as per permission granted under 13/658. Upgrade of existing roadways within the site. The development will benefit from the permitted upgrade of the Doon road.
- The proposed turbine delivery route is the same as the permitted Uggool, Cloosh and Seecon wind energy developments, also via the Doon road.
- The observer submits that the lead developer under 13/658 sought and obtained the relevant consents from the 25 individual landowners of the Doon Commonage. Those landowners gave permission for access only relating to that planning permission and no other wind energy development.
- O'Grianna High Court decision, all works of wind farm projects including haul routes to be subject to EIA.
- Article 22 of Planning and Development Regulations, wayleaves to be furnished as part of planning application. The written consent of landowner to make the application is to be supplied where the owner is not the applicant. Developer should have sought the permission of all 25 landowners in this instance.
- The Observer intends to proceed to judicial review in the event that the application is not found to be invalid.

12.2.17 Seamus O'Céidigh FMPC

- Moycullen Community Development Council. Voluntary group representing approximately 30 different voluntary groups in the area. Familiar with wind turbines in the area.
- Already a significant amount of bog has been excavated to construct wind turbines, equivalent to 50 years of locals cutting turf in the area.
- Must be some contribution to the survival of the Irish language, no evidence of this.
- Issue of community gain. Very remote area, little job creation. Wind is a resource of the area but the local community will gain little from the proposed development. Very little long term job creation outside the construction of wind turbines.
- Concern about access to local bogs for turbiary rights. Need for independent monitoring of this.
- Long term concerns. Impacts of decommissioning of the wind farm.
- Local gain should be a percentage of the profits made by the wind farm.
- Community gain should be decided by local community organisations.

Applicant Response (Brian Keville):

- Detailed proposal for community gain is outlined in the EIS. Community to be the driving force behind the implementation of this. Input from community groups has been very useful in formulating the community gain proposals.
- Community gain fund of €1.74 million over the life of the project.

Additional Comment of Mr O'Céidigh

- Community gain figure should be based on profits of wind farm and on discussion with the local community.

Eamon Galligan on Behalf of Applicant:

- No basis for calculating community gain, unlike Section 48 development contribution scheme. Section constitutionally suspect. The Board has an arbitrary power with resepct to imposition of community gain condition. Should be a basis for this in the Act. Risk that disproportionate contributions can be imposed.
- Board is asked to consider community proposals on file, based on consultation with various community groups.

Additional Comment of Mr O'Céidigh:

- Need for more detailed consideration of community gain. Not the same as planning conditions for a commercial development that would create direct and indirect local employment.
- Agrees that there should be legal parameters for the calculation of community gain.

2.2.18 Applicant Response to Submission on Behalf of Conor O'Brien

Eamon Galligan:

- McGilligan case. Landowner had a piece of land that had been included within the wind farm application site without her consent. The Court held that it was a matter concerning the validity of the application because it was a matter relating to land within the development site and the landowner's consent had not been obtained. Declaration that the application was invalid.
- O'Grianna case. The applicant has carried out EIA of all relevant projects in terms of cumulative impacts, including the Doon road upgrade and the N59 junction improvement.
- Article 22(2)(g) of the Planning and Development Regulations 2001 (as amended). Particulars to accompany a planning application. Submits that this concerns the land that is the subject matter of the application, i.e. within the red line site boundary. With regard to access over the Doon road, the applicant will rely on the right of way of the current landowner of the development site, i.e. Coillte and has the written consent of same.
- An Bord Pleanála doesn't normally adjudicate on matters of land ownership. Relies on section 34(13) of the Planning and Development Act 2000 (as amended) in the context of normal planning applications and section 37(h)(vi) with respect to Strategic Infrastructure developments, '*A person shall not be entitled solely by reason of a permission under section 37(g) to carry out any development*'. A person may get a planning permission to carry out a development but may need another consent to use it, e.g. permission for a public house but needs an intoxicating liquor license to operate it.

- Refers to Keane V ABP, 1998. Predates article 22(g) but there was a general understanding r.e. consent of the landowner. Under now repealed Local Government Planning and Development Act 1963, section 26(11) provides the same terms as section 37(h)(vi) of the 2000 Act. Judgement states that a person who has been granted planning permission will be unable to proceed with the development until he has obtained a relevant permission, such as licencing law, fire safety certificate. There may be covenants on the land that require the consent of the lessor to be obtained. This does not preclude the planning authority or the Board from granting permission provided that the requirements of planning legislation are met. The Board is therefore not precluded from granting permission in this case with regard to the Keane judgement, notwithstanding the absence of any consent.

Reply of Mr. Killlea:

- Documentary evidence must be submitted if the site does not adjoin a public road. The proposed access traverses over private lands.
- Doesn't accept submission of Mr. Galligan with regard to right of way. Applicant has not obtained the necessary consent required.
- Permission was sought from the 25 individual landowners in the application 13/658.

Eamon Galligan:

- Right of Way attaches to the land, does not attach to a particular person.
- The terms of 13/658, is of no relevance to the present applicant.

Mr Killelea:

- The right of way has not been assigned in this particular instance.

2.2.19 Submission of Dr.O'Cathain in Relation to Peatland Impacts

- Is a mathematician. Has looked at peatland impact reports for 4-5 years and has made various submissions of this type.
- AGEC report is inaccurate in places. Repeats points made in written submission.
- Qualitative analysis is flawed. Scottish Executive Guidelines 2007 provides a list of risk factors which should be considered including forestry, widely acknowledged to be a contributing factor in the Derrybrien case. No mention of forestry in the report submitted by AGEC. This is a serious omission.
- Repeats points made in his written submission r.e. the FoS assessment method.
- The FoS formula is based on the shear strength of peat, measured using a shear vane. Quotes from Boylan r.e. problems of measuring the shear strength of peat. For an area to be safe requires high shear strength, low depth and low slope. AGEC used measurements for depth and slope at different locations around the site but used an average shear strength across the whole site. There may be areas of peat that are weaker. There is very little site specific information and AGEC did not identify areas of the site where peat failure would be more/less likely. The acceptable FoS figure of 1.3 is arbitrary. There is no indication of the amount of exceedance of the 1.3 figure, i.e. the difference between places that are marginally stable from places where there is no peat at all.
- Concern about a reliance on average measurements across the site. Repeats points made in the written submission in relation to this issue. The shear strength

measurement is replaced by a measurement of 'cohesion' in the drained equation, this was not measured on site but again drawn from literature. The Observer tried to verify the undrained FoS using figures provided but found that the value HW, which was not provided, determined the FoS outcome, e.g. value at T19 could be between 0-7.7. AGEC stated that the HW value is based on sensitivity analysis. The observer states that the difference is based on the variation of depth to water table, however the shear strength of the peat should be the most important variable. Submits that the formulas used have a lot of scope for interpretation. Only real information used was slope and depth.

- Lyndsey & Bragg investigation into the Derrybrien failure found that it had not taken place at an area of low FoS measurements. Areas with low FoS also showed no sign of failure in that case.
- The subject proposal would be a lacuna with regard to of European Court ruling 258/11.
- Failure to properly address peatland impacts was a factory in the Knockranny refusal.

Dr. Paul Jennings Response on Behalf of Applicant:

- Provides details of his professional credentials and experience, in order to counter points that he is not impartial in this case. Cites an example of the 2003 Derrybrien report, which was commissioned by the ESB. Found that the ESB were at fault. AGEC has a professional reputation to uphold.
- Dr. Jennings was a contributor to the 'Boylan et al' paper referred to by Dr. O'Cathain in his submission. Also has assessed various post event instances of peat failure, including Derrybrien.
- Issue of forestry as a key trigger of peat slide failures. Dr. Jennings was at the Derrybrien site within 24 hours of the peat failure in 2003. Almost the entire site was covered by forestry. Forestry does not necessarily contribute to peat failure risk. It drains the peat and can actually strengthen it. The Derrybrien failure in 2003 actually occurred where forestry was absent or thin. Forestry does not contribute to peat slope failure. The qualitative assessment considers vegetation and looks for vegetation that indicates wetter ground, which may also indicate softer underlying peat deposits, i.e. areas where forestry didn't grow because the ground is too wet.
- FoS approach is used but also 2 other approaches. AGEC report is based on a site walkover by experienced geotechnical engineers. They inspect the site for any features associated with potential peat instability, this forms part of the qualitative assessment, which is used along with FoS. AGEC do not rely on the FoS numbers alone.
- FoS was first published in the 1950s. This has no bearing on its adequacy, other long established principles are still in use. The approach is referred to in the Scottish best practice guide 2007 as the most informative approach.
- The FoS approach can be applied to any material that has a shear strength, e.g. soil, rock, concrete, peat. Boylan et al note that it can be difficult to apply soil mechanics to peat. However, the peat slides towards the base layer. The amount of fibres reduces with the depth of the peat and is minimal at the base of peat, this is the area used to calculate FoS.
- Shear vane testing. Agrees that this is indicative of peat strength only, not definitive. Is used to assess sites against an in house database of results including peat failures such as Derrybrien (250+ results). A similar shear vane profile to a

failure site may be an indication of difficulties. Would be taken into account along with peat thickness and slope angles.

- Use of average values. These are not used for undrained analysis, which is the key analysis with regards to construction induced failures. All such failures are due to undrained loading condition. This is the instantaneous strength. Indicated by the shear vane. The assessment is also based on professional experience and judgement, local and site specific information to estimate the lower bound value, it is not just arbitrary. Drained analysis is used to assess if the overall site would be susceptible to rainfall induced failures, regardless of the presence of the proposed development. Generalised values are used for effective strength parameters because it is very difficult to establish these.
- Argues that the presence of more roads and concrete on a site could reduce the likelihood of a slope failure in an extreme rainfall event. Refers to Pollatomish failure in 2003, where an extreme rainfall event washed the peat off the site. Derrybrien was an undrained failure, i.e. construction induced.
- The oberver's mathematics are wrong. The unit weight of soil and water used are wrong.
- The FoS figure of 1.3 is based on international experience of slopes. A 30% margin of safety is considered a reasonable for peat slopes and is best engineering practice, e.g. most highway and railway slopes are designed to 1.3 FoS.
- Reference of padding of the dataset with irrelevant information. Rejects this, the AGEC report identifies areas where there is a low FoS, however these are considered in more detail. Geotecnical experience used for drained (long term) analysis. Long term loading of peat will increase its strength, consolidation theory.
- AGEC are aware of the serious consequences of a peat slide and would never look to understate the risk of instability.

Dr. O'Cathain Further Comment:

- Queries information about shear strength at each turbine location. Dr. Jennings – AGEC use a cautious estimate, this this case 6 kpa. This estimation is based on the shear vane measurement of soil and subsoil values, slope angle, peat thickness and strength, comparison with the in house database, also an experienced site inspection.

2.2.20 Submission of Máire Ní Raghallaigh

- Making a submission on behalf of her parents. Mairtín and Treasa Ní Raghallaigh.
- Observers could not view EIS in medium of Irish.
- Question why a national EIA could not be carried out for the proposed development.

Comment of Eamon Galligan:

- Questions whether the observers sought an EIS in Irish.

Observer:

- They did not at the public consultation. This should have been available in the initial stages, in order to give people the opportunity to be completely involved in the early stages.

2.2.21 Submission of Peter Sweetman and Associates

Legal Issues:

- Under EU legislation and case law the competent authorities are obliged to remedy the failure to carry out EIA. The detailed procedural rules applicable in that context are a matter for the domestic legal order of each member state. Under the principle of procedural autonomy of the member states and the principle of equivalence and effectiveness, it is for the national courts to revoke/suspend a consent already granted in order to subject the project to EIA in accordance with the requirements of the EU Directive, or alternatively for the individual to claim compensation for the harm suffered.
- While community law cannot preclude the applicable national rules for allowing in certain cases the regularisation of operations or measures which are unlawful in the light of community law, such a possibility should be subject to the condition that it does not offer the persons concerned the opportunity to circumvent the community rules or to dispense with applying them and it should remain the exception.
- Under the principle of co-operation in good faith, member states are required to nullify the unlawful consequences of a breach of Community law. The competent authorities are therefore obliged to take measures necessary for the remedy of failure to carry out EIA, e.g. the suspense of a consent already granted because of a failure to carry out such an assessment subject to the limits resulting from the procedural autonomy of member states.
- While the term 'development consent' is modelled on certain elements of national law, it remains a Community concept, i.e. Irish planning regulations cannot be used to circumvent Community law. The Board is required to make 3 decisions, i.e. AA screening, AA, EIA and planning. The classification of a decision as 'development consent' within the meaning of article 1(2) of the EIA Directive must be carried out pursuant to national law in a manner consistent with Community law.

Project Splitting and Cumulative effects:

- The purpose of the EIA Directive cannot be circumvented by the splitting of projects and the failure to take account the cumulative effect of several wind energy projects must not mean that in practice there will not be a significant combined environmental effect. This principle has been established in many European legal cases.
- The planning authority has permitted several developments including Cloosh (no EIA or AA), Uggool (overlapping the subject site, no EIA or AA on that development).
- VA0016 strategic infrastructure permission by the Board for a new substation, underground cabling and associated works at the subject site. No EIA carried out by the Board. The subject proposal relies on that decision.
- Subject development fails European law.
- The planning authority also granted permission for Lettercraffroe and Seecon wind farms in close proximity. These did not have EIA and are connecting into the permitted substation at the development site.
- 11/429, permission for 07239118, granted permission, no EIA or AA.
- Possibility of judicial review if the Board grants permission.

AA:

- Sweetman judgement. AA cannot have lacuna and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the proposed works on designated sites. It is for the national court to establish whether the AA meets these requirements.
- Kelly v ABP. Board's obligations in relation to stage 1 screening for AA. Agreement on nature and purpose of screening with regard to European case law. The possibility of a significant effect on a designated site will generate the need for AA. The requirement at this stage is that a plan or project likely to have a significant effect is a trigger for the obligation to carry out AA. There is no need to establish such an effect, merely the possibility of such an effect. Refers to NPWS submission on file and limited screening carried out in AA of proposed development. No proper screening carried out on previous decisions mentioned above. Sites cannot be screened out just because they are beyond a certain radius. De minimis threshold is very low for screening. Refers to current Killaloe bypass case with respect to EIA Directive.
- Ballyroan judgement (Cluddaun wind farm case). Impossible for the Board to grant a permission on points that have already been referred to the Court of Appeal. Decision on AA, points relating to (1) restoration, obligation on the Board to ensure that the development would not affect an NPWS objective regarding restoration of a cSAC outside the development site; (2) best scientific evidence, obligation on board to seek best scientific evidence, must be no lacuna, substantial peatland issues raised by Dr. O'Cathain, any bog slide on the site would affect a cSAC. Was Court obliged to have regard to additional evidence relating to impacts of on the Freshwater Pearl Mussel, which was not presented to the Board as part of the AA, does this represent a lacuna in the information put before the Board? To what extent is it lawful for the details of mitigation measures to be left for post permission agreement with the Board?

Peatland Issues:

- Questions Mr. Jennings if site is flat or undulating. Mr. Jennings states that the site is undulating.
- Major lacuna in the EIS as to the nature of the site and the relevant slope, i.e. the underlying bedrock.

Site Notice:

- Uggool, proposed revision to 03/6992, ref. 11/1735. Proposal to change the 20 permitted turbines to increase the tip height from 110m to 125m. No reference to any EIA. The application should have been invalidated.

Seecon Permission by An Board Pleanala, Galway WES (11/429 239118):

- Board decision for a wind energy development with same applicant as the subject development. Board direction had regard to the EIS, the NIS, the submissions and observations to the Board, the Inspector's report. The Board did not accept the Inspector's recommendation to refuse permission, noted that the Galway WES had been subject to SEA. The strategy is flawed and was not subject to proper SEA.
- The site is located in a strategic area for wind energy but the strategic area includes numerous designated sites.

- Board decided that Inspector's concerns about cumulative impacts could be mitigated by co-ordinated construction phasing. Relying on monitoring after the effect. No evidence of compliance.
- Conditions of permission. Points of detail to be agreed but the schedule of construction is more substantial than a 'point of detail'. Same issue arises r.e. monitoring of water quality, this is a lacuna. Doesn't comply with European law. People Over Wind Case.

Peat Management:

- Peat management plan gives no information as to the management of the existing stumps subsequent to deforestation.
- 3 existing quarries at the overall Galway Wind Park, what is their status under section 261A? All would require AA.

Seecon Permission (11/429):

- Board decision was subject to a condition requiring an environmental health and safety management plan, subject to ongoing monitoring by the planning authority, how can this be carried out?
- Same landowner, Coillte, in all Galway Wind Park developments. Questions the entitlement of this body to develop wind farms in partnership with others. Refers to role of Bord na Mona in Bellacorick case.
- Asks planning authority if compliance documentation has been submitted in this case. PA states that this would be available online.
- Comments r.e. costs, current judicial review of Board's refusal of costs in the Cluddaun wind farm case.
- Condition of Board permission requiring transport management plan and traffic management details for construction traffic to be submitted to the planning authority. Notes size of wind turbine blades, these are oversized loads. In order to comply with this condition, the development should have submitted a traffic management plan from Galway Port to the development site, including any obstructions. Mount Lucas wind farm, trees were cut down to allow turbine deliveries to go around bends. Transport management plan for Shell tunnel boring machine was inadequate, the site and the final location of the machine delivered were not the same.
- Condition no. 13 of Seecon permission. Rock extracted from burrow pits to be assessed for suitability for road construction, regard for its propensity to generate silt unider construction conditions. That issue is not covered in the subject EIS. Rock from borrow ptis not to be sold or transported off site without prior planning permission, issue of what is the development site, sucbmits that all Galway Wind Park developments are under same ownership and part of same overall development. Should be the subject of a holistic EIA.
- Condition that the name of the wind farm should be in Irish, it is actually in English. Other observer made a submission through Irish. The Board has a duty to ascertain if a person wishes to give their evidence to the hearing in Irish. Board's treatment of the Irish language in this case is fundamentally flawed. Contradicts a condition requiring signage at the wind farm to be bilingual in Irish and English.

10.3 Day Two July 15th 2015

10.3.1 The hearing resumed as Mr. Sweetman continued his submission.

10.3.2 Continuation of Peter Sweetman Submission

Seecon Permission:

- Planning authority has not made compliance documentation available online. No letters of compliance from planning authority. No written approval of documentation submitted.
- Observer visited the site last night, current development in the area does not comply with the terms of planning conditions.
- Wishes to make a submission. Obligation to remedy a failure to carry out EIA. Non-compliance with conditions would nullify any EIA carried out. All of the Galway Wind Park developments in the area are all intervisible and interconnected. Example of project slicing.

Other Planning Applications in the Vicinity of the Development Site:

- Primarily permitted wind farms.
- De minimis reference to relevant planning history in the area, inadequate to consider only this and not other permitted wind farms in the area. Should have a list of developments visible from the subject site.
- 07VA0016 lack of compliance documentation available on Galway County Council website, no evidence of compliance with any of the Board's conditions in this case. Non compliance by a connected developer on another permission within the subject site. Is unable to make a submission on this matter due to the lack of available documentation. Cannot extend an unauthorised development. Notes lack of response of planning authority on this matter.
- Will make a submission to the planning authority in relation to non compliance with these matters.

Comments on health matters:

- Shadow flicker impacts on epileptics. Ministerial guidelines do not address this issue. Submits a document relating to this matter, relating to general health impacts.
- Compliance with Ararhus convention. Fee for attendance at Oral Hearing, which is sent back to the developer, current court case in relation to this.

Conflict of Interest:

- Other developments in Galway Wind Farm were carried out by Fehily Timoney. Conflict of interest with certain Board Member.

Applicant Response:

- Comment r.e. national landscape strategy. This would not change the landscape character and visual impact assessment in the EIS.
- Case law. Some issues raised out outside the responsibility of the current applicant. Accepts that cumulative impact of other projects must be taken into account, this has been addressed in the submitted EIS. The subject application complies with legal obligations regarding EIA.
- AA. The Board will be aware of the Kelly case and Sweetman judgement, Waddenzee case. No lacuna in AA. Stage I screening did occur during this project. The Board requested further information on the matter and the applicant provided further elaboration. Sites were not screened out solely on the basis of

distance, other parameters and criteria were used. Another site was added into the Stage 2 assessment on foot of concerns raised by the NPWS.

- EIA. Board's requirement to carry out EIA with a full record of same, Kelly case. Agrees with Mr Sweetman on this matter. Important that Inspector's report contains a record of EIA if it is adopted by the Board. May have been some shortfall in the Board record in some recent decisions.
- Doon road. Requirement of Board that the applicant prepare a habitat enhancement and bog restoration plan, this will address some of the concerns relating to impacts from this.
- Can't comment on matters relating to compliance with other permissions. These are enforcement issues, to be pursued separately.

Dr. Jennings on Behalf of Applicant Response to Peatland Issues Raised by Mr. Sweetman:

- Comments on southern part of site. Concurs that the terrain south of the Doon road is flat, not normally associated with peat land sliding. Lower risk of landslide then north of the road. Hard terrain is submerged and covered with blanket peat, there are softer hollows. Appears flat but differing underlying ground conditions, agreed with Mr. Sweetman on this matter. AGEC does take the underlying surface into account. Carries out 5 probes at turbine bases at 10m spacing around the turbine, one at each corner and one in the middle. This is to identify any changes in underlying ground conditions. Generally find no great difference between ground and underlying slopes. The probe with the deepest depth of peat is used in the calculations, takes account of the possibility of a slope in any direction.
- The infill hollows are full of peat, not possible to fail as a landslide. It is contained within a topographic hollow, peat can't go anywhere. Separate health and safety risk associated with construction in areas of deeper peat but not an environmental risk. Dealt with in Appendix 13, lists mitigation measures for working in deeper peat.

Mr. Sweetman Additional Comment:

- Lacuna relevant to the EIA and priority habitat in relation to inadequate peatland depth measurements. Measurements only in relation to turbine locations but not to the different underlying slope at the overall site, risk of landslide to Corrib.

Dr. Jennings Response:

- Probes at all turbine locations. Overall >1,000 probes to measure peat depth throughout the site. All measurement of blanket bog. Where there is a flat surface covered in peat with subsurface depressions filled with peat, a peat failure cannot go anywhere.
- This point is contested by Mr. Sweetman who notes the proximity of the site to the Corrib. Dr. Jennings – the site is not in the Corrib catchment. The AGEC study only looks at areas of turbine construction, including new roads, this is the initiation point for a failure.

Mr. Sweetman Additional Comment:

- Applicant hasn't looked at the overall development, hasn't considered all potential impacts on Connemara Bog Complex SAC. This is a lacuna.
- Flat area is turbines 9-29, all priority habitat, even if not designated.

Planning Authority Response:

- Page 18 of WES, Appendix 4 of CDP. Section 2.4 EIA. Paragraph refers to scoping of SEA of WES, potential to significantly impact on Natura 2000 sites, HDA carried out.
- SID applications compliance. Planning authority is given documentation to display in their offices. Compliance on SID is available but may not be online. Planning authority will try to provide information on their website.
- Other applications in the general area. Compliance documentation is available on the public file for each individual case. Some outstanding compliance with regard to roads and other issues, ongoing process.

Mr. Sweetman Additional Comment:

- SEA of WES is flawed as large areas were screened out by the developer of the current case, which were screened in by the SEA of the WES.
- No evidence of compliance with other SID cases. Not on website.

Eamon Galligan Comment on Behalf of Applicant:

- Applicant does not have a view that the SEA of the WES is flawed.

Planning Authority:

- Compliance correspondence has been submitted and the planning authority is replying to it.
- Did not consider that the applicant had any issue in relation to the SEA of the WES.

10.3.3 Sean O'Muirí

- Notes planning authority statement that visual impact of development is not considered significant from local road network. Questions which roads the planning authority assessed the site from.
- Developers agreed at pre-planning consultation that the development would have a significant visual impact on the local community.
- Significant visual impact from houses in the Oldtown area. Detrimental impact on the landscape and on the community.
- 26 turbines discussed at initial public consultation, not 29 turbines. No consultation on total scheme of 29 turbines.
- Quality of photomontages submitted at pre-planning was questionable. Showed proposed turbines in the context of other proposed/permitted developments to minimise visual impact. Knockranny wind farm was indicated as approved. Attempt to coerce local residents to accept development.
- Development will have significant visual impact due to elevated nature of the site.

Applicant Response Brian Keville:

- Several pre planning meetings and correspondence with residents of the Oldtown area. Accepted the opinion of the local residents on visual impacts without agreeing with that assessment. Opinions on landscape are subjective.
- Accepts that public consultation layout consisted of 26 turbines. The entire project layout was subject to 17 separate revisions to optimise the layout, did increase to 29. 2 of the 3 additional turbines were in the lower elevation of the site, below the Doon road.

- Produced individual photomontages from houses in Oldtown area as part of pre-application consultation. Applied same methodology as used in application documents.
- Knockranny turbines were shown to give full context for proposed development.
- View from Oldtown area range of 3.1-3.4km to closest visible turbine. Turbines would be those in the 1-8 cluster, north of the Doon road. Knockranny turbines are much closer to the Oldtown area.
- Could submit additional photomontages indicating views from Oldtown.

10.3.4 John Rushe and Annette Collins

Public Consultation:

- Pre-planning public consultation on the proposed development. Applicant met with the observers on 2 occasions in 2014. Both times it was agreed that the turbines north of the Doon road, particularly 1-7 represented a significant visual impact on the applicant's home. Acknowledged that no mitigation was possible. Acknowledged that there would be a similar impact on other houses to the west. Observer suggested the relocation of several turbines to the north of the Doon road, however the number of turbines in this area actually increased.
- Consultation process outlined in the Community Impact Statement is inaccurate and misleading. Record of community engagement with the developer is incomplete. Contests statement that wind farm was designed with a view to minimising potential environmental, visual and residential amenity impacts.
- Policy W5 of WES r.e. community involvement in wind energy developments. Community consultation strategy of developer and inaccurate recording process are inconsistent with this. Board should consider whether this represents proper planning.

Visual Impact:

- Refers to P19.242354, Clachan, Co. Offaly, issue of visual impact and residential amenity. Inspector's report concluded significant visual impact and intrusion due to height and spatial extent of turbines, excessively dominant and visually intrusive.
- Submits that proposed turbines nos. 1-8 would create a similar visual intrusion. Significant negative impact on residential amenities in areas of Oldtown and Knockranny to the east and north of the site, also the wider area. Also significnalty more visible than the other 20 turbines. Photomontages nos. 5-14 (except 12) when viewed from the east of the proposed site. Galway LCA section 3.28, development should not protrude above existing ridge lines. Contravention of this by turbines nos. 1-8. Low lying part of site to south of Doon road, reasonable development of this is acceptable with regard to visual impact. Contravention of County Development Plan HL94, preservation of views and prospects.

Ardderroo River and Connemara Bog Complex SAC:

- The development poses a significant risk due to elements of the development adjacent to the river.
- Eastern most borrow pit is 273m from the eastern site boundary and Ardderroo river.
- Turbines nos 1-6 are close to the upper streams of the Ardderroo River, direct aquatic link to the SAC.
- Site compound 77m above the Ardderroo River.

- P104 of revised NIS, notes from Department of Arts, Heritage and Gaeltacht, general requirement for Annex I lake habitat whtin the SAC is to restore it to high status. Proposed development will not help to achieve this objective, instead will have a negative impact.
- Development in Doonbeg, ref. PL03.PA0025. Permission refused due to potential negative impacts on the Doonbeg River. Inspector's report noted risks presented by a direct aquatic connection between the turbine locations and the Doonbeg River. Turbines nos. 1-8 within the proposed development, direct connection between streams in the vicinity and the Ardderroo River. Similar risk exists.
- Inspector should visit the site and view current upgrade and river diversion works at the intersection of the Ardderroo River and the Doon road. These clearly are having a negative impact on the river, are similar to proposed works. Cumulative negative impact on the river.

Impact on Birds:
- Bird impact assessment in EIS addendum. Note that 5 Annex I species, 2 BoCCI red species and 21 BoCCi amber species were recorded within the site. This indicates that the site is significant from a conservation perspective. Questions suitability of site for development.
- Notes that bird strike calculations indicate probable bird strike within the Whooper Swan population. Unacceptable negative impact on this Annex I species given its small population within the site.
- Permission should be refused if there is any possibility of negative bird impacts.

General:
- Adverse environmental impacts and on the lives of local residents.
- Rely on the Board to carry out a comprehensive analysis of their concerns. Considers that a refusal would be logical.

Applicant Response (Brian Keville and Eamon Galligan)
- Public consultation. Mr Keville met with Mr Rushe and other local residents several times. 3 separate meetings in February, June and August 2014. Further correspondence with Mr. Rushe as a spokesperson for local residents. More consultation than just the public meeting.
- Turbines nos. 1-8. Email regarding possible revised layout for this area, 10/09/2014. The closest turbine is >3km from any house in the Knockranny area, over 6 times the recommended separation distance from the closest house in the Knockranny area. Reasonable distance in order to protect visual and residential amenity and in accordance with current best practice. Email of 30/09/14, detailed visual impact assessment on Knockranny area, different conclusion.
- Different views on the significance of the visual impact. Often not possible for 2 parties to agree on the subjective matter of landscape.
- Clachan decision in Offaly relates to a totally different site.

Applicant Response r.e. Connemara Bog Complex SAC (Michael Gill):
- Eastern borrow pit relationship with the Ardderroo River. Drainage system would separate the site drainage from all natural water courses via buffer zones. All works areas at the site including borrow pits would be managed. Only water treated to the highest standard would be discharged into the ground, not to any natural watercourse.

- The whole site drains to the Ardderroo river. The only works proposed at the river are the 4 culverts. Mitigation proposed, including no instream works. S50 consent from OPW, consultation with IFI and compliance with their guidelines on river crossings.
- Above comments apply to turbines nos. 1-3, borrow pit no. 3 and the site compound, i.e. all of the proposed development. Drainage mitigation is to be applied to all works areas, all of which are elevated relative to local watercourses.
- NPWS comment in relation to Annex I lake habitat, objective to restore to high status. The application of the proposed mitigation measures will result in no impact on water quality, therefore no impact on the status of lakes downstream of the site and no impact with regard to the WFD.
- Doon road upgrade, no cumulative impacts on Addderroo river due as proposed works will not be simultaneous. If silt is discharged by the current works, this will have been discharged by the time the proposed development is carried out. Issue at intersection of Doon road and Ardderroo river.

Brian Keville Response to Visual Impact Issues:

- LCA of Co. Galway, section 3.28. This is a recommendation only, has been a supporting document of County Development Plans since 2001-2002. Is not part of any policy or objective of the current County Development Plan. The WES preparation involved an independent landscape impact assessment, determined that the site area had the capacity to accommodate large scale wind farms.
- Protected views 78, 79 and 80 of the current County Development Plan. These were considered in the landscape visual impact assessment in the EIS, photomontages in the VIA consider impacts on views from the N59. Development does not contravene Policy LCM1 and objective FPV1 of the current County Development Plan relating to protected views and prospects. Planning authority did not raise any issue in relation to potential impacts on these views.

Applicant Response r.e. Birds Impacts (Chris Peppiat):

- Connemara Bog Complex is significant for avifauna. However, the site is outside the SPA and extensive surveys at the site found very low levels of Annex I species.
- Whooper swan observations, 1 collision every 41 years in collision risk model. This species breeds in Iceland and travels to Ireland in winter, breeding replacement rate is higher than this therefore no significant impact on the overall population.

John Rushe Additional Comment:

- Requests Inspector to consider the possible omission of the turbines north of the Doon road. Negative impact of these turbines on visual and residential amenities, relative to the rest of the development. Is the proposed development as a whole dependent on turbines nos. 1-8, could they be omitted?

Eamon Galligan/Brian Keville:

- The area north of the Doon road is zoned as strategic for wind energy development in the WES. Contribution of the development to local and national targets for renewable energy. Several alternative sites were included in the site selection process but did not have the same capacity for development. Omission of turbines nos. 1-8 would mean that another site would have to be developed to

meet government targets for renewable energy development as these have to be delivered on a node by node basis. Also plan led approach as per the WES.

10.3.5 Peter Sweetman on Behalf of Ronan and Eilidh Browne

- Observer lives close to Barna (Shannagurraun) wind farm.
- Still photomontages do not give a full impression of the visual impact of a moving object, i.e. a wind turbine.
- Smith et al document, submitted with several other wind farm cases including Bellacorrick and Yellow River, states no environmental C02 gain when a wind farm is developed on peat due to the environmental impacts of peat management.
- Proposed drainage measures are aspirational. Environmental impacts of current works at the site, specifically dust/limestone run off and impacts on PH of lakes in Connemara Bog Complex.

Applicant's Response (Brian Keville):

- Observer lives in Spiddal, c. 8.5 km from the closest proposed turbine. All relevant guidance acknowledges that photomontages are only one tool in visual and landscape impact assessment along with ZVI maps, landscape character assessment and classification of impacts. Photomontages prepared for currently operational projects, including Shannagurraun site, are very accurate.
- Shannagurraun site would be on much higher ground relative to the observer's house than the Ardderroo site, also a lot closer. The higher land on which the Shannagurraun site is located would screen the proposed development from the observer's house. Refers to photomontage no. 18, adjacent to the Shannagurraun wind farm site. The observer's house is approximately 2km due south of this location.

Michael Gill r.e. Limestone Dust:

- All rivers carry silt on a temporal and seasonal basis. The PH of water naturally varies depending on this, according to climatic conditions. Process of silt removal from rivers and transfer downstream occurs on an ongoing basis. PH fluctuates in response with that. The associated aquatic environments in the rivers have an ability to tolerate this. The Doon road upgrade works are included in the cumulative assessment in the EIS.
- It is intended to source all hardcore from the on-site borrow pits, i.e. granite bedrock. Locally sourced stone will not affect downstream hydrochemistry.

Carbon Issue (Brian Keville):

- Section 9.2.3.2 of the EIS refers to Scottish research in 2009, regarding wind farms on Scottish peat lands. 154,936 tonnes of carbon equivalent losses would offset carbon as per EIS.

Peter Sweetman Additional Comment:

- Existing imported limestone road at the site, resulting in significant dust at the site at present. Rainfall will result in a flow into the river.
- Smith at Al document of 2011 is a direct contradiction of the 2008 Scottish document.
- Carbon production has not dropped in Ireland has not dropped since the construction of 1,000 wind turbines, due to spinning reserve.

10.3.6 Aine Ní Fhoghairtaigh

- The development site is located in Connemara, a beautiful, rural, idyllic landscape. Abundance of stone and little soil. Rich landscape, teeming with life. Loved and cherished by writers, poets and artists.
- Proposed development would be industrial, massively incongruous. It would dominate the visual and environmental character of this area, tourism, heritage and quality of life.
- Existing operational wind farms in Connemara stand out, e.g. 3 wind farms visible from Moycullen to Spiddal, undeniable visual dominance. No screening or assimilation. Current proposal is of a much larger scale, totally unsuitable for a delicate and fragile landscape.
- Connemara is a place of refuge for those who wish to find a quiet place. Need to preserve such places. Noise from the turbines would destroy this key rural asset.
- Connemara should be maintained so that it can be enjoyed by generations to come. The observer has strong family connections to the area for generations, who have lived in harmony with the landscape. Link to family identity, history, heritage, language. Each generation tries to improve the land a little. The proposed development would utterly change this landscape forever.
- Just because another wind farm has already interfered with this landscape, it is does not mean that the current proposal should continue this trend. We need to preserve what's left of Connemara. We don't need to develop every empty space, the area should be treasured and protected. Clustering is not enough justification for the proposal.

Applicant Response (Brian Keville):

- Baseline landscape in this area. Already heavily altered due to afforestation and recent energy infrastructure, telecommunications masts. There will be turbines in the general area irrespective of the proposed development. The area is classed as strategic in the WES. Horseshoe shaped ridge surrounding the site screens a large number of the turbines from views.
- Low population density of 2.9 people per sq.km. in the surrounding area. The WES included a landscape capacity assessment, which considered this area as the only part of the county suitable to accommodate this scale and type of development. 21 of 29 turbines are in the strategic area. Turbines nos. 1-8 are all within the strategic area. Development of the subject site allows for a cluster of wind energy developments in this part of Galway rather than the development of other sites further west, and spreading of turbines into other parts of the county.

Planning Authority r.e. Noise from Existing Wind Farms in the Area:

- Lettergunnet wind farm compliance on noise submitted recently. Difficult for the planning authority to sign off on this because of the use of two different noise parameters. Section 146A application to the Board to clarify which parameter should be used.

10.3.7 Applicant Comment r.e. Submission of Photomontages (Eamon Galligan)

- Applicant does not wish to submit additional photomontages from Oldtown area, as previously discussed, as it would be confusing to put this into the arena.

- The existing photomontage no. 14 in the EIS indicates the general view from the Oldtown area, in the vicinity of the dwellings referred to previously.

10.3.8 Conditions Module

Conditions Recommended by PA (Questions of Applicant and Response of PA):

- Condition no. 5. Works permitted under 13/658, i.e. Doon road/N59 junction works. Suggested to include '*alternative permitted construction access linking N59 to Letter Doon road'*, current proposal 15/813 for new bypasss of residential properties on Doon road. New wording of condition no. 5 to allow for this possibility. Doon road assessed as turbine delivery route in EIS, proposed bypass would be temporary and has also been assessed for capacity for use as turbine haul route. PA has no objection, 15/813 is currently pending.
- Condition no. 7. Application of mitigation measures. Paragraphs (a) and (b), text is repeated. Wishes to clarify. PA has no objection. Clarifies that it should have read (a) and (b) of condition no. 7.
- Condition no. 8. Revised proposal to retain existing agricultural building. No reason for any agreement in writing in relation to this aspect of the development. Request omission of this development. PA has no objection assuming that the Board is satisfied with the revised proposal.
- Condition no. 12(b). Refuelling or machine servicing within designated impermeable bunded areas drained by an oil interceptor. Requests insertion "*or in accordance with proposals outlined in section 4.3.13.2 of the EIS*" as there may be some requirement to refuel large construction machines at their working location in remote parts of the site as it is not practical to move them to the construction compound for refuelling, e.g. cranes. PA has no objection, comments that this is standard practice. Requests that the condition is worded in such a way as to explain what is required rather than refer back to the EIS.
- Condition nos. 12 (e) to (g). No modifications requested. These matters are covered in the EIS, therefore the applicant has addressed the matter.
- Condition no. 16 relating to treatment of excavated peat. No modification requested, details of this matter are provided in the Peat Management Plan and drainage plan submitted in the EIS.
- Condition no. 17 r.e. noise. Proposes a modification to increase sensitivity to this low noise environment, wind speeds below 6 m/s, compliance with noise criteria with a lower limit of 40 dBA, in order to comply with Wind Energy Development Guidelines for low noise environment. Updating of the standard referred to in the planning authority conditions. Newer standard is probably more stringent, i.e. ISO 1996-1:2003. Noise monitoring results to be submitted to the PA as per the EIS, results wouldn't be agreed with the PA. Planning authority has no objection.
- Condition no. 20 r.e. decommissioning. Suggests that it would be better to leave concrete foundations in situ and cover them with suitable materials from the borrow pits on site as a more sustainable approach than removing them, as proposed in section 4.11 of the EIS. PA has no objection.

PA Comment r.e. Cash Deposit, Condition no. 24:

- Based on standard used for other permitted wind farms in the area.

Discussion r.e. Issue of Commonage:

- Submission on behalf of Conor O'Brien r.e. access to the development.

- Consent was granted by owners of the Commonage for Coillte to have access to lands further west for a separate development, however this does not transfer the developer of the subject proposal. This entitlement is a right of way that inures for the benefit of the land. Applicant has entered into discussions with Coillte to make use of their right of way.

11.0 PLANNING ASSESSMENT

11.1 Introduction

11.1.1 I have examined the file, visited the site and conducted an Oral Hearing in respect of this application. The following are identified as the significant issues to be assessed in this case:

- Principle of Development
- Legal and Procedural Issues
- Landscape and Visual Impacts
- Ornithological Impacts
- Bats Impacts
- Other Ecological Impacts
- Water Impacts
- Peatland Impacts
- Roads and Transportation Issues
- Archaeology
- Impacts on Residential Amenities (Noise and Shadow Flicker)
- Community Gain Proposals
- Other Issues
- Planning Conclusion

11.1.2 The Environmental Impact Assessment and Natura Impact Assessment are set out separately below.

11.2 Principle of Development

11.2.1 The site is within a wider area known as the 'Galway Wind Park', which was designated as the most suitable part of Co. Galway to accommodate wind energy developments under the Co. Galway WES. The area was designated as such in order to contribute towards the national 40% target for renewable energy production, as well as objectives for renewable energy infrastructure as set out in the Regional Planning Guidelines. Large tracts of land in the area are zoned as 'SA Strategic Areas' or 'AP Acceptable in Principle Areas', ref. Map WE-5A of WES. The designation of this area in the adoption of the original WES in 2011 reflected an emerging pattern on the ground as several large scale wind energy developments had already been permitted on lands to the north and west of the site (22 no. turbines at Cloosh and 8 no. turbines at Lettercraffroe). As noted above and in the enclosed map, several more wind energy developments have since also been granted in the vicinity (16 no. turbines at Uggool and 23 no. turbines at Seecon). The planning authority also permitted 11 turbines at Knockranny to the immediate east, however the Board decision remains pending, ref. PL07.243094. The subject application is therefore the latest in a series of proposals/permissions for large scale wind energy developments in this area. Permission has also been granted for road works and electricity transmission

infrastructure to facilitate these developments. The development would consolidate an established area of wind energy development, thus avoiding piecemeal development, and would make use of existing roads and electricity infrastructure.

11.2.2 Figure 2.10 of the EIS superimposes the subject site boundary over the policy areas of the WES. Approximately 75% of the site is located in a 'Strategic Area', i.e. the most suitable locations for wind energy development. A smaller area on the western side of the side, adjoining the permitted Uggool wind farm, is designated as 'Open for Consideration'. A total of 22 of the 29 no. proposed turbines are located within the 'Strategic Area'. These WES zoning designations have been adopted based on analysis of the available wind energy resource, the electricity transmission network, transport and utility infrastructure, natural heritage designations, ground conditions, built heritage, landscape character and sensitivity, proximity to residential properties and recreation/tourism/amenity issues. The WES was subject to the SEA process. Section 7.4.2 of the Galway County Development Plan 2015-2021 states a policy to maximise wind energy development in areas designated as 'Strategic Areas', 'Acceptable in Principle' and 'Open for Consideration' in the WES. Proposals in all of these areas are to be considered on a case by case basis, subject to meeting specific requirements and guidance contained within the strategy. I note that the planning authority is favourably disposed towards the proposed development. Its submission on file notes that the project would contribute up to 24% of the West Galway target capacity under Gate 3 and recommends approval based on, among other considerations, the site's zoning under the WES. In addition, with regard to overall County Development Plan policy, the site is not located in an area where constraints apply, e.g. presence of scenic routes or important facilities such as an airport, i.e. there is no conflict with any other relevant policy. Having examined the Gaeltacht Local Area Plan 2008-2018, I am also satisfied that the development is generally in accordance with its overall objectives.

11.2.3 On the basis of the foregoing, it is considered that the development is acceptable in principle at this location and should be assessed on its merits, in accordance with national and local policy on wind energy developments. In addition, given that it involves the development of land zoned as 'strategic' for wind energy development, it would help to achieve national, regional and local objectives for renewable energy production. It would also maximise the use of already permitted/constructed roads and electricity infrastructure.

11.3 Legal and Procedural Issues

11.3.1 <u>Site Access and Submission of Conor O'Brien</u>

The observer Conor O'Brien has objected to the proposed development on the grounds that he has an interest in private lands to the east of the development site, i.e. the Doon Commonage. The Doon road crosses these lands and it is submitted that the developer would need the consent of all of the 25 no. Doon Commonage landowners to access the development site. These landowners reached an agreement with the developer of the adjacent Cloosh wind farm to access that permitted development, however no such agreement has been reached with the current applicant. The initial submission requested that the Board address the issue with the applicant. The matter was raised at the Oral Hearing, at which the applicant's legal representative made a detailed response, see above. With regard to the

information presented at the Oral Hearing, it appears that the applicant proposes to rely on the right of way of the current landowner of the development site, i.e. Coillte, and has entered into discussions with them to reach some agreement on the matter.

I am of the view that this issue is not material to a consideration of whether or not the proposed development can be permitted with regard to the following matters:

- Works to the Doon road, which would facilitate the proposed development, are already permitted and under way and have been taken into consideration in the submitted EIS;
- The Board generally does not arbitrate on matters of dispute in relation to private property as they are not strictly planning matters;
- The granting of planning permission does not entitle the applicant to carry out works, if the consent of 3rd parties is required. As per section 34(13 of the Planning and Development Act 2000 (as amended), "*A person shall not be entitled solely by reason of a permission under this section to carry out any development*";
- The applicant appears to be taking measures to resolve the issue.

11.3.2 Project Splitting and Cumulative Impacts

The recent case Pol O Grianna and Others v An Bord Pleanála is of particular importance to all wind farm proposals. It related to ABP case PL04.242223 (12/05270), which granted permission for a 6-turbine wind farm (13.8 MW), electricity sub-station and associated works at the townlands of Derragh, Rathgaskig & Lack Beg near Ballingeary, Co. Cork. The application was accompanied by an EIS and by an AA screening report. This decision was the subject of judicial review. Paragraph 26 of the O'Grianna judgement notes that the Board decision did not involve any assessment of the potential environmental impacts of the grid connection stage of the wind farm development. Paragraph 27 states;

"*I am satisfied that the second phase of the development in the present case, namely the connection to the national grid, is an integral part of the overall development …, the connection to the national grid is fundamental to the entire project, and in principle at least the cumulative effect of both must be assessed in order to comply with the Directive*."

The judgement therefore concludes that the wind farm and its grid connection are in reality one project. The Court quashed the Board's decision on the grounds of 'project splitting'. The Board sought remittal of the application so that it might complete an EIA of the whole project, i.e. both wind turbines and grid connection, rather than the developer having to recommence a new planning application process. On April 16th 2015, the High Court agreed to remit the subject wind farm application back to the Board rather than require the entire planning process to be recommenced before the planning authority. However, at the time of writing, the applicant has sought leave to appeal the remittal decision to the Supreme Court.

The EIS provides detailed information regarding grid connection. Section 3.2.2 outlines the relationship of the proposed development to current grid connection allocations. Co. Galway has been assigned 349.59 MW of the wind energy element of Gate 3 grid connection offers made by the Commission for Energy Regulation to renewable energy generators. A total of 11.89 MW has been allocated to wind farm

projects in East Galway and is not relevant to the subject site. A total of 40.9 MW is utilised by the operational Lettergunnet (22.7 MW) and Shannagurraun (18.2 MW) wind farms and is connected directly into the Salthill 110 kV electricity substation. The remaining 296.8 MW is referred to as the West Galway subgroup. Table 3.1 of the EIS sets out that a total of 196 MW of capacity has already been permitted in wind farms at Uggool, Lettercraffroe, Cloosh, Seecon, Knockalough and Rosaveel, leaving a remainder of 100.8 MW. The parent company of the applicant Ardderroo Windfarm Ltd. controls grid connections DG191 and TG62, totalling 124.6 MW. It is intended to accommodate 21 MW of this allocation at the permitted Knockalough wind farm site. This leaves 103.6 MW of Gate 3 grid connection capacity in West Galway that has not yet secured planning permission. The subject proposal at Ardderroo would accommodate 87 MW.

In terms of physical infrastructure, the development would connect to the permitted Letter 110kV substation (PL07.VA0016), located within the site on the northern side of the Doon road. This substation was under construction when the site was inspected in June 2015. The proposed development includes a new substation within the development site, to connect to the Letter substation via an underground cable. Due to the status of the area under the Galway WES, all grid connections and cabling necessary to connect the Letter substation to the national grid have either been permitted or are the subject of Section 5 declarations by the planning authority (see planning history above). The Letter substation connects via an underground cable along the Doon road to the permitted 110 KV Salthill-Screeb 110kV overhead line (PL07.VA0004), where it crosses the road circa 2km west of the site. There is an alternative possibility of locating a substation on the western side of the development site and connecting to the grid at the existing Screeb 110kV substation, however this is a less optimal route due to greater distance from the proposed wind farm. The following points are noted:

- All works required to connect the development to the national grid can be undertaken within the development site, ref. EIS figure 4.20.
- The adjacent Knockranny proposal (PL07.243094) currently under consideration by the Board would have a total capacity of 33 MW, this would result in a total installed capacity in excess of the remaining 103.6 MW as outlined above if both developments are permitted.

The EIS takes the above grid connection into consideration in its assessment of environmental impacts, along with permitted and proposed wind energy developments and related infrastructure in the area. On this basis, it is considered that the proposed development does not result in 'project splitting' as due consideration has been given to permitted and proposed developments. Observers' comments refer to non-compliance with conditions of permissions for wind energy developments and other infrastructure works in the area, however the issue of planning enforcement is a matter for the planning authority and is outside the scope of the subject case.

11.4 Landscape and Visual Impacts

11.4.1 Introduction and General Policy Provisions

The issues of landscape and visual impact were among the most contentious points in the third party submissions on file and were the subject of much debate at the Oral Hearing. The third parties stated concerns about views from residential properties in

the Oldtown residential area and on views from the N59 route, also general impacts on the special character of Connemara. These concerns were heightened in the context of the existing permitted and proposed developments in the vicinity and it was felt that there would be a substantial cumulative visual impact. It was also submitted that turbines nos. 1-8 at the northern end of the site would have a particularly significant impact due to their elevated location.

The development site is characteristic of the "Mountain Moorland" landscape type as identified in the Wind Energy Development Guidelines (2006). The Guidelines note that it may be acceptable to locate wind energy development on ridges and peaks in these areas. Larger wind energy developments can generally be accommodated because they correspond in terms of scale in the typical extensive areas of continuous unenclosed ground. All spacing and layout options are usually acceptable, however random layouts are best for hills as the open expanse of these landscapes can absorb a number of wind energy developments. There are generally no height restrictions. The proposed scheme is in accordance with these recommendations as it is situated on a hillside within an undulating area of hills that is characterised by a mix of land uses.

Chapter 4 of the Galway WES provides strategic guidance on the capacity of different Landscape Character Areas (LCAs) within the County for wind energy developments, based on the Co. Galway Landscape Character Assessment published by Galway Co. Council in 2002. The Assessment divided the county into 25 LCAs and classified their sensitivity as follows:

- Class 1 – Low Sensitivity
- Class 2 – Moderate Sensitivity
- Class 3 – High Sensitivity
- Class 4 – Special Sensitivity
- Class 5 – Unique Sensitivity

Both the Assessment and the WES indicate that the subject site is within Landscape Character Area 10, 'East Connemara Mountains (Moycullen, Recess to Glinsk)'. This area is described as scenic but not remarkable and has a landscape sensitivity 'Class 3 – High' with pockets of 'Class 4 – Special'. Section 3.28 of the Assessment states with regard to LCA 10:

Development is prohibited in the areas (indicated as class 4 on the landscape sensitivity map) that carry a statutory nature designation. In the remaining mountainous areas (indicated as class 3 on the landscape sensitivity map), development should not protrude above the existing ridgelines in order to maintain long distance views of the Connemara mountains. Similarly long distance views to Galway Bay and the Aran Islands from elevated roads on the mountainsides should not be obscured; development along these routes should be located on the northern side of the N59 road to maintain views for tourist traffic. Where possible development should be set within existing forestry or surrounded by coniferous forestry for screening.

Table WE7 (WE10 in the 2011 WES) indicates that LCA 10 has an overall low to moderate sensitivity and states with regard to this area:

This large scale landscape is less sensitive to wind energy development The Forestry plantations and accompanying clearfelling and access tracks decrease overall sensitivity and the area is not adjoining any significant tourism, scenic or recreational areas. The topography also offers opportunities for screening. The scale and topography of this area decreases sensitivity to large wind energy developments. This area could accommodate a large wind energy development.

Table WE7 states that LCA10 is appropriate for a large wind farm (defined as 11-25 turbines) in' Strategic Areas' and medium (6-10 turbines) in areas 'Acceptable in Principle' and 'Open for Consideration':

The landform and land use combined with existing access tracks and current clearfelling activity increase the capacity of this landscape to accommodate wind energy development. The large scale and rolling landform also increases the capacity of the area for such developments. A large scale wind energy development could be accommodated within this area outside Natura 2000 sites and Class 4-Special landscape sensitivity, subject to detailed assessment. Should other wind energy developments be permitted, cumulative landscape impacts should be assessed. Mitigation of visual impacts on the slopes of the mountains resulting from infrastructure to the turbines is required to minimise any long distance views.

Figures 11.3 and 11.4 of the EIS superimpose the development site outline over the LCAs and landscape sensitivity rating of the Assessment The site is located entirely within an area with the landscape sensitivity 'Class 3–High' and is bound to the south east by an area designated as 'Class 4–Special'. It is considered that the proposed development is generally in accordance with the provisions of the WES.

Both the 2009-2015 Galway County Development Plan and the current 2015 County Development Plan include the same basic landscape characterisation and sensitivity ratings as derived from the 2002 Landscape Character Assessment, also the same designated views and prospects as derived from the 2002 Assessment. Potential impacts on individual views and prospects within the 20km radius are considered below.

Having regard to these national and local policy provisions and to the 'strategic' designation of most of the site in the Co. Galway WES, it is considered that the area can visually accommodate a large wind farm at the subject site, subject to further consideration of impacts on specific vantage points, as discussed below. I note in particular the following statement in Section 3.8 of the Wind Energy Guidelines:

"*The visibility of a proposed wind energy development from designated views or prospects would not automatically preclude an area from future wind energy development…*"

Notwithstanding, it is proposed to address the visual impact of the development on the landscape within both the local and wider environment. The Landscape and Visual Impact Assessment (LVIA) carried out in the EIS using photomontages is used within this report for reference, note in particular Figure 11.2 of the EIS, which indicates designated views and focal points. I also visited the locations of all of the listed viewpoints identified in the LVIA. The following assessment draws on the guidance provided in the Scottish Natural Heritage (SNH) documents '*Assessing the*

Cumulative Impact of Onshore Wind Energy Developments' (March 2012) and '*Siting and Designing Wind Farms in the Landscape Version 2*' (May 2014).

11.4.2 Impacts on the N59

EIS photomontages nos. 6, 8, 10, 11, 13 and 17 are all views from the N59. All are deemed to have 'slight' or 'imperceptible' views, except for view no. 17, which has 'no impact'. Map HL2 of the 2009-2015 County Development Plan indicates designated views nos. 78 and 79 along the N59, '*views of several peaks south of the N59*'. Photomontages nos. 10 and 11 at Roscahill correspond to designated view no 79, and photomontage no. 13 corresponds to designated view no. 78. The development is partially visible from these locations. The EIS deems the overall impacts 'slight' at all locations and I concur. Having viewed the site many times from the N59, I accept this overall assessment. Although close to the N59, the proposed development would be, at most, intermittently and partially visible due to its location on the southern slope of an existing ridge. It would also always be visible in the context of the other Galway Wind Park developments, i.e. the additional overall impacts would be slight.

11.4.3 Impacts on Oldtown and Other Residential Properties to the Southeast of Site

Several residents of this area have objected to the proposed development on the basis of significant adverse visual impacts. The Oldtown area is located north west of Moycullen and centres on a local road running in a south westerly direction off the N59. It is characterised by a substantial amount of scattered residential development. Parts of the wider area have the landscape sensitivity 'Class 4–Special', this is associated with their location within the Connemara Bog Complex SAC and pNHA. However, the lands within the designated sites are generally beyond the reach of public roads and outside areas of residential development. Therefore, the locations of most residences are within the lower 'Class 3–High' landscape sensitivity rating.

The applicant submits that photomontage no. 14 is representative of this area, this is considered reasonable. Having driven the local roads off the N59 and with regard to the topography of the area, I note that the local landscape is undulating and that views of the site from many locations are at least partially shielded by Newtown Hill and Knockranny Hill. The EIS assessment notes that this is a relatively enclosed, undulating landscape with land cover including trees and scrub and I accept this point. The location of photomontage no. 14 is one that has a more open view towards the development site and therefore indicates a location of greater potential visual impact. The EIS notes that the development site is located approximately 3.24km from this vantage point. Given the scale of the proposed turbines, they would be prominently visible from this location. The photomontage indicates that a total of 9 no. turbines would be visible in a scattered/staggered formation against a backdrop of hills. The cumulative photomontage indicates a total of circa 29 no. turbines at least partially visible (including blade tip only). The proposed development would therefore undoubtedly change the outlook from this location and would result in a noticeably greater cumulative impact then the 'do nothing scenario'. The EIS assesses the quantitative impact as 'slight'. Given that 9 additional turbines would be visible in close proximity, I would consider that the quantitative impact is 'moderate'. The EIS assesses the qualitative impact as 'moderate', based on the nature of the landscape and the context of the permitted turbines. I accept this assessment with regard to the intermittent and partial nature of views of the development due to local topography

and vegetation and to the location of the area within the lower landscape sensitivity classification 'Class 3-High'.

Photomontage no. 16 is a view from a residential area on the Moycullen to Spiddal road. As at location no. 14, the development would be only partially visible and screened by vegetation and topography. Cumulative impacts are not significant due to the intermittent nature of views. The overall impact is classed as 'Slight' in the EIS, due to the greater distance to the turbines. I concur with this assessment. The settlement of Moycullen will not have views of the development.

On this basis, I agree with the EIS assessment of the overall impacts as 'moderate'. While the concerns of local residents are noted, the visual impact on this area is considered acceptable in the context of the 'Strategic' zoning of the development site in the WES.

11.4.4 Impacts on Views to the South of the Site

There is potential for significant visual impact on lands to the south of the development site. This area to the immediate south is located within the Connemara Bog Complex SAC and has the landscape sensitivity designation 'Class 4–Special'. However, there are no protected/designated views and very little residential development. The area further to the south is within LCA 12 '*South Foothills of East Connemara Mountains*', a broad band running parallel to the coastline. This area is described in the WES as undulating heath and scrubland with regular rocky outcrops, generally undeveloped, with expansive views in a southerly direction across Galway Bay towards County Clare. There are areas of 'Class 3–High' and 'Class 4-Special' sensitivity, due to the nature designations that apply. The WES classifies the area as having high sensitivity overall and states:

"*The remote, isolated, wild and uninterrupted character of this area increases its overall sensitivity. Large scale development would alter the landscape character to a considerable extent. The open, expansive character, combined with little natural screening increases visual sensitivity."*

On this basis, LCA 12 is not zoned as suitable for wind energy development in the WES. There is arguably a contradiction in the zoning of the subject site as 'strategic' considering its visibility from LAC 12, however the WES is silent on this matter. The EIS notes that there are already 3 no. existing wind energy developments to the south of the site, i.e. Knockalough, Shannagurraun and Lettergunnet, and this point is accepted.

EIS photomontage no. 15 is a location to the immediate south of the development site. Having visited the area, I am satisfied that it represents a 'worst case scenario' of views from the south due to its uninterrupted views of the proposed development. All of the proposed turbines would be clearly visible at this location. The EIS assesses the quantitative impacts as 'significant' and also the cumulative qualitative impacts as 'significant', however this impact is in the context of a substantial number of permitted/proposed wind turbines with high visibility at this location. The EIS describes the 'do nothing scenario' as follows:

"*Wind turbines appear as a key element in the landscape, visible against the skyline along the hilltops in much of this view.*"

EIS photomontage no. 18 is a view of the site from another local road to the south of the site, c. 3.19 km from the nearest turbine. The overall impact is similar to that at location no. 15 as all of the proposed turbines would be visible and the EIS again assesses the overall impact is 'significant' in terms of quantitative and qualitative impacts. I agree with this assessment.

All of the proposed development would also be visible from viewpoint no 19, the Spiddal to Moycullen road further south of the site. However, this overall impact is lesser than that at viewpoints nos. 15 and 18 due to the greater intervening distance and to the presence of the existing Shannagurraun wind farm in the foreground. The EIS assesses the overall impact as 'slight' and I concur. In addition, the development is barely visible at viewpoint no. 20, closer to the coast at Barna. County Development Plan designated views nos. 71, 72 and 74 close to viewpoint no. 20 are all views away from the coast towards the sea, therefore no potential impact. Designated view 73, also in this area, is local views of Lough Inch only. The proposed development is also barely visible at viewpoint no. 21, further to the south west, which represents visibility from County Development Plan designated view no. 85 '*Keeraunagark north*' and at viewpoints nos. 22 and 23 (vicinity of designated view no. 107 Rossaveal), further to the south west.

Having visited this area, I agree with the EIS assessment of significant impacts on view nearby to the south of the development site. In my opinion, this is the most substantial visual impact associated with the development. Although the already permitted turbines will completely change the character of this area, the proposed development would undoubtedly make a significant additional contribution, resulting in a greater cumulative impact. However, it is accepted that the character of the area will have already changed and, as noted in the WES and in the County Development Plan 2009-2015 (Policy HL94) and Objective LCM1 of the 2015 Plan, there is a need to balance the preservation and enhancement of the amenities of places and features of natural beauty and interest against the need to develop key strategic infrastructure to meet the strategic aims of the Plan. In addition, I consider that the views from this area to the sea are of greater importance than those inland towards the hills on which the proposed turbines are situated.

11.4.5 Impacts on the Wider Area Between N59 and Lough Corrib

There are several designated views to the south east of the site, in the vicinity of Moycullen, i.e. view no. 75, *View of Llugh Bhain Uí Choinc* and view no. 76, '*View of Lough Corrib*', also view no. 81, '*View of Ross* Lake'. These are all views away from the development site and thus there is no potential impact.

Photomontage viewpoint no. 3 is a viewpoint to the north east of the development site, close to the western shore of Lough Corrib. There are no designated views or prospects in the vicinity. A total of 17 no. turbines of the development would be partially visible against the skyline at a distance of c. 7.94km. The EIS deems the visual impact to be 'moderate' at this location and I accept this assessment given the number of turbines visible and their relative proximity. However, I consider this

moderate impact to be acceptable at this location due to the lack of specific landscape designations.

Designated view no. 82, '*View of Islands on Lough Corrib*' is a view towards the development site from the western side of Lough Corrib. View no. 83 at Oughterard is also the location of the 'Western Way' route, which runs north of Oughterard. Photomontages nos. 4 and 5 are representative of this area. The development is not visible at location no. 4 due to intervening topography and vegetation. The EIS deems visual impacts at location no. 5 to be slight. Having visited the area, I consider that turbines may be intermittently visible on the skyline from some locations but, given the context of existing/permitted wind energy developments, the additional impact would be slight. Moreover, Lough Corrib is the main focal point in views from roads in the area, i.e. views away from the development site.

Designated view no. 80, '*View of peaks south of the N59*', corresponds to photomontages no. 7 and 9. The development is only partially visible from both locations (5 turbines) and the overall EIS assessment is 'slight' at no.7 and 'moderate' at no. 9. Again, I agree with this assessment.

On this basis, I am satisfied that there will not be significant adverse visual impacts on the area between the N59 and Lough Corrib.

11.4.6 Impacts on the Wider Area East of Lough Corrib

Views from Menlough at the edge of Galway City, at the southern end of Lough Corrib. This area of Galway City has a special character associated with its proximity to Lough Corrib. It has an '*Agriculture and high amenity*' zoning under the Galway City Development Plan 2011-2017 and views of Lough Corrib from public roads are protected. Although located beyond the City boundary, photomontage no. 1 is representative of views from this area as it is an uninterrupted view towards the development site, across Lough Corrib. A total of 18 no. turbines of the development are visible against the skyline at a distance of approximately 17.85 km. The other proposed/permitted wind energy developments are also visible. The EIS rates the overall impact as 'slight' in the context of the other wind energy developments. I agree with this assessment.

EIS viewpoint no.2 corresponds to protected view no. 55, i.e. '*Castle Ruins Southwest of Ballyconnellan*". This development has limited visibility due to intervening distance (c. 16 km) and topography. The EIS rates the overall impact as 'slight' with regard to the cumulative context and I also concur with this view. There are 2 no. additional designated views north east of Lough Corrib, ref. view no. 57 '*Headford Castle*' and view no. 58 '*Ross Emily Castle, North West of Headford'*. Having visited these locations, I am satisfied that the overall visual impact would be similar to that at vantage point no. 2, possibly less due to the greater intervening distance.

11.4.7 Specific Impacts of Turbines Nos. 1-8 and their Compliance with Co. Galway Landscape Character Assessment

Several of the observers' submissions stated particular concerns about the visual impacts of turbines nos. 1-8, due to their elevated location in the northern part of the site. This issue was also raised repeatedly at the Oral Hearing. It was submitted that

this aspect of the development contravenes the Co. Galway Landscape Character Assessment.

Turbines nos. 1-8 are the most visible aspect of the development in the wider landscape as they are located on the relatively elevated northern part of the site. Having examined the photomontages, I note that their omission would either completely eliminate or substantially reduce visual impacts at viewpoints nos. 1, 3, 5, 6, 7, 8, 9, 10, 11, 13, 14 and 16, i.e. views from the N59 and other areas to the east in the site. It is accepted in particular that their omission from the development would virtually eliminate views of it from viewpoint no. 14, i.e. the residential area to the south east of the development site. However, the landscape would not remain in its original state even if turbines nos. 1-8 were omitted, as the other permitted/proposed wind energy developments in the area would still be visible.

Several of the third party submissions refer to section 3.28 of the 2002 Landscape Character Assessment, which states with regard to LCA 10:

" …*development should not protrude above the existing ridgelines in order to maintain long distant views of the Connemara mountains.*"

The applicant submits that the LCA has an advisory status only as it informs subsequent County Development Plans and the WES. This point is accepted, however the above statement is repeated in the WES (see above), despite the inclusion of the northern part of the development site in the 'Strategic Area' for wind energy development. I note that the Wind Energy Development Guidelines, state that the Mountain Moorland landscape can accommodate wind energy development on ridges and peaks. On balance, given that the overall visual impacts of the development are considered acceptable as per the above discussion, and with regard to the strategic zoning of the site, it is considered that this element of the development is appropriate.

11.4.8 Other Visual Impacts

There is potential for long term visual impacts associated with the car park, roads, meteorological mast and recreational facilities, the borrow pits and the substation. The EIS does not identify any significant visual impacts associated with these aspects of the development. It is considered that significant adverse visual impacts will not arise due to the forested nature of the development site and the additional landscaping and screening proposals.

11.4.9 Issue of Cumulative Impacts

Several observers' submissions commented that the development would exacerbate the existing and potential visual impacts of currently proposed and already permitted wind energy developments in the vicinity. I note section 6.9.2 of the Wind Energy Guidelines, which states the following in relation to 'mountain moorland' landscapes:

"*… given that these landscapes comprise hedgerows and often hills, and that views across the landscape will likely be intermittent and partially obscured, visibility of two or more wind energy developments is usually acceptable.*"

The Guidelines state that cumulative effects are generally acceptable in this landscape type, depending on topography as well as siting and design of wind energy developments involved. Table WE7 of the WES also states the following regarding cumulative impacts within LCA10:

"*Acceptable depending on topography and subject to appropriate design and landscape siting to minimise adverse impact and optimise aesthetic effect and protection of heritage and amenities*."

Therefore, there is no issue in principle with the visibility of several wind energy developments in the landscape at this location.

Table 11.3 of the EIS indicates that cumulative visual impacts were considered with regard to all existing/permitted/proposed wind farms within a 20km radius of the development site. Overall, it was found that the proposed development did not result in significant additional visual impacts over and above the already permitted/proposed wind energy developments. The greatest cumulative visibility in in two main areas, i.e. to the immediate south of the development site and an area comprising Lough Corrib and shoreline to the east. However, most of this visibility is due to existing/permitted turbines and there is very little additional visibility of turbines as a result of the proposed development. The additional visibility is located mainly to the east of the development site and in small sections along the N59. Other areas include small sections between 15-20 km from the centre of the study area, a small area near Maam Cross and a small area in Galway City, where the actual visibility may not exist due to vegetation and buildings. Section 11.8.1.2 of the EIS also states that the design of the proposed wind farm is in keeping with the adjoining wind farms due to its staggered layout.

Section 11.8.1.2 of the EIS also considers cumulative impacts with regard to cumulative visibility, as discussed above, and sequential effects, i.e. when a viewer has to move to a different viewpoint. This approach draws on the guidance provided in the SNH document '*Assessing the Cumulative Impact of Onshore Wind Energy Developments*' (March 2012). Paragraph 79 of that document distinguishes between '*combined or simultaneous visibility*' and '*successive or repetitive visibility*'. The proposed development would result in a greater *combined* visibility from most viewpoints, i.e. the observer can see 2 or more developments from one viewpoint, without moving his or her head. However, the photomontages indicate that the development in the context of other farms would read as a single large cluster of wind turbines that is intermittently visible along the hilltops, which is more harmonious than several distinct groups of turbines. There are increased effects on the local area but the extent of impacts on the wider landscape is limited as the overall scale of this cluster is accommodated within the scope of the landscape. In my opinion, this cumulative impact results in the wind farms being seen as a key characteristic of the overall landscape but not of sufficient dominance to be a defining characteristic of the area, ref. paragraph 4.5 of the SNH document '*Siting and Designing Wind Farms in the Landscape Version 2*' (May 2014).

The proposed development would result in *successive* or sequential impacts on views from the N59 as views of the larger wind farm cluster would intermittent as a viewer travels along the route. However, visual impacts on the N59 are considered to be acceptable overall, as discussed above.

Having viewed the site from many vantage points and with regard to the LVIA in the EIS, I accept the development will not overall result in significant additional cumulative impacts at most locations. I accept the EIS conclusion that overall cumulative impacts are long term and slight to moderate.

11.4.10 Conclusion

The most significant visual impacts resulting from the proposed development would be in the 'Class 4–Special' designated lands to the south of the site, where the EIS has deemed the visual impact to be 'significant'. The EIS also finds this to be the area of greatest visual impacts, but points out that the areas are not heavily settled, have few local roads and have no areas of 'Unique' sensitivity. It is also submitted that the landscape at this location has the capacity to absorb the proposed turbines due to its expansive, large scale nature. As discussed above, I conclude that visual impacts here are acceptable. I also note that the development would not have significant adverse impacts on the N59 or on any of the designated views within the 20km study area. While it is acknowledged that the change likely to arise is considered to be negative at some locations, it is not considered a significant one that would constitute unacceptable detrimental effects on the character or values of the area such as would warrant a recommendation of refusal on visual impacts grounds. I accept the EIS conclusion that overall impacts are 'slight' to 'moderate' within the 20 km radius.

11.5 Ornithological Impacts

10.5.1 Bird Surveys and Species Present at the site

The DoAHG comment on file states particular concerns about potential ornithological impacts. It considers that the EIS contains limited information about birds in the receiving environment and advises that further information is necessary, as summarised above. The EIS Addendum submitted in response includes an updated Birds Impact Assessment (Appendix 3-2) with additional details of bird survey data and a discussion of the findings of bird survey work at other wind energy development sites (operating, permitted and proposed) but does not include the results of any additional surveys carried out at the site. The applicant has based the assessment submitted on the SNH document '*Survey methods of use in assessing the impacts of onshore wind farms on bird communities*' (2005) and '*Recommended methodology for assessment of impacts of proposed windfarms on breeding Hen Harrier within the known range of the species in Ireland*' (Anon, 2003).

The EIS lists the following target species for Vantage Point (VP) bird surveys: Whooper Swan, Greenland White-Fronted (GWF) Goose, White-tailed Eagle, Hen Harrier, Merlin, Peregrine and Golden Plover. No rationale is provided for this list, however there is detailed consideration of species of conservation concern that may be present in the wider area. I note that the list of target species does not include Cormorant and Common Gull, which are Special Conservation Interests of the adjacent Connemara Bog Complex SPA, or several species that are Special Conservation Interests of the nearby Lough Corrib SPA, i.e. Pochard, Tufted Duck, Gadwall, Shoveler, Coot, Common Scoter, Common Tern, Arctic Tern, Common Gull and Black-headed Gull. However, it is accepted that the EIS and EIS Addendum provide analysis of potential effects on these species.

The adequacy of the EIS survey methodology and data has been assessed with regard to the guidance provided in the SNH document *Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms* (May 2014), which supersedes the 2005 document cited by the applicant.

VP Surveys

The primary bird survey work carried out at the development site was the VP surveys carried out at the site over the period between February 2013 and January 2014. General information on the survey methodology is provided in section 6.4 of the EIS, including Fig. 6.6 indicating VP survey locations. Appendix A of the EIS addendum provides the raw survey data including times of surveys. Watches were carried out for 3 or 6 hour periods at each VP. A total of 9 no. VPs were used during the February–March 2013 surveys but two of these were combined and 8 no. VPs were used for the reminder of the surveys up to January 2014.

I note that the VP surveys were carried out over a period of one year with a total of 414 hours of VP surveys. This overall timeframe is substantially less than that recommended by the SNH document, which states that a 2 year minimum is generally necessary to allow for variation in bird use between years. The SNH guidance accepts that adequate site specific information collected for other purposes up to 5 years old can be used and I note that the EIS Addendum includes analysis of available bird survey data from the adjacent wind farm developments, as requested by the Board. However, this general information does not provide a detailed picture of the development site with regard to its sensitive location in close proximity to both the Connemara Bog Complex SPA and the Lough Corrib SPA. Section 3.5 of the SNH document states:

"*In recognition of the wind farm industry moving into more sensitive bird areas, including locations potentially impacting on the qualifying interests of designated sites, two years survey will be required unless it can be demonstrated by the developer that a shorter period of survey is sufficient.*"

The need for a 2 year time frame in this case is highlighted by an absence of survey information for species of conservation concern such as Golden Plover and Greenland White-fronted (GWF) Geese, both of which are Special Conservation Interests of nearby designated sites. Section 6.4.5 of the EIS lists species of conservation concern that are known to be present in the area but were not observed during site surveys, including Red Grouse, White-tailed Eagle, Golden Plover, GWF Goose, all of which are Birds Directive Annex I species, and Woodcock (BoCCI Red List). In particular, the EIS states surprise that the Golden Plover was not observed at the development site. The absence of these species from the development site may be due to year-on-year changes in population dynamics, etc. which cannot be taken into account by an ornithological assessment of only one year's duration. I also note that no VP surveys were carried out during the months of August, September and most of October 2013 (the earliest dated survey is 28th October 2013). The DoAHG comment specifically refers to a lack of survey data for the Autumn migratory period, therefore it is considered that the applicant has not fully addressed this matter given that the EIS addendum contains no new survey data. The importance of the site for migratory birds cannot be fully assessed in the absence of information from these months.

The SNH document recommends a total of 72 hours of survey time per VP, divided seasonally with 36 hours breeding and 36 hours non-breeding. The exact amount of survey time at each VP is not available as the raw survey data does not provide start and finish times or details of sunrise/sunset, just the birds observed at each VP. Section 6.4.1 of the EIS states that there was approx. 6.5 hours of survey time per VP per month during the breeding period April-July 2013, a total of c. 26 hours per VP, which is less than the recommended amount. There were 18 hours of watch time per VP during the period February-March 2013 and 42 hours of watches at 4 of the 8 VPs during October 2013 to January 2014. This total watch time is considered to be deficient overall. In addition, I note with regard to the raw survey data that the VP surveys generally commenced at either morning, after 07.20 am, or at various times in the afternoon. Given that the VP surveys lasted 3-6 hours at each location, this indicates that the VPs were not observed at all times of the day and night, and does not allow for systematic, comprehensive dawn and dusk surveys. Such surveys are important for the observance of species that may be particularly active at those times flying between nocturnal roosting sites and day-time foraging sites, in poor light conditions when the birds' ability to see wind turbines is likely to be diminished, i.e. raptors, White-tailed Eagle, Hen Harrier.

With regard to VP locations, section 3.3. of the SNH document recommends that the main breeding and wintering bird survey areas should extend at least 500m beyond the development boundary and 500m beyond possible access tracks and grid connections. However, depending on the species using the area, there may be a need for further species or species group-specific survey to establish nest, roost or display sites up to 6km from the proposed development site. For proposals greater than 50 MW, a comparable control or reference site should be selected and surveyed at the time of the initial surveys. The VP survey submitted is limited to locations within the development site only. The methodology utilised to select VPs is not described in any detail with regard to the suitability of the VP locations selected for the detectability of various species. This can have an important bearing on survey results, particularly given the forested nature of the development site, as certain species may be difficult to perceive and therefore not appear in survey results. Figure 6.6 does indicate fields of view from each VP, however these do not appear to cover the entire development site. It does not include VP 9, where surveys were carried out during the February-March 2013 period. In addition, Figure 6.6 gives no indication as to the siting of the proposed turbines, or the habitat in which the VPs are located. The SNH document recommends that:

"…*The location of VP watch points and the area of visibility from each VP must be presented as a map or maps which show the arc (Viewshed) in which the observations were conducted. Such Viewshed figures should include details of altitudinal cut–off levels to allow assessment of coverage and whether any lower level flight activity may have been missed. The map should also show the location of the proposed wind farm including turbine locations and its proximity to any designated sites where relevant*..."

Given the upland nature of the site, with a complex topography comprising undulating hills and hollows, valleys, forestry, etc., it is not possible, in the absence of any detailed viewshed analysis associated with VPs, to present a scientifically robust assessment of the site as regards overall bird activity and usage of the site based on the vantage points utilised. This is a critical issue and has implications for any

assessment of collision risk and/or assessment of potential disturbance of flight paths/commuting corridors based on deficient bird activity/usage data.

Section 3.8.1 of the SNH document highlights that VP survey must not take place simultaneously with any other fieldwork on the site as it may cause disturbance and invalidate the VP survey results. I note that the Red Grouse survey was conducted on the 27th March 2013, the same day as a VP survey. It investigated one area of potential grouse habitat, approx. 20 ha in extent. The survey involved the use of a 'tape lure', i.e. a recorded Red Grouse call played via a megaphone at approx. 75-100m intervals. I note that the raw survey results include a single observance at VP 8 at 12.28 on 27th March 2013, also several observances at VP 6b between 15.18 and 17.15. It cannot be ascertained if the surveys were simultaneous as the time and duration of the Red Grouse survey are not provided, however they were carried out on the same day. Breeding bird point counts were carried out at 10 locations along forestry tracks within the site (EIS Fig 6.12) on 14th May and 17th June 2013, these do not appear to have coincided with the other VP surveys but the raw survey data is unclear. The site was surveyed for Merlin on 15th and 16th April 2013 and 22nd, 23rd July 2013. The Merlin survey methodology consisted of looking for signs of Merlins in the areas surrounding the site. I note that the raw survey data includes observances at VPs 1 and 2 on 16th April and VP2 on the 22nd July, therefore the Merlin survey may have been carried out at the same time as VP work.

Distribution and Abundance Surveys – Moorland Birds and Raptors

The SNH document recommends that distribution and abundance surveys are used in addition to VP surveys, in order to record numbers and distribution of breeding, wintering and migrant birds using the site. Section 3.7.1 refers to moorland breeding birds and recommends 4 no. survey visits at least 7 days apart, to cover the breeding season between mid-April and early July. A tape lure survey for red grouse conducted on 27th March 2013 at a 20 ha area of the site that had potential as grouse habitat did not find any responses or signs of grouse. The sites were visited on 14th May and 17th June 2013 and a point count method was used to record breeding birds at 10 sites along the forestry tracks on the site. All bird species seen or heard within or flying over the area covered by an approximate radius of 50m from the count point were recorded for a period of 5 minutes. A separate Merlin survey was carried out on the 15th to 16th April and the 22nd to 23rd July 2013. While this survey data supplements the VP survey work discussed above, it does not make up for the deficiencies of the VP surveys.

Surveys of Wintering and Migratory Waterfowl

With reference to wintering and migratory waterfowl, especially geese and swans, section 3.7.8 of the SNH document recommends that surveys of both roost sites and feeding areas should be carried out as disturbance and displacement can occur on both these locations. Feeding distribution surveys for geese and swans should be undertaken in areas of suitable habitat when the survey area lies within the core foraging distance of SPAs for these species or other major roosts, unless it can be established that the area is not utilised for feeding. The applicant was requested to submit further information to address the issue of proximity to upland lakes and potential flightlines for wintering wildfowl. This issue is assessed in the EIS Addendum by way of analysis of the findings of bird survey work at other wind energy developments, along with the above survey findings, i.e. no new survey results are

presented. In particular, there are no surveys of specific waterbodies, roost sites or feeding areas within or adjacent to the development site. This is a serious deficiency having regard to the number of water bodies throughout the site and to the potential presence of protected waterfowl.

Conclusion

Comprehensive survey work is necessary in order to create a detailed picture of bird distribution and flight activity and the usage of the development site by key bird species. The information can then be used to predict the potential effects of the wind farm on birds at the site. However, it appears that the survey work carried out is limited overall with regard to SNH recommendations. Although the SNH document has no status in this jurisdiction, it is a good example of best practice, which is considered particularly relevant to this site due to the range of species of conservation interest present, including several several Birds Directive Annex I species, and to the ecological sensitivity of the study area and its proximity to the Connemara Bog Complex SPA and Lough Corrib SPA. It is apparent from the above analysis that the VP survey data falls short of best practice with regard to its duration and extent. Critically the overall timeframe of 1 year for the assessment of the potential impacts on avifauna is insufficient to give a representative and accurate determination of the usage of the study area by key target bird species of conservation interest. In addition, there is a failure to survey waterbodies within and beyond the development site, which may be utilised by species such as Whooper Swan and GWF Geese in order to identify any potential flight paths between these water bodies. The survey data submitted, therefore, fails to present a complete picture of the various bird species present at the site and their movements. This absence prevents a scientifically robust assessment of the site with regard to potential ornithological impacts.

10.5.2 Potential Impacts Including Cumulative Impacts

Potential impacts of wind farms on birds generally relate to direct habitat loss at the construction stage and to displacement (also known as indirect/secondary habitat loss) at the operational stage. Displacement occurs when birds avoid the wind farms or if foraging routes or roosting ground use are disturbed by a barrier effect.

The total area of direct habitat loss at the development site would be 46.5 ha of mostly forestry habitats. The maximum loss of foraging habitat would be approximately 91 ha, or approximately 5% of the 1,707ha EIS study area. The forestry habitat lost would comprise 2.4% of that habitat type present within the site (EIS Addendum section 4.1.3). The number of species that use closed canopy forestry for foraging are relatively few, the list provided does not include any species of conservation concern. Section 6.5.3 considers cumulative habitat loss as a result of the adjacent 4 no. permitted/proposed wind farm developments (Uggool, Cloosh, Seecon and Knockranny), also the Doon road upgrade, the Letter substantion and the 110 kV Galway to Screeb electricity connection. The majority of habitat loss would also be within conifer plantation with small scale loss of semi-natural habitat. The EIS addendum comments that the actual development footprints of the wind farms often occupy a few % of the overall site area, so the area of direct habitat loss is very small. As at the development site, most of the habitat lost would be forestry, with negligible impacts on hen Harrier, Merlin, Red Grouse and Golden Plover. No significant cumulative impact is expected as huge areas of forestry habitat will remain. Section

6.5.3 of the EIS considers cumulative habitat loss as a result of Cloosh Wind Farm, Knockranny Wind Farm, Uggool Wind Farm, Seecon Wind Farm, Doon road upgrade, Letter substation and the 110 kV Galway to Screeb overhead line. The exact total area of habitat loss is unclear but, from the figures submitted, I estimate that it would be in the region of 210 ha. The EIS notes that most of the habitats lost would be conifer plantations and this point is accepted. While this analysis is noted, it is difficult to assess the potential impacts of habitat loss in the absence of a full picture of bird movements and use of the site with regard to patterns of migration, feeding, roosting, etc.

The EIS identifies the potential for disturbance during the construction phase as a 'short term slight negative impact' and it is noted that the development site is already highly modified, dynamic and subject to current disturbance. Cumulative construction disturbance is not expected as the timing of wind farm construction is to be staggered, this point is accepted. Snipe may be permanently affected by construction as it breeds in open habitats rather than forestry. The EIS addendum assesses the potential impact of construction disturbance on Hen Harrier, Merlin, Peregrine, Woodcock, 'Commic' Tern and Whooper Swan as 'Low'. However, the same issues apply regarding the survey data on which these conclusions are based.

The EIS models collision risk for various bird species using the results of bird surveys carried out at the site. Specific collision risk assessments were carried out for Hen Harrier, Peregrine Falcon and Whooper Swan based on relevant bird dimensions and velocity. No 'preferential avoidance' of the wind farm area is assumed. A 95% 'avoidance factor' (to allow for some evasive action by birds), as recommended by the SNH, is applied to calculate the total number of bird transits through the rotors per year. Potential collision risk was assessed for various wind conditions and averaged out. The EIS concludes that there is a 'long term negligible impact of turbine collision on Peregrine, Hen Harrier and Whooper Swan. The conditions of large scale mortality will not occur at the development. There are unlikely to be cumulative impacts on species that do not fly regularly at heights that take them through the turbine swept area. The species that are most likely to be significantly affected are those where the number of individuals in a local population are few. It is submitted that, as the predicted collision risks for Peregrine, Hen Harrier and Whooper Swan are low at the development site, potential cumulative risks are more likely to relate to the effects of barriers to migration/commuting, disturbance and habitat loss rather than losses caused by collision. The EIS addendum concludes that collision risks for the operational phase are 'Very Low' for the raptors Hen Harrier, Peregrine, Merlin; 'Low' for Kestrel and Sparrowhawk; 'Very Low' for passerine birds (78% of bird observations at the site), also 'Very Low' for wader species, swans, ducks and gulls. As discussed above, this collision risk model is based on VP survey data that is considered to be inadequate. In particular, there are no collision risk modelling results for Golden Plover, GWF Goose, Whooper Swan and the White-tailed Eagle, all of which are known to be present in the area.

Section 6.5.2 of the EIS considers secondary habitat loss due to avoidance of turbines by birds. An avoidance of foraging within a 100m radius of each of the 29 turbines would result in a maximum loss of foraging habitat of c. 91ha or 5% of the total site area. The EIS concludes that the residual impacts are 'Long term slight negative'. With regard to cumulative impacts, a 'worst case scenario' of the above avoidance within the development site and the same avoidance radius for all 114 adjacent

existing/permitted/proposed turbines, then the extent of the secondary habitat loss would be c. 449ha or 1.4% of the entire 330 km^2 development area. The EIS assumes that 100% avoidance of these areas is unlikely and that there would be a negligible secondary habitat loss. The EIS Addendum comments that the only species recorded at the site that would be susceptible to secondary habitat loss are Snipe, which was recorded occasionally during winter and the breeding season and Wheatear, recorded on 2 occasions and unlikely to be breeding. The overall significance of potential secondary habitat loss is assessed as 'Low-very low'.

Section 6.5.5 of the EIS concludes that potential impacts of collision, disturbance and secondary habitat loss are not expected to be significant and no permanent significant impacts on bird populations are expected. The revised Birds Impact Assessment in the EIS addendum concludes that the unmitigated significance of predicted impacts on the bird population is 'Low-very low'. Residual impacts are not expected to be significant and no permanent significant impacts on bird populations are expected. As discussed above, these conclusions are questionable due to the deficiencies of the survey data on which they are based.

10.5.3 Potential Impacts on Specific Bird Species

Potential impacts on specific individual species of conservation concern that have been recorded in the general area or during the above site surveys may be considered separately as follows, with regard to the information and analysis provided in the EIS and EIS Addendum and information obtained from the BirdWatch Ireland website. Potential collision risk estimations are based on the 95% avoidance factor recommended by the SNH:

Peregrine Falcon (BD Annex I, BoCCI Green List)
A raptor species, which breeds on cliffs on the coast or inland in quarries. It forages mainly in open areas. A year round resident of the area, ref. Bird Watch Ireland. Some movement away from its breeding areas in the winter, towards the coast or other areas with suitable prey. Small numbers were recorded at the Cloosh site to the west of the development site during the winter. It was recorded at the site during the VP survey. Single birds were recorded on the 1st, 12th (twice), 15th and 18th (twice) March 2013, flying/hunting at a height of 3 to over 100m. The EIS comments that there are no likely nest sites within the development site or in the immediate vicinity. The findings of bird survey work at other wind energy development sites find that Peregrine are regularly (but not very frequently) present during winter in the area but there are no breeding season records of the species. The collision risk analysis for Peregrine Falcon calculated an average of 0.017 collisions per year or 0.425 collisions over a 25 year wind farm life span. The EIS identifies a long term negligible negative impact of turbine collision on Peregrine, noting that the species was recorded on relatively few occasions during winter only. Cumulative collision risks for Peregrine were also very low at the site. It must be noted, however, that deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by Peregrine Falcon.
Merlin (BD Annex I, BoCCI Amber List)
A small bird of prey associated with upland and lowland bogland habitats, forages mainly in open areas. Widespread winter visitor at lowland sites from October to April. Local summer visitor to uplands throughout Ireland. West Co. Galway is a core breeding area

for the species, however most known nest sites are situated some distance to the west and south-west of the site. There are traditional nest sites on vegetated islands in lakes to the south west of the development site, within the Connemara Bog Complex SPA and the species is a Special Conservation Interest of the SPA. The VP site survey recorded a single female on the 18th and 25th March 2013, flying at a height of 5-10m. Surveys were carried out on 15th-16th April and 22nd-23rd July 2013 to detect Merlin breeding activity, including potential nest sites. No evidence was found that Merlin breed within or closely adjacent to the development site. The EIS concludes that the species flies through the site at passage periods, with foraging in open habitats. The findings of bird survey work at other wind energy development sites indicate that Merlin are regularly (but not commonly) recorded in the area during winter and passage periods but there are no records of breeding activity in this area.

Collision risk figures were not calculated for Merlin as neither of the two Merlin sightings within the study area were at heights less than 10m above the ground. The general conclusions of the EIS regarding potential ornithological impacts apply. It must be noted, however, that deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by Merlin. The Merlin breeding surveys were carried out in a satisfactory fashion.

Common/Arctic or 'Commic' Term (BD Annex I, BoCCI Amber List)

Both Common Tern and Arctic Terns as Special Conservation Interests of the Lough Corrib SPA. 2 no. birds were recorded flying very high at the site (>300m) on 26th June 2013. It is impossible to distinguish between Common and Arctic Tern at this distance. The EIS comments that the species is present in Ireland during the breeding season only. The lakes within and adjoining the site do not offer potential nesting sites for this species. Therefore it is a possible summer visitor to site. The EIS addendum considers that site usage will be limited to occasional commuting through the area.

The EIS does not calculate collision risk for this species as the birds recorded were flying above the height greater than the swept are of the proposed turbines. The general conclusions of the EIS regarding potential ornithological impacts apply. It must be noted, however, that deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by Common and Arctic Tern.

Golden Plover (BD Annex I, BoCCI Red List)

A wader species that breeds on heath and bogland in both lowland and upland situtations. A Special Conservation Interest of the Connemara Bog Complex SPA and the Lough Corrib SPA. The species is known to breed within the Connemara Bog Complex SPA. It was not recorded during site surveys. The EIS comments that it is very noticeable in flight with very distinctive calls, therefore unlikely to be missed by extensive survey work. The EIS concludes that it may possibly fly through, overfly or commute at the site. The findings of bird survey work at other wind energy development sites indicate that the species is present in the general area during winter. There seems to be a trend in the wind energy development EIS results that wintering birds are seen in open areas, but have not been seen overflying the areas of conifer forestry in which various wind energy developments have been proposed.

The EIS identifies a possible collision risk for Golden Plover, however no collision risk model was carried out as the species was not observed during VP surveys. The general conclusions of the EIS regarding potential ornithological impacts apply. It must be noted, however, that deficiencies in the methodology of the VP surveys have consequences for

the addressing of potential impacts of usage of the site by Golden Plover. Of importance, this species is known to move in flocks at night from daytime roosting sites to night foraging sites, therefore potential impacts of a wind farm development on Golden Plover cannot be determined from diurnal surveys. There does not appear to have been any VP surveys carried out during the hours of darkness with thermal imaging/night vison to identify if any such nocturnal movements of this species occur over the site.

Red Grouse (BoCCI Red List)

Thinly distributed on bog and heathland in Ireland. The Irish population has probably been much reduced in recent decades by habitat loss and fragmentation caused by peat cutting and the expansion of forestry. The species is known in areas of blanket bog and heath around the study area. No birds were observed during Red Grouse tape lure survey or VP surveys of the site and no signs of grouse (i.e. feathers or droppings) were recorded during ecological surveys. The tape lure survey was carried out in the only area within the development site that had good potential as grouse habitat. However, Red Grouse were recorded in areas of open bogland to the north and east of the development site. The findings of bird survey work at other wind energy development sites found that Red Grouse are thinly distributed across suitable open bog and heath habitats, but will not be affected by developments sited within forestry.

The species does not fly at heights at which it could collide with the blades of an operating wind turbine. The general conclusions of the EIS regarding potential ornithological impacts apply. It must be noted, however, that deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by Red Grouse. In particular, as with other species of bird, there are year-on-year changes in population dynamics, etc. which cannot be taken into account by an ornithological assessment of only one year's duration.

Woodcock (BoCCCI Red List)

Widespread (but declining) as a breeding bird in broadleaved and conifer woodlands in Ireland A single bird was flushed from the forestry edge close to the eastern site boundary during the Merlin survey in April 2013. It is impossible to say if the single bird observed was a wintering bird or likely to breed at the site. The species was not recorded at the site during May to July 2013 or spring-summer 2014. It is highly likely that there is a small wintering population at the development site. The species does not fly at heights at which it could collide with the blades of an operating wind turbine.

The general conclusions of the EIS regarding potential ornithological impacts apply. It must be noted, however, that deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by Woodcock.

Whooper Swan (BD Annex I, BoCCI Amber List)

A winter visitor to wetlands throughout Ireland from October to April. Uses a variety of habitats to graze on water plants, grass and winter cereals. A flock of 3 birds was recorded at the site on 11th and 14th November 2013, it flew though at a height of over 100 m. The EIS concludes that the species is a winter visitor to the site. The findings of bird survey work at other wind energy development sites indicate that Whooper Swan are present in small numbers (typically <20) during the winter. They commute through the development study areas, using lakes within and outside them. Figure 3 of the revised Birds Impact Assessment in the EIS Addendum indicates the flight paths of the Whooper Swan recorded at the site. Given the small number of movements and their varying directions, there is no evidence of a flight path, flyway or commuting corridor for the species. The birds recorded may have been using lakes within the development site

or just flying through it.

The EIS calculates a collision risk for Whooper Swan at 0.1223 collisions per year for a 95% avoidance factor, i.e. 3 collisions during a 25 year wind farm life span. It identifies a long term negligible negative impact of turbine collision on the species, noting that it was recorded on relatively few occasions during winter only. It must be noted that deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by Whooper Swan and collision risk assessment. In particular, VP watches for Whooper Swan should be carried out during key times of movement of flocks of Whooper Swan (dawn and dusk), as VP watches outside of these key times for flock movements may result in an underestimate of the numbers of this species passing through the study area. Also, given the ecological sensitivity of this species and dependence on water bodies, it is considered that significant nearby water bodies should be systematically surveyed in order to establish if this species is present in the vicinity.

Greenland White-Fronted (GWF) Goose (BD Annex I, BoCCI Amber List)

A winter visitor to western Ireland from October to April. The Connemara Bog flock of GWF geese has been dwindling in numbers (<10 birds recorded in the last few winters), to such an extent that the species is not listed as a Special Conservation Interest for the Connemara Bog Complex SPA. Recent sightings have come from sites to the south and east of the development site, approx. 2-5 km from the site boundary and from Maam Cross, approx. 16 km west of the development site. The species is a specific conservation objective of the Lough Corrib SPA. An area of land to the south west of the development, where there have been past sightings of this species, was excluded from the development site area as an ecological design constraint. The species was not recorded during site surveys. The findings of bird survey work at other wind energy development sites indicate that the Connemara Bog flock of GWF Geese has been recorded in the region in the past, mainly at sites to the south and south west of the development site.

It is possible that the lack of observation of this species is owing to the limited duration of the ornithological survey work and the fact that there does not appear to have been a concerted effort to carry out VP surveys during key times when this species is particularly mobile (at dawn and dusk, when, similar to Whooper Swans, flocks move between roosting and foraging sites). Also, given the ecological sensitivity of this species and dependence on water bodies, it is considered that significant water bodies in the area should be systematically surveyed to establish if this species is present in the vicinity.

Hen Harrier (BD Annex I, BoCCI Amber List)

A raptor species, which is a Special Conservation Objective of the Lough Corrib SPA. It winters in this part of Ireland and breeds predominantly in heather dominated areas and in young conifer plantations, where they nest on the ground. Not known to breed in the Connemara area but there is a known winter roost site 15.5km east of the development site. The species has declined, probably due to the loss of quality moorland habitat due to agricultural changes, and maturing plantations. Hen Harriers mainly hunt over moorland whilst breeding where they take ground nesting birds and mammals. Single birds were recorded hunting and flying at the site on the 4th (twice), 5th (twice) and 14th March 2013. The findings of bird survey work at other wind energy developments indicate that the species is occasionally present in winter but usage of sites is very low. There are no breeding season records.

The collision risk assessment for Hen Harrier estimates a total of 1.226 bird transits through the rotors per year, based on a 95% avoidance factor. The collision risk varies between 0.008 – 0.003 collisions per year, average equivalent to one collision every 181.8 years or 0.14 collisions during a 25 year wind farm lifespan. The EIS identifies a long term negligible negative impact of turbine collision on Hen Harrier. Potential cumulative impacts relating to the effects of barriers to migration/commuting, disturbance and secondary habitat loss, rather than losses caused by collision. It must be noted that deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by Hen Harrier and collision risk assessment, particularly given the importance of the extensive Conifer Plantation Habitat at the development site for nesting Hen Harrier.

Meadow Pipit (BoCCI Red List)

Widespread in open habitats throughout Ireland, it is the commonest species in many bog, heath, upland grassland and young or recently felled conifer areas. It is currently on the Red List because the population declined by 50% during the period 1998-2011. It declined suddenly because of severe winters in 2009/10 and 2011/12. However, recent data indicates that it is in recovery since 2011. The species was noted at the site during winter and summer VP surveys. Meadow Pipit is a passerine bird and as such, according to SNH guidance, it is not potentially threatened by wind farms. Thus, there are no significant concerns regarding potential impacts.

White-tailed Eagle (BD Annex I, BoCCI Green List)

A raptor species that does not breed in Ireland according to Bird Watch Ireland. There are consistent records of this species in west Connemara in recent years. Birds are often seen at Lough Corrib and there is an established flight path from the Hill of Doon area of the lake through the Maam Cross area to the Screeb area, approx. 16-17km from the development site. There have recently been 2 pairs resident at sites in Connemara c. 15km and 40+ km from the site. The species has a foraging range of 300+ km^2 or approx. 10km from a roost site. This species was not recorded during site surveys. The EIS comments that it is likely that individuals will occasionally fly through the vicinity of the study area during the lifetime of the development but there is a reasonable buffer zone between the development and known roost sites. The findings of bird survey work at other wind energy development sites indicate that there have been several flight records of White-tailed Eagles in the area although generally from the area slightly to the west of the development site, e.g. at Seecon and Lettercraffroe sites.

The species flies at heights at which it could collide with the blades of an operating wind turbine, however no collision risk model was carried out as the species was not observed during VP surveys. The general conclusions of the EIS regarding potential ornithological impacts apply. It must be noted, however, that deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by White-tailed Eagle.

Cormorant (BoCCI Amber list)

A Special Conservation Interest of the Connemara Bog Complex SPA. Breeds in coastal colonies, with some birds breeding inland in trees. Resident in Ireland year round. Winters at sea and on inland lakes and rivers in Co. Galway. Recorded at the site during both winter and summer VP surveys. The general conclusions of the EIS regarding potential ornithological impacts apply.

Common Gull (BoCCI Amber List)

A Special Conservation Interest of the Connemara Bog Complex SPA and the Lough

Corrib SPA. Resident year round in this part of Ireland. Nests on the ground in a wide variety of situations, including, islands, cliffs and shingle banks. Breeds on the coast and inland in the west of Ireland, can breed on islands in lakes where it has declined. Not recorded at the development site, however deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by this species.

10.5.4 Potential Impacts on Wintering Wildfowl Flight Paths

The EIS addendum considers potential impacts on migratory flight paths for wintering wildfowl, as specified in the further information request. Aside from the above species, other wintering wildfowl present in area are Mallard, Teal, Grey Heron and Little Grebe. The additional Birds Impacts Assessment finds no indications that the area is the site of any major commuting or migratory flight paths for wintering wildfowl. Figures 1 and 2 present the detailed flight paths for Mallard and Teal respectively. Mallard and Teal were mapped as the most commonly encountered and numerous wildfowl species in the study area during winter. It is submitted that the maps indicate no evidence of a flight path, flyway or commuting corridor for large numbers of wintering windfowl. Instead, the evidence points to local movements birds. The EIS Addendum attributes this pattern to wintering birds resident in the local area moving between the small lowland acid oligotrophic and dystrophic lakes within the development site. Table 3.6 of the revised Birds Impacts Assessment indicates the numbers of wildfowl recorded within the development site in comparison to the all-Ireland significance threshold, i.e. 1% of the all-Ireland wintering population. It is submitted that the numbers of wintering wildfowl recorded within the study area are not significant at the national level, e.g. 6-21 mallard flights were recorded per day, the all-Ireland threshold population is 150. Section 3.1.3 calculates the collision risk for Mallard (based on a 98% avoidance factor, which is higher than that used in the original EIS), finding an average of 0.038 collisions per year or 0.95 collisions during a 25 year wind farm life span. These findings are noted, however, as was the case for the assessment of impacts on individual bird species, deficiencies in the methodology of the VP surveys have consequences for the addressing of potential impacts of usage of the site by these species.

10.5.5 Ornithological Impacts Mitigation Measures

Proposed mitigation measures for habitats loss comprise environmental management during construction; native tree and shrub planting along turbine access roads and riparian corridors and bog restoration/rehabilitation; phasing of wind farm developments to reduce cumulative habitats impacts; avoidance of forestry felling at the development site during the breeding season to minimise disturbance. Ongoing monitoring of bird populations is proposed. Section 3.2.1.2 of the EIS addendum includes a proposal to sponsor the siting of up to 5 no. Kestrel nesting boxes in suitable areas away from the wind farm footprint, this is in order to mitigate a 34% drop in the Kestrel population in Ireland between 1998 and 2010. These proposed measures are generally acceptable, however, their effectiveness cannot be robustly assessed in the absence of adequate survey information.

10.5.6 Ornithological Impacts Conclusion

It is recognised that a large body of work has been undertaken with regards to the ornithological assessment of the proposed development. The applicant has also been given the opportunity to address the issues raised by the DoAHG and it is accepted that the EIS Addendum provides analysis of the findings of bird surveys at adjacent wind energy developments. However, the underlying methodology is inadequate with regard to the limited duration and extent of VP surveys at the development site and the lack of any dedicated surveys of significant waterbodies or potential roosting or feeding sites. Survey data of the highest standard is necessary to form a robust scientific basis for subsequent analysis of ornithological impacts at the development site, as regards gauging overall bird activity and usage of the site, the assessment of collision risk and the AA of potential impacts on designated sites. These concerns are heightened in the context of the development site, which is adjacent to several other permitted/proposed wind energy developments, as the lack of information on flight paths does not allow for a full consideration of a wider 'barrier effect', with secondary avoidance as a result of the combined presence of several adjacent wind farms.

11.6 Bats Impacts

10.6.1 All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Acts (2000 and 2010). In addition, the EU Habitats Directive seeks to protect bat species and their habitats and requires that appropriate monitoring of populations be undertaken. All Irish bats are listed in Annex IV of the Habitats Directive and the Lesser Horseshoe Bat is further listed under Annex II requiring designation of SACs for the species.

10.6.2 Bat Survey Data

There is a known Lesser Horseshoe Bat breeding colony at Ross House, within the Ross Lake and Woods SAC, c. 3.5 km from the development site. The species is a Special Conservation Interest of the SAC. The Bat Conservation Ireland national bat database shows records of 4 no. species within 5 km of the development site, i.e. Common Pipistrelle, Soprano Pipistrelle, Daubenton's Batand the Lesser Horseshoe Bat.

A broadband recording bat detector was placed at 4 locations within the development site during the period April to July 2014 (location no. 3 at the northern end of the site and locations nos. 1, 2 and 4 at the southern end of the site). Dusk and dawn mobile detector surveys were also carried out along walked transect routes on the nights of the 28th-29th May, 15th-16th June, 27th-28th July and 23rd-24th September 2013. A total of 5 no species were identified during the bat surveys, i.e. Common Pipistrelle, Soprano Pipistrelle, Brown Long-Eared Bat, Leisler's Bat and Lesser Horseshoe Bat. Myotis bats were recorded but it was not possible to identify which of the three species regularly found in Ireland. Activity within the study area during the transect surveys was low with an equivalent of 1.1 bat passes per km walked in total, representing a low level of site usage. The broadband bat recorder noted an average for the 4 fixed point recording locations of 0.77 bat passes per hour. This frequency was similar to situations where the same detector was used at upland sites with confer plantations in Ireland. The majority of bat contacts recorded during the bat surveys

were of Common Soprano or unidentified pipistrelles, these are the two most commonly encountered species in Ireland.

The existing agricultural shed on the Doon Road, which was to be demolished as the site for the proposed substation, was inspected on 13th August 2014 to check for any signs of roosting bats. Bat droppings were noted within the shed. Bat recordings were carried out overnight on the 14th - 15th August 2014. A total of 43 recordings of bat vocalisations were recorded, all were the Lesser Horseshoe Bat. It was not possible to determine how many bats were present, the amount of droppings seen did not indicate that the roost was likely to be occupied by a large number. Further investigations were made at the roost site on the 3 nights of the 5th-8th September 2014, with 2 bat recorders at points outside and around the shed. The results showed that Lesser Horseshoe Bats were present at the shed on all 3 nights. It is not possible to determine how many bats were involved, however the timing of bat activity indicated that the shed is used as a night roost. The other existing buildings at this part of the site were searched for signs of bat roosting activity but no such signs were recorded. The location of the day roost used by the bats at the site is not known, or if the bats present are coming from a maternity roost of females or from a roost of males/non breeding females. Breeding females generally range between 25 and 5 km from the maternity roost. There are known Lesser Horseshoe Bat roosts c. 3.5 km away at Ross Lake and 4.7 km away at Knockbane. No signs of bat activity were recorded at the other buildings at Letter Lodge.

I note that the Bat Conservation Ireland (BCI) guidance document '*Wind Turbine/Wind Farm Development Bat Survey Guidelines*' (December 2012) recommends a 'four season approach' to allow for the consideration of all aspects of the yearly life cycle of bats and their associated movements, including the confirmation of potential hibernation sites, where these are present in the locality, to be made during the winter months. To this end, it is recommended that bat activity surveys should be carried out over a minimum of 5 months from March/April to October/November inclusive, during optimum weather conditions. The duration of the bat surveys undertaken is considered to be inadequate on this basis as it is insufficient to accurately determine bat usage of the study site throughout the bat year. For example, according to the BCI guidelines,

"… *potential swarming sites should be inspected and monitored during the autumn months and, as these rare sites can attract thousands of bats, their identification by night survey is vital. The use of broadband detectors/recorders and static automatic recording devices is particularly recommended for survey of potential swarming sites*..."

This assessment has not been undertaken in the EIS or EIS Addendum.

10.6.2 Potential Bat Impacts

There is a Lesser Horseshoe Bat night roost within the existing agricultural shed at the centre of the site. The EIS states that night roosts are important for this species as they allow the exploitation of valuable foraging areas. It is not yet known where the day roost(s) used by the bat(s) which use this night roost is/are situated, or if they are coming from a maternity roost of females or from a roost of males/non-breeding females. During summer breeding females stay closer to their maternity roost than do

males to their summer roosts. Breeding females generally range between 2.5-5km from the maternity roost, although distances of up to 8km have been recorded in Ireland. There are known roosts of this species approximately 3.3km from the study area at Ross Lake and 4.7 km away at Knockbane. Although it might be expected that Lesser Horseshoe Bats would not use or require a night roost in close proximity to a day roost site, this is not always the case and it is possible that there is a day roost close to the night roost site. The other buildings at the Letter Lodge site were searched for Lesser Horseshoe bat and signs of bat roosting activity soon after the night roost was discovered. No signs of bat activity were recorded in other buildings at the site.

Wind turbines are a known risk to bats, which can be killed by a fatal change in pressure within the lungs (barotrauma) following exposure to low pressure vortices close to moving wind turbine blades or through collision with turbine blades. There is a significant risk where there are large numbers of bats in the vicinity of a wind farm site or regularly passing through the site. The EIS submits that most Irish bat species, including Lesser Horseshoe Bats, fly at low altitudes and keep close to vegetation and other solid features and would not be at risk of collision with turbine blades that are rotating between 39.5-156.5m above ground. In addition, most of the development site is exposed to strong gusts of wind and the numbers of bats flying at wind speeds of 6.5-9m/s are much reduced in comparison to less windy conditions due to lower numbers of flying insects (the prey of bats). With regard to impacts on the Lesser Horseshoe Bat night roost, the EIS identifies a long term moderate/significant negative impact on the Lesser Horseshoe Bat, if the local population of the species is unable to find an alternative night roost site. The EIS identifies a further possible impact on bats as a result of indirect/secondary habitat loss due to the avoidance of turbines. The maximum loss of foraging habitat would be approximately 91ha, or approximately 5% of the 1,707 ha EIS study area. The adjacent permitted/proposed wind energy developments are taken into account of the EIS assessment but no specific cumulative impacts are identified.

The proposed mitigation measures comprise felling of all trees within a radius of 70m of the turbine base, in order to avoid bats foraging in or close to planted conifers from coming into close proximity of rotating turbines blades, this is based on practice from the UK. The EIS anticipates a negligible residual impact following this measure. There are also mitigation measures involving the careful demolition of the Lesser Horseshoe bat night roost and the creation of an alternative night roost site or an alternative roost structure, close to the existing roost site. The EIS states that this would result in a short term imperceptible/slight negative impact until the alternative roost becomes accepted for use by the bats currently using the existing roost. It concludes that there would be a 'Long Term Moderate/Significant Negative Impact' as a result of the loss of a Lesser Horseshoe Bat night roost.

The Bat Conservation Ireland guidance states that most Irish bat species are normally low fliers e.g. <10m above ground level and as such are considered to be at a lower risk from turbine impacts. However, pipistrelle species have been observed to investigate new landscape structures such as turbine masts. Data from European wind turbine related mortality includes high numbers of pipistrelle species of which approximately 50% occur outside the migratory season. In addition, Leisler's bat is classified as a high risk species in relation to wind turbines as it is a high flier which travels considerable distances (up to 13.4km has been recorded in Ireland) between

roosts and foraging areas. The species has evolved for fast flight in excess of 40km/h and is less manoeuvrable as a consequence. It therefore avoids cluttered environments by keeping above the tree canopy normally flying between 10m and 70m above the ground but the species has been known to reach heights of 500m. Flying at such heights potentially brings it into direct risk of collision with wind turbines. The EIS does not give any detailed consideration to potential risks to these species despite their presence during the site bat surveys.

10.6.3 Revised Proposal and EIS Addendum Additional Assessment of Bats Impacts

The applicant was requested to address concerns raised by the DoAHG in their submission on file, as summarised in the above section 7.2.4. The response comprised a revised proposal to retain the agricultural shed roost site and to relocate the site substation to a new location >150 m to the east. It is submitted that the new substation location is in an area of dense forestry plantation, which offers poor quality foraging habitat for bat species in general. There are no features present at the new site that could potentially used as a bat roost. The proposed new substation would retain all boundary features that may have acted as navigation or foraging routes for Lesser Horseshoe Bats using the existing night roost. The substation would not be illuminated during the night.

The EIS Addendum includes a revised assessment of bat impacts, which provides further assessment of the night time recordings at the roost site in August 2014. This concludes that the night roost may be used by one individual bat and that the maximum number using the night roost is not likely to be >5 individuals. The EIS Addendum identifies that the only potential impacts on bats are during the operational stage of the development, due to direct collision and barotrauma. These impacts are considered to be long term, negligible and negative.

10.6.4 Bats Impacts Conclusion

The applicant has addressed several of the concerns raised by the DoAHG by relocating the proposed substation and retaining the existing Lesser Horseshoe Bat roost at the development site. However, it is considered that the bat surveys presented in the EIS do not represent a comprehensive and robust evaluation of the usage by bats of the development site due to the short time-scale of surveys. The determination of impacts on bats during the operational phase cannot, therefore, be identified with any scientific precision or accuracy, nor can the robust assessment of the potential success of mitigation measures be determined.

11.7 Other Ecological Impacts

11.7.1 In addition to impacts on birds and bats as discussed above, Chapter 6 of the EIS, 'Flora and Fauna' considers impacts on habitats and other sensitive fauna present at the site comprising Marsh Fritillary, Downy Emerald, Kerry Slug and various aquatic species. The available data and possible impacts may be considered as follows.

11.7.2 Habitats Impacts

The EIS does not provide full details of the site survey work carried out to map and identify habitats present. No details are given regarding survey routes walked through

the site, and there is no evidence of the recording of relevés to indicate representative samples of the vegetation occurring in different habitats. Moreover, no comprehensive details regarding the dates of habitat/flora surveys within different habitats are presented.

Section 6.3 of the EIS lists habitats present at the site, including a habitat map (figure 6.3). The site would have been dominated by peatland habitats before forestry was planted, probably mostly lowland blanket bog. The EIS states that 90% of the site is planted in conifers (including 72.5ha of recently felled woodland), mainly Sitka Spruce with smaller areas of Lodgepole Pine and Japanese Larch. Much of the forestry has been planted on thin or very wet peat and is stunted in growth. The next most abundant habitats are peatlands (c. 2.8% of the total site area), all of which, except for cutover bog, are considered to be of high conservation value. The unforested part of the northern end of the site is a mosaic of rock outcrops with shallow peat and depressions with deeper peat. Isolated islands of the original habitat remain in the form of very wet hummock-hollow complexes. Much of the peatland habitats in other parts of the site have been damaged by disturbance and drainage associated with the forestry operations but a number of high quality examples of wet heath and blanket bog exist at the site. A total of 7 no. habitats listed in Annex I of the EU Habitats Directive were recorded:

Habitat	**Location at Site**
Active Blanket Bog [7130* priority]	Depressions with deeper peat at the northern end of the site. Also small patches surrounded by forestry in the southern part of the site.
Oligotrophic waters containing very few minerals of sandy plains Littoreletalia uniflorae [310]	Larger lakes at the southern end of the site.
Atlantic wet heaths with *Erica tetralix* [4010]	Within a mosaic in a raised area at the northern end of the site. Also a strip through the middle of the site, surrounded by conifer plantation. This was burned in 2013 but will probably recover.
Natural dystrophic lakes and ponds [3160]	Many of the smaller lakes at the site.
Depressions on Peat Substrates of the Rhynchosporion [7150]	Present in some of the depressions at the northern end of the site.
Transition mire and quaking bog [7140]	One small patch next to an acid oligotrophic lake.
Alkaline fens [7230]	Small area next to the roadway, likely directly related to the limestone chippings used to surface the road.

Although heath habitats, which are also Annex I listed, are present, they represent isolated pockets of habitat and the damaged areas do not represent good quality examples of this type. There is also a very small area (0.3 ha) of wet Willow-Alder-Ash woodland present at the centre of the site. This is not an Annex I habitat but is of local importance as a piece of habitat in an area where deciduous woodland is almost completely absent.

Potential impacts on peatlands and water bodies and proposed peatland restoration measures are considered in detail below. The EIS notes a permanent slight negative impact on habitats from construction works. The development would change approx.. 41.5ha of habitat (2.4% of the development site). Of this, c. 90% would be conifer plantation/recently felled woodland (c. 37ha taking into account some replanting). The remainder would be spoil and bare ground, scrub, dense Bracken, immature woodland, wet grassland, treelines, buildings, and exposed sand, gravel or till. The development would result in loss 0.2ha of wet Willow-Alder-Ash woodland, most of the area of this habitat. The Annex I habitats affected would be 0.11ha of wet heath (c. 0.89% of the total area of this habitat type present at the site) and 0.19ha of lowland blanket bog (c. 0.43% of the total area of this habitat type present at the site). Of this, only 0.04ha of wet heath and 0.14ha of blanket bog would be permanently affected. The EIS considers cumulative impacts on flora and fauna with regard to other wind energy developments in the vicinity and other permitted developments. The majority of the habitat loss for these projects will be within conifer plantation, some of which would be subject to habitat restoration. The loss of semi-natural habitat is small in scale, with the majority of habitat loss in marginal roadside location.

The proposed mitigation measures comprise an Environment Management Plan, ecological enhancement, establishment of native woodland and scrub along the routes of any newly created wind turbine access roads and in small groups along riparian corridors. It is proposed to facilitate the restoration of blanket bog habitat in areas of conifer felling, in consultation with the NPWS. There would be no felling of conifers, individual trees or bushes during the construction.

Having regard to the below assessment of peatland and hydrology impacts, it is considered that the proposed development will not result in significant adverse impacts on habitats at the site, or at linked habitats in the vicinity, subject to the strict implementation of the detailed mitigation measures provided. However, the above identified deficiencies in the habitats surveys carried out at the site should be noted.

11.7.3 Kerry Slug

A population of Kerry Slug was discovered at Lettercraffroe in 2010, c. 5km northwest of the development site. Subsequent further research found a population at Seecon, 3.2km west of the development site. Kerry Slug is listed in Annexes II and IV of the EU Habitats Directive. A total of 5 areas within the development site were surveyed for Kerry Slug during the period April–May 2014. A total of 100 slugs were recorded during the 4 weeks of the survey, however the Kerry Slug was not present. The EIS also notes that a hand search at the site of the Letter Substation, carried out in November 2012, was also negative for Kerry Slug. The EIS concludes that Kerry Slug has not yet spread into the site from the nearest known site approximately 3km to the west at Seecon. The Ash Grey Slug, which is listed as vulnerable on the Irish red list, was noted at the site. This species was also recently discovered using forestry plantation habitat at Cloosh, the EIS concludes that it may have broader habitats' requirements than was once thought. The EIS does not identify any significant impacts on these species, this conclusion is accepted.

11.7.4 Marsh Fritillary and Downy Emerald

The butterfly species Marsh Fritillary is listed in Annex II of the EU Habitats Directive. There are known populations of the species at breeding sites in Connemara and it is known to be present within the Connemara Bog Complex SAC. The habitats within the study area were assessed for their potential as suitable Marsh Fritillary breeding sites on the 24th September 2013. No suitable sites were discovered. There were no signs that Marsh Fritillary had been feeding on the foodplant Devilsbit, which is present at the site. The EIS notes that 90% of the site is forested and therefore unsuitable for this species. The Downy Emerald dragonfly is listed as endangered in the Irish red list. It was noted once on the western edge of the study area. The species generally does not fly at heights at which they would be vulnerable to turbine blades. The EIS concludes that the proposed development should pose no threat to this species as long as water quality mitigation measures are strictly enforced and successful. The EIS does not identify any significant impacts on these species, this conclusion is accepted.

11.7.5 Aquatic Species

The site primarily drains to the Owenboliska catchment, which is within the Connemara Bog Complex SAC. Arctic Char, Otter (Annex II listed) and frog (EU habitats Directive Annex IV) are present at the SAC. A small area at the northern end of the site drains to the Lough Corrib catchment, i.e. the Lough Corrib SPA, however none of the proposed turbines are located in this part of the site. The Owenboliska catchment contains spawning Atlantic Salmon and Sea Trout, as well as Brown Trout. Small Brown Trout are present in all streams and most lakes, including Lough Fadda and Lough Naweelan. The parr of Brown Trout were recorded in the Ardderroo River on the eastern site boundary during water sampling carried out at the site on 27th September 2013. There are records of Otter (EU Habitats Directive Annex II and IV) living at the stream below Uggool Lough and at the lake below Loch na nArd-doiriú, c. 800m from the site boundary. The EIS states that it is highly likely that the species is present at the site.

The development site is not within a catchment area that has been mapped as sensitive for Freshwater Pearl Mussel (EU Habitats Directive Annex II and IV*)*. Section 6.4.5 of the EIS notes a report on the suitability of the Owenboliska River as habitat for Freshwater Pearl Mussel at the Uggool site to the immediate west, carried out in December 2011, which found no historical evidence of this species in the river. Previous surveys found no evidence of the species.

Water sampling carried out at the site on 27th September 2013 indicated that the Ardderroo River at the site is poor to moderately polluted and that the Sruffaunbeg/Owenboliska river system at the site is moderately polluted. Existing EPA data for monitoring sites downstream indicate moderate pollution of the Ardderroo River and poor-moderate water quality for the Sruffaunbeg/Owenboliska River. The EIS identifies a '*Short term potentially significant negative impact of suspended solids and mobilised nutrients on aquatic habitats, aquatic fauna and groundwater quality during construction'*. This would primarily result from entrainment of suspended solids and nutrient release in surface watercourses during construction. There is also the potential for release of pollutants into surface waters, which could have negative impacts on surface water quality in the Owenboliska catchment, with consequent

potential negative impacts on aquatic fauna including Atlantic Salmon, Sea Trout, Brown Trout and European Eel. Proposed mitigation comprises the surface water drainage measures discussed below, also construction phasing such that the subject development does not coincide with adjacent wind energy developments.

The EIS identifies a 'long term slight negative' residual impact on aquatic habitats and species. The assessment of cumulative water impacts considers that, even though 4 other permitted/proposed wind energy developments and the road and energy infrastructure lie within the same Owenboliska catchment, the residual/mitigated impact of the development on water quality will be imperceptible/negligible. Therefore, no cumulative impacts are envisaged.

The DoAHG submission on file notes that the reported water quality samples do not correspond to high status. The Board is requested to note that the general requirement for Annex I lake habitats, which occur in the SAC downstream, is to restore them to high status.

Having regard to the below assessment of peatland and hydrology impacts, it is considered that the proposed development will not result in significant adverse impacts on aquatic habitats and species at the site, or in the vicinity, subject to the strict implementation of the detailed mitigation measures provided.

11.8 Water Impacts

11.8.1 Existing Surface and Ground Water Regime

The EIS provides an outline of the surface and groundwater regimes on the development site, based on water sampling and site surveys carried out by Hydro Environmental Services on 31st October 2013, 17th and 18th April 2014 and 4th June 2014. The site is covered by blanket bog and dotted with several small to medium sized lakes. The smaller lakes are generally isolated while the larger ones are sources of streams or are situated along routes of streams that flow through the site. Recharge rates at the site are low due its peatland environment, as illustrated by the presence of a high density of streams in the area. The majority of the site is located in the Owenboliska River catchment within the regional Owenboliska-Cashla-Screeb-Coastal catchment. A very small section of the northern part of the site is within the Lough Corrib regional catchment (none of the proposed turbines are located in this area). There are 2 main rivers draining the site:

- The Owenboliska River, which originates at Seecon Lough c. 2.5km west of the site and flows in a south easterly direction through the southern part of the site, where it is joined by several tributaries. It then flows southwards, passing through Boliska Lough before entering the sea at Spiddal.
- The Ardderroo river originates in the northern section of the site and flows in a southerly direction delineating the eastern site boundary. It drains into Lough na nArd-doirú at the southern site boundary, which then drains into the Owenboliska River via a smaller unnamed lake.

There are 8 no. subcatchments within the site ref. table 8.3 of the EIS. There are numerous manmade drains within the overall site, associated with the forestry plantations that cover c. 90% of the site. There are culverts at stream crossings and at low points under access roads, which drain to down gradient forest plantations. OPW flood risk mapping does not indicate any records for the development site. However, a

recurring flooding incidence is mapped downstream of the site on the Owenboliska River north of Boliska lough.

The Spiddal groundwater body underlies the site. It is assigned 'good status'. The Connemara Granite under the site is generally classified as a Poor Aquifer (Pl – bedrock which is generally unproductive, except in local zones). Low permeability leads to a high water table and potential waterlogging of the site in winter. The vulnerability rating of the aquifer within the site ranges from "low to moderate" to "high to extreme", reflecting the varying depths of local subsoils and peat. The more elevated areas at the northern end of the site are rated "high to extreme" while the southern lower lying section of the site is rated as "low to moderate". However, due to the low permeability nature of the site, there is low potential for groundwater dispersion and movement within the aquifer.

11.8.2 Water Quality Data

Q-rating data for EPA monitoring points on the Owenboliska River 3.5km south of the development site boundary indicates a Q-4 rating (good Status) from 2004 to date. A Q-rating point located on the tributary originating from Buffy Hill in the site area also has a Q-4 rating. Surface water sampling carried out at 3 locations at the site on 31st October 2013 and 18th April 2014 indicates slightly acidic PH values for surface waters, typical of peatland environments and consistent with the underlying granite bedrock. Total suspended solids were below the Freshwater Fish Directive. All nutrient levels were low. The results were generally consistent with the "High Status" range. The relevant catchments currently have 'good' WFD status. However, I note that the ecological water sampling indicated moderately polluted waters at the site, see above.

11.8.3 Potential Water Impacts

Risks to water quality generally relate to surface waters only as the groundwater body underneath the site is protected by a covering of blanket bog. All turbines are effectively located in sub-catchment areas of the Owenboliska River. The Owenboliska is known to contain trout and is locally important for fishing. The site is hydrologically connected to the Connemara Bog Complex SAC and pNHA but not to any other designated site. The Arderroo River and the Owenboliska catchments and associated tributaries are sensitive to pollution. There are 4 wells are identified within 5km of the site. Third party submissions raise concerns about potential impacts on the Boliska Lough public water supply, which is downstream of the site.

The proposed development footprint (increase in impermeable areas) would result in an average increase of daily surface water run off of 133m^3/day. This represents a 0.14% increase in the average daily/monthly volume of runoff from the site. The EIS concludes that this increase is 'negligible' and that there will be no risk of exacerbated flooding down gradient of the site.

Potential construction impacts result from forestry felling; earthworks; excavation and borrow pit construction dewatering; potential hydrocarbon release; wastewater contamination of ground and surface water; release of cement based products; morphological changes to watercourses and drainage patterns. Tree felling and earth works could result in exposure of soil and subsoils and associated release of

suspended sediment to watercourses. The DoAHG comment on file states concern about potential impacts of ground disturbance and excavations, peat disposal, deforestation, drainage and directional drilling on surface waters, particularly the lake habitats downstream.

11.8.4 Drainage Design and Mitigation Measures

The EIS sets out a suite of drainage mitigation measures to be carried out during construction, prepared by Hydro Environmental Services. The proposed measures are based on a methodology suitable for peatland situations, i.e. prevention of disturbance to natural drainage features and diverting clean surface water flow away from construction operations, followed by separate attenuation and treatment of construction run off. All proposed turbine locations and new access roads (except for stream crossings) are located >50 m away from streams. There are no buffer zones to existing forestry drains, these are to be integrated with the proposed wind farm drainage, primarily by improved water treatment using measures such as silt traps, stilling ponds and buffered outfalls prior to discharge.

The drainage design includes a range of well-established mitigation measures to protect surface water quality during construction. Existing 'clean' surface water flow is to be diverted around excavations, construction areas and temporary storage areas using interceptor drains. Drainage from works areas is to be collected and routed towards stilling ponds prior to controlled release over vegetated surfaces at a minimum of 50m and 100m distance from streams and lakes respectively. There would be no direct discharges to any watercourses, all drainage waters would be dispersed as overland flows and no direct discharge of untreated runoff drainage into the existing site drainage. The measures include the use of filtration treatment (i.e. 'siltbuster' or equivalent), silt fences, silt bags, management of groundwater inflows, management of hydrocarbons, avoidance of wet cement batching at the site and ongoing surface water quality monitoring. Section 8.4 of the EIS sets out specific additional mitigation measures for tree felling, for management of run-off from the peat storage areas, for excavation works at the turbine sites and borrow pits and for management of hydrocarbons and cement based products. The construction methodology submitted includes measures to prevent concrete and fuel spillages and sediment run off. There is to be ongoing monitoring of the mitigation measures during construction.

The development involves 4 no. new watercourse crossings and 10 no. potential crossing upgrades. Existing artificial drains in the vicinity of site roads will be retained where possible, check dams would be added if they are expected to receive drainage water from works areas. If road works are necessary, they would be carried out on the opposite side of the road from the drain. There will be a requirement for a power cable stream crossing in the area of T18 and T24. The crossing will be facilitated by directional drilling beneath the stream bed. It is submitted that the drainage works have been designed to maximise erosion control, which is more effective than having to control sediment during high rainfall. Full details of the measures included in the drainage design are submitted, including attenuation and sediment trap measures. This includes drainage for the borrow pits, floating roads and cable trenches. Details of site and drainage management are also provided. Surface water quality monitoring is to be conducted before, during and after felling and construction activity.

The EIS addendum addresses additional issues associated with the proposed new substation location, noting that it is outside all stream buffer zones. Construction mitigation measures are set out as in the main EIS. The EIS addendum also deals with the proposed directional drilling in more detail. Directional drilling operations are to be supervised by a qualified ecologist and/or hydrologist and turbidity monitoring up and downstream of the drilling operation will be carried out.

11.8.5 Water Impacts Conclusion

The EIS identifies the following residual impacts:

- Clear felling of coniferous plantation – indirect, negative, slight, short term, low probability impact.
- Earthworks (removal of vegetation cover, excavations and stock piling) – negative, indirect, imperceptible, short term, low probability impact.
- Dewatering of the proposed borrow pits could potentially impact on groundwater levels or result in contamination from hydrocarbons – direct, negligible, short term, medium probability impact on groundwater quality.
- Potential hydrocarbon release during construction and storage – indirect, negative, imperceptible, short term, low probability impact on surface water quality.
- Groundwater and surface water contamination from wastewater disposal – no residual impact. Release of cement based products – negative, indirect, imperceptible, short term, moderate probability impact.

The EIS concludes that mitigation measures will prevent potentially sediment laden runoff from entering streams that flow through the Connemara Bog SAC. There could potentially be an "imperceptible, short term, low probability" impact on local streams. No direct or indirect impacts on the SAC are envisaged.

The EIS concludes that there will be no impact on any potential water supply. The applicant's presentation at the Oral Hearing considered potential impacts on Boliska Lough Public Water Supply, located 5km downstream of the development site. It is submitted that the proposed mitigation measures will protect downstream water quality. The drainage design does not rely on the assimilative capacity of streams or lakes to reduce impacts on downstream water quality

The EIS considers cumulative water impacts with regard to the adjacent permitted/proposed permitted wind energy developments. The greatest risk identified is during the construction phase of development. There are 3 no. significant permitted developments within the Owenboliska catchment, i.e. Uggool, Cloosh and Seecon. The EIS states that the timetable for the construction of these developments is unknown, however it is very unlikely that all 3 would coincide with the proposed development if permitted. It is noted that construction is currently underway at the Uggool site. The total no. of turbines that could be operating within the Owenboliska catchment is 89. The total catchment area for the Owenboliska River is c. 97km^2 and therefore this equates to 1 turbine for approx. every 1.09km^2, which would not be considered high density. Cumulative impacts are not anticipated from non-wind energy developments in the area, i.e. the Moycullen N59 bypass, the Connemara 110kv reinforcement, the Connemara Green Way, the R336 Screeb to Barna road upgrade, the Doon road upgrade and Letter 110kV substation.

I consider these conclusions to be creditable, on the basis that the most significant potential impacts arise during the construction phase. I am satisfied overall that the development would not have a significant adverse impact on water quality subject to the proper implementation of the proposed mitigation measures. These measures are comprehensive and are described as pre-emptive and proactive, with ongoing inspection, water quality monitoring and maintenance. Cumulative impacts can be prevented by phasing construction such that it does not take place at the same time as adjacent wind energy developments.

11.9 Peatland Impacts

11.9.1 Background

One of the refusal reasons of PL07.239053 (14 turbines) at the Knockranny site to the immediate east related to peatland impacts. In that case, refusal reason no. 2 stated:

"*Notwithstanding the detailed geotechnical surveys undertaken, the Board is not satisfied that all geotechnical/peat slippage risks have been fully resolved for all turbine locations, and it is considered that the resultant risk of environmental damage is unacceptable, that the proposed development would therefore pose an unacceptable risk of environmental pollution* …"

The EIS analysis of the development site is based on geological mapping, gouge coring and peat depth probing, which was undertaken by HES on 31st October 2013 and on 17th and 18th April 2014. AGEC Ltd. carried out further site investigations on 29th October and 1st November 2013, on 29th and 30th April 2014, 4th June 2014 and 6th August 2014, including 5 no. probes at each proposed turbine location. A total of over 1,300 probes were carried out at the site.

The elevation across the development site varies from 60mOD to 265mOD, based on O.S. maps. There are localised steep slopes of up to 20° in the northern part of the site, the southern area is undulating in nature. Blanket peat is the dominant soil type, underlain by glacial till with granite bedrock. The peat is significantly degraded in most places as a result of forestry related drainage and rill ploughing. Peat is shallower at the northern end of the site, where there are rock outcrops in places, typically <1m with localised pockets of deeper peat of up to 4.5m in depth. There is thicker blanket peat under the conifer plantations in the southern part of the site, with little indication that the peat was cut for turf in the past, depths recorded here were typically 1.0-4.0m with localised depths of up to 7.2m. There are localised areas of deep, highly saturated peat in the southern part of the site, which would be considered to have low strength. The average peat depth across the site was 1.8m.

There are no recorded peat failures at the development site. The nearest recorded peat failure occurred 22km north west of the site in Joyces Country, co. Galway in 1821. There was a recorded peat failure 35km north west of the site at Letterass, Co. Mayo in 2006. A review found no other peat failures within a 50km radius of the site.

11.9.2 Peat Stability Assessment

The EIS assessment of impacts on soils and geology is supplemented by a Peat Stability Assessment conducted by Hydro-Environmental Services and AGEC Ltd.

AGEC carried out a Peat Stability Assessment for each of the infrastructure locations, this is included as Appendix 13 of the EIS. The assessment is based on a series of factors that influence peat stability including properties of peat/soil/rock, slope angle, depth of peat, shear vane test results, underlying strata, groundwater and loading conditions. An adverse combination of these factors could result in instability.

In-situ shear vane testing was carried out across the site and the results used to establish the 'undrained shear strength' (c_u) of peat at the site, i.e. the undrained loading condition that would apply in the short term during construction. Peat strength at sites of known past failures (assuming undrained loading failure) are generally very low. For example, findings of the Derrybrien failure indicated that undrained loading during construction was a critical failure mechanism. In that case, the undrained shear strength was estimated at 2.5 kPa. Testing at various locations around the development site found an undrained shear strength in the range of 5-50 kPa with an average value of about 15 kPa. The lower bound strengths recorded would be typical of deep, weak saturated peat and were recorded in the deeper peat deposits in the flatter areas of the site. The Peat Stability Assessment estimates undrained shear strength, c_u, as 6 kPa, based on the c_u values recorded at the site. It is submitted that this is a conservative estimate.

The assessment also considered the drained loading condition, which is relevant to the long term stability of the site. This examines the effect of changes in groundwater levels associated with rainfall on the existing stability of the natural peat slopes. It is independent of the proposed development and is based on generalised peat strength and groundwater conditions. A review of published information was carried out to determine suitable drained strength, summarised in Table 2 of Appendix 13. The general drained strength for the site is an estimate of effective cohesion (c') 4 kPa and effective friction angle (ø') 25°, again it is submitted that this is a conservative estimate.

The shear strength is used to calculate a measure known as 'Factor of Safety' (FoS), i.e. the degree of stability of a peat slope resulting from the interaction between the weight of the soil/peat and the shear resistance of the peat to the downslope weight (strength of peat). The acceptable minimum FoS, based on international experience of slopes, is typically 1.3. A FoS <1 indicates that the slope is unstable and liable to fail. The stability analysis included a surcharge of loading of 10kPa, the equivalent of placing 1m of stockpiled peat on the surface of the peat slope, identified as 'condition 2' in the EIS. This is to present a 'worst case scenario'. The undrained analysis for load condition 2 is considered the most critical load case as most peat failures occur in the short term upon loading of the peat surface. The findings of the FoS analysis for each turbine location may be summarised as follows, these should be considered in conjunction with Figure 6 of the stability assessment, which maps the FoS site analysis in relation to turbine locations and access roads.

Turbine No.	**Range of Peat Depth (m)**	**Average Peat Depth (m)**	**Slope Angle (°)**	**FOS Undrained (Condition 2)**	**F.O.S. Drained (Condition 2)**
T1	0.5 to 1.8	1.2	6.0	2.06	2.96
T2	0.1 to 0.7	1.3	4.0	5.07	7.30
T3	0.2 to 1.4	0.6	4.0	3.59	5.17

T4	0.7 to 2.1	1.5	5.0	2.23	3.21
T5	0.3 to 0.9	0.6	3.0	6.04	8.71
T6	0.1 to 0.9	0.3	12.0	1.55	2.19
T7	0 to 0.4	0.2	11.0	2.31	3.28
T8	0.4 to 1.0	0.7	11.0	1.60	3.58
T9	0.45 to 2.3	1.1	2.0	5.21	7.52
T10	0.4 to 2.2	1.2	3.0	3.59	5.17
T11	0.5 to 1.4	0.9	2.0	7.17	10.34
T12	3.0 to 4.0	3.6	2.0	3.44	16.88
T13	0.25 to 0.7	0.55	3.0	6.75	14.65
T14	0.9 to 2.3	1.4	2.0	5.21	7.52
T15	3.3 to 4.6	3.7	2.0	3.07	4.43
T16	0.9 to 1.5	1.2	2.0	6.88	9.93
T17	0.2 to 1.0	0.4	4.0	4.71	6.78
T18	0.9 to 1.6	1.3	2.0	6.62	9.55
T19	0.5 to 2.7	1.7	4.0	2.33	3.36
T20	0.5 to 0.8	0.6	5.0	3.84	5.52
T21	3.0 to 3.8	3.4	1.0	7.16	10.34
T22	0.4 to 1.1	0.7	3.0	5.47	7.88
T23	1.0 to 2.0	1.5	2.0	5.73	8.27
T24	0.5 to 0.6	0.6	5.0	4.32	6.21
T25	3.1 to 5.9	4.3	2.0	2.49	3.60
T26	0.4 to 1.5	0.8	6.0	2.31	3.31
T27	1.0 to 2.1	1.4	3.0	3.70	5.34
T28	0.5 to 1.2	0.9	2.0	7.00	10.10
T29	0.8 to 1.3	1.0	3.0	4.99	7.20
Substation	0 to 0.5	0.1	6.0	3.21	4.59
Const. Compound	0.6 to 1.5	0.8	4.0	5.45	7.86
Temporary Const. Compound	1.0 to 1.5	1.25	3.0	2.25	3.25
Met Mast	4.7 to 5.4	4.9	1.0	5.37	7.76

The analysis found FoS figures above the accepted parameter for all turbine locations. The EIS provides further details. The undrained analysis found a FoS in excess of 1.3 at all 408 locations tested. The drained analysis found 3 no. locations with a FoS below the minimum, i.e. Wp069 (1.06), Wp025 (1.14) and Wp034 (1.13). There findings are not mapped, it is unclear where in the site they are located. The Peat Stability Assessment states that they correspond to areas of deeper peat within topographical depressions, i.e. there would be no risk of a peat slide. However, they present an elevated construction risk and are to be subject to additional mitigation/control measures. This is a creditable conclusion as peat located in a depression cannot move down a slope. I also note that the proposed roads and infrastructure locations would be the initiation point for any peatland failure and that peat conditions are mapped for these locations.

AGEC carried out a risk assessment based on the stability analysis in combination with qualitative factors such as the presence of mechanically cut peat, quaking peat, bog pools, sub peat water flow, slope characteristics and numerous other factors.

Figure 4 of the assessment indicates parts of the site that have deep weak peat, with a resultant elevated construction risk, these are all in the southern part of the site. Turbines nos. T2, T3, T4, T5, T8, T9, T10, T11, T13, T14, T16, T17, T19, T20, T22, T26, T27, T28, T29, the substation site and the construction compound sites all had a risk rating of 'trivial', i.e. 'none or only routine control measures required'. Turbine nos. T1, T6, T7, T15, T18, T24 and T25 had a risk rating of 'tolerable', i.e. 'only routine control measures required'. Turbine nos. T12, T21 and T23 had a risk rating of 'substantial', i.e. 'notable control measures required'.

The peat stability assessment concludes that the site has an acceptable margin of safety and is suitable for a wind farm development, subject to the implementation of recommended mitigation measures.

11.9.3 Peat Management and Bog Restoration

Section 7.4 of the EIS summarises estimated peat excavation volumes and a Peat Management Plan by AGEC is submitted as Appendix 3 of the EIS. Further details of peat storage were provided by the applicant at the Oral Hearing. A total of 304,250 m^3 is to be excavated at the turbine sites, substation, borrow pits, met mast, site roads and construction compounds. The combined estimated volume of the 3 no. borrow pits is 292,073m^3 (stated as 288,400m^3 in the Peat Management Plan). Not all of the peat removed will be stored in the borrow pits, a portion will be used for reinstatement and landscaping works around the site. The peat Management Plan sets out proposed measures for the storage of peat excavated during construction, noting that inappropriate side-casting of material is considered one of the main peat stability risks during the construction phase. Excavated peat is to be placed on one of the 3 no. borrow pits at the site, once bedrock has been excavated primarily for roads construction (sequential approach). Cross sections and construction details are provided for each pit, peat is to be stored in cells defined by rock buttresses and the stability of the areas is to be monitored. An amended Peat Management Plan is submitted with the EIS Addendum, including revised calculations such that it is now proposed to excavate a total of 306,050m^3 of peat. The capacity of peat storage areas and the amount of peat to be used for landscaping purposes are unchanged.

Additional peatland mitigation measures comprise ecological enhancement and the establishment of native woodland and scrub along the routes of any newly created wind turbine access roads and in small groups along riparian corridors. It is proposed to facilitate the restoration of blanket bog habitat in areas of conifer felling, in consultation with the NPWS. The acrotelm (upper layer of peat) is to be reused for landscaping purposes, estimated total volume 25,000m^3 (c. 860m^3 at each turbine site). Ongoing monitoring is proposed during the construction period, with contingency measures in the event of excessive movement or the onset of a peat slide.

Further details of the peatland habitats restoration measures were submitted as further information. A site survey undertaken on the 19th, 24th and 25th March 2015 found that the sites of the following turbines are suitable/optimal for habitat enhancement and bog restoration: T2, T5, T7, T8, T14, T17, T18, T22, T23, T24, T26. The plan sets out proposed habitat management measures for each those turbine sites. The overall objective is to maintain, enhance and where possible restore baseline hydrological and ecological conditions. This is to be achieved by blocking existing forestry drains at the site immediately after construction works, using peat

dams in most cases. This will allow re-wetting of blanket bog/heath habitat, giving wet bog plant communities including sphagnum mosses a chance to establish. The developer will then carry out ongoing monitoring of the water table at each site. It is anticipated that the peatland habitat will continue to re-wet within discrete areas of the development footprint and encourage the regeneration of wet bog plant communities. The developer will carry out ongoing vegetation monitoring of permanent vegetation quadrats and the *Sphagnum* trial plots at each turbine site, to inform the effectiveness of the management measures. A proposed ecological monitoring schedule is provided. Other ongoing measures comprise the avoidance of peat cutting, additional drainage, waste dumping, fertilisers, tree planting, ploughing, burning or use of heavy machinery. It is also proposed to introduce an invasive species eradication programme if invasive species are encountered.

11.9.4 Mitigation Measures at Turbine Sites and Borrow Pits

The Peat Stability Assessment includes a geotechnical risk register for the locations of turbines, also the site substation and the construction compounds. This provides details of existing conditions at each location and sets out proposed control measures. The EIS concludes that this risk can be mitigated by proposed risk control measures, which generally comprise the maintenance of existing hydrology and the use of experienced geotechnical staff and trained operators. The locations of turbines nos. T12, T15, T21 and T25 have maximum peat depths of 3.8-5.9m but have shallow slope angles of 1.0-2.0°. Peat depths of up to 5.4m were recorded at the proposed met mast location with a shallow slope angle of 1°. These locations are not considered to represent a peat slide risk due to the flatter topography but pose a safety risk during construction. Additional mitigation measures are proposed for an area south of T18, where directional drilling is to be carried out to create a cable duct. The proposed measures for each location may be summarised as follows:

T12
Located in the centre of the site, south of the Doon road. The risk is associated with a peat depth of 4.0m, the slope is 2°. Stream nearby to north. The EIS proposes additional control measures during construction including the use of bog mats, supporting of excavation side walls, daily inspection of excavation, pumping to remove water during construction and increased exclusion zone around excavation. Adjacent sections of road should also be subject to these measures.
T15
Located in the centre of the site, south of Doon road. Peat depth of 4.6m, slope 2°. Additional control measures are proposed as at T12.
T18 Directional Drilling
Directional drilling will be required to construct a cable duct under a river bed 250m south of T18, which will contain electricity and fibre optic cables from T17, T21, T22, T26, T27 and T28. Detailed methodology is set out in EIS section 4.3 and the preliminary Construction and Environmental Management Plan, EIS Appendix 4.
T21
Located in the south western part of the site. Peat depth of 3.8m, slope 1°. Stream nearby to east and lake to west. Additional control measures are proposed for the construction phase as at T12.
T23
Located in the southern part of the site peat depth of 2m. Slope of 2°. Stream nearby to

east, leading to lake to north. Risk associated with sub peat water flow and surface water flow. Additional control measures not proposed.
T25 and T27
I note from Figure 4 of the Peat Stability Assessment that T25 and T27, located in the southern part of the site, are adjacent to areas of deep, weak peat. The geotechnical risk register notes that the location of T25, in the south eastern corner of the site, has a peat depth of 5.9m and slope of 2°. No substantial risk is identified, however additional control measures are proposed as at T12. T27 is located at the southern site boundary, to the immediate north of an area of deep peat. Peat depth at the turbine location is 2.1m, slope is 3°. No substantial risk is identified, overall rating of 'trivial'. No additional control measures are proposed.
Borrow Pits
The geotechnical risk assessment does not consider the 3 no. borrow pits. However, detailed designs and mitigation measures are provided for each pit in section 7.4 of the Peat Management Plan and the preliminary Construction and Environmental Management Plan, including cross sections. Rock buttresses are to be used to stabilise the peat storage areas. The EIS does not proposed any additional mitigation measures for the location of Borrow Pit no. 3, which is adjacent to an area of deep, weak peat, however all works are to be subject to ongoing assessment of ground stability conditions.

11.9.5 Design of Site Access Roads

The EIS considers impacts of proposed upgraded/new access roads and sets out a detailed construction methodology. The existing roads have been constructed using both excavate and replace and floated construction techniques. Both will be upgraded to a width of 6m using the same techniques. Both techniques will also be used for the new roads, depending on localised peat depth and slope, as set out in Table 1 of the Peat Management Plan. Proposed new roads are to be predominantly of the excavated type, this is the preferred construction method for new roads in shallow peat. Floating roads are to be used in localised areas only, where deeper peat exists, a detailed methodology is provided in sections 5 and 6 of the Peat Management Plan, including ongoing monitoring at 10m intervals. Pressure berms on either side of the road may be included in areas of deeper peat. At transitions between floating and existing excavated roads a length of road of c. 10-20m will have all peat excavated and replaced with suitable fill. Figure 1 of the Peat Management Plan provides the access roads design layout.

11.9.6 Peatland Impacts Assessment Critique by Observers

The observer Dr. Padraig O'Cathain questions the methodology of the AGEC peat stability assessment, as in the above summary of the written submission and the comments at the Oral Hearing. Additional points in relation to peatland impacts assessment were raised by Peter Sweetman in the course of the Oral Hearing. The main points raised may be addressed separately as follows.

Dr O'Cathain questions the validity of the FoS assessment method, stating that it was developed in the 1930s for mineral soils and is now discredited. He refers to an article '*Peat Slope Failure in Ireland*' by N. Boylan, P. Jennings and M. Long (UCD Quarterly Journal of Engineering, Geology and Hydrogeology 2008). This paper is based on 70 no. reported historic peat failure events, including the failures at Pollatomish, Co.

Mayo and Derrybrien, Co. Galway in 2003. It states that peatland hydrology plays a significant role in many of the peat failures that have occurred in Ireland and notes that slope inclination is a significant factor in controlling the occurrence of peat failure. Analysis of historic peat failures shows a general trend of increasing peat thickness with reduction in slope angle. The vast majority of the failures are clustered between 4° and 8°. Shear strength is also a primary controlling factor in peat failures. It notes that, although peat is a decaying mass of soft organic material, soil mechanics strength models that were developed for mineral soils are routinely applied to peat. The significant difference between the fabric and structure of peat and mineral soils makes the direct application of such models doubtful. There are many uncertainties and difficulties about the use of standard laboratory and in situ shear strength test methods. The paper notes a lack of research and concludes that:

"*The huge areas of uncertainty that exist about peat strength and causal factors of failure mean that slope stability analyses in peat cannot be relied on, and should be used only as an indication of stability*."

AGEC submit that the FoS method is recommended in the guidance document '*Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments*' (Scottish Executive 2006), a document which is also cited in the EIS. I note that this document concurs that conventional geotechnical approaches to mineral soil analysis are poorly tested with respect to peat and that the use of slope stability analyses to predict realistic FoS's requires correspondingly greater understanding of site-specific controls. However, I note that the Peatlands Impacts Assessment in the EIS is based on a site walkover and a detailed consideration of ground conditions, both carried out by technically competent persons. It would be useful if the EIS had provided a more detailed description of the site ground conditions with regard to possible indicators of existing features associated with peat instability, e.g. quaking areas, underground pipes, however it is accepted that it is based on a comprehensive site investigation. I accept that the AGEC approach to peat stability assessment is holistic as it includes qualitative judgement as well as the numerical analysis of testing results from the development site. The FoS assessment is supplemented by a peatland risk analysis, as recommended in the Scottish document, which takes site specific factors into consideration, i.e. it is not the sole method of assessment. Dr Paul Jennings cited his professional expertise at the Oral Hearing. This is supplemented by further details of AGEC credentials in the EIS and is accepted.

It is submitted that the values used for the formulae in the assessment were chosen based on average values from literature. Peat failures occur at localised weak spots and an average case analysis is inappropriate. A single reaction of weak peat could lead to a bog burst. AGEC respond that average values were not used for the undrained analysis. This is the critical analysis with regard to construction induced failures as all such failures are due to undrained loading condition, i.e. the instantaneous strength of the peat. Professional experience and judgement are also used to estimate the peat strength. I note that 5 no. probes were carried out at each infrastructure location, i.e. there was a detailed assessment and not just an average measurement. Dr O'Cathain questions the use of shear vane testing as a method of assessing the strength of peat, again referring to Boylan et al. AGEC comment that peat slides towards the base layer where the amount of fibres present is minimal, this is the area used to calculate FoS. A cautious estimate of the shear strength is used. In

addition, shear vane testing is used in conjunction with measurement of soil and subsoil values, slope angle, peat thickness and strength, also comparison with an in house database of results including peat failures such as Derrybrien (250+ results). A similar shear vane profile to a failure site may be an indication of difficulties, this would be taken into account along with peat thickness and slope angles. This point is accepted. Average figures are used for the drained analysis, which is an assessment of the susceptibility of the site to rainfall induced failure, regardless of the presence of the proposed development. AGEC submit that generalised values are used for effective strength parameters because it is very difficult to establish these and this point is accepted.

Peter Sweetman submits that there is a major lacuna in the EIS as to the nature of slopes at the site and their relationship with the underlying bedrock. The underlying slope may be very differenent from the visible slope at the surface. AGEC agrees that the terrain at the southern part of the site is submerged and covered with blanket peat, i.e. there may be different underlying ground conditions than are apparent at the surface. The 5 no. probes at each turbine location are spaced 10m apart, this is to identify any changes in underlying ground conditions. Generally, no great difference was found between the ground and the underlying slope. While there are infilled hollows of peat at several locations in this part of the site, landslides are unlikely to occur at such hollows, as discussed above. I am satisfied that there was a comprehensive investigation of ground conditions at the site.

It is submitted that the peat impact assessment does not give adequate consideration of the impacts of forestry at the development site and that this was a known contributor to the slope failure at Derrybrien. Dr O'Cathain cites a report entitled '*Wind Farms and Blanket Peat The Bog Slide of 16th October 2003 at Derrybrien, Co. Galway, Ireland*' (2005) by Lyndsey & Bragg, School of Health & Biosciences University of East London. Lyndsey & Bragg note that the Derrybrien blanket bog site was characterised by a mature forestry canopy of lodgepole pine, which had reduced rainfall to the underlying peat soil. The peat had dried causing it to crack along the lines of the forestry ploughing furrows. The area had thus become heavily fissured and, in effect, divided into long ribbons of peat running between the ploughing furrows, which were generally orientated downslope. Evidence suggests that the failure may have resulted either from loading by excavation machinery or from the release of water into heavily-fissured peat or both. The initial failure led to distinct rafts along forest plough/drainage channels, which separated from other and flowed downslope, each supporting a line of plantation trees. The fault-lines corresponded to cracks from the forestry. The bog slide occurred during a spell of dry weather, in a run of dry summers which probably exacerbated cracking within the peat. Lyndsey & Bragg also note that the removal of forestry at peatland sites can have significant hydrological impacts. It was submitted that the hearing that the EIS does not properly assess such potential impacts relating to the proposed felling of forestry at the development site.

AGEC comment that Dr. Jennings was at the Derrybrien site within 24 hours of the failure in 2003 and was involved in the assessment of that peat failure. While almost the entire site was covered in forestry, the Derrybrien failure actually occurred where forestry was absent or thin. The areas where there is an absence of forestry are indicative of wetter ground conditions and increased likelihood of failure, i.e. areas where the forestry didn't grow because the ground was too wet. Forestry does not necessarily contribute to peat failure risk and can actually strengthen peatland. On

balance, it appears that adequate assessment was made of potential impacts relating to forestry. In addition, I note that Lyndsey & Bragg comment that the Derrybrien failure was part of a general pattern of instability within that area, with evidence of other bog slides and of peat movement on the site and in the vicinity. This does not appear to be the case at the development site.

While the comments of the observers are noted, I accept that AGEC has carried out a comprehensive analysis of the possibility of peat failure at the development site, drawing from thorough site investigations and the application of professional expertise and judgement. The analysis of peat failure risk is in accordance with recommended best practice (as per the Scottish guidance) and fully considers all aspects of the proposed development. This type of evidence based analysis based on a variety of approaches appears to have been absent in the Derrybrien case, as per the information provided in the Lyndsey & Bragg report.

11.9.7 Peatland Impacts Conclusion

The EIS concludes that there is a low-medium risk of peat instability or failure at the development site. The impact on peatlands as a result of excavation of soils, subsoil and bedrock is identified as "*negative, direct, slight, medium/high probability, and permanent impact on peat and bedrock*". It is accepted that such impacts are unavoidable if development is to take place at the development site. The EIS states that potential cumulative impacts will not arise as the proposed construction works would not take place at the same time as the other permitted/proposed wind energy developments in the area. This point is accepted, given that the initiation point of a peat failure would be at locations where infrastructure is under construction. Detailed methodologies have been provided for all aspects of construction, which include mitigation measures and ongoing monitoring of peat conditions, also a contingency plan for any indications of a possible peat failure. The detailed drainage proposals, which are designed for a peatland context, are also noted in this regard.

The proposed peat storage methods are acceptable subject to the satisfactory sequencing and management of peat and the implementation of adequate drainage measures. While the discrepancies in the figures provided are noted, it is considered overall that the borrow pits have adequate capacity with regard to the amount of material to be used for restoration.

I note that T27 is immediately adjacent to an area of deep, weak peat. Borrow pit no. 3 and one of the temporary construction compounds are also located in this part of the site. There is a stream nearby to the south. I note that this is a relatively flat part of the site. The EIS does not provide a detailed analysis of the combined risk at this area. However, with regard to the general assessment and proposed construction methodology/mitigation measures, including ongoing monitoring during construction, it is considered that the potential risks in this area have been given due consideration and mitigated for.

The peat stability assessment carried out by AGEC concludes that the site has an acceptable margin of safety and is suitable for the proposed wind farm development. This assessment is the result of an expert analysis and based on extensive site inspection and testing of over 400 locations at the development site. Having regard to the above discussion, I am satisfied that the proposed development does not present

an undue risk of peat instability, subject to the implementation of the proposed mitigation measures, also the stated construction and site drainage methodologies.

11.10 Roads and Transportation Issues

Several of the observers have stated concerns relating to traffic impacts, particularly cumulative impacts on the Doon residential area south west of the site off the N59. This issue was again raised at the Oral Hearing.

Section 13.1 of the EIS considers potential traffic impacts, which primarily relate to the construction phase of the development. The EIS traffic analysis is based on a count carried out during the PM peak of 17.00-18.00 on a weekday, 17th April 2014. Information on flows on the N59 were derived from NRA data, including a count maintained by the NRA just south of the N59/Doon road junction. NRA data was also used to estimate future background traffic volumes in the area.

Traffic volumes would vary over the estimated 11 month construction timeframe The general site preparation and groundworks (estimated 200 days), would involve an estimated 104 no. daily truck movements. This represents a 114% traffic increase on background flows on the Doon Road and 6% increase on the N59. There would be 29 days when turbine foundations would be poured. On those days, there would be an additional 75 no 2 way HGV movements of concrete deliveries over a 12 hour period. There would also be a total of 290 no. deliveries of turbine components over the turbine construction stage (approx. 15 weeks), with an estimated 7 no. daily deliveries for 2 days per week of 'extended artics' with large components such as turbine blades. Construction employee traffic is estimated on the basis of 65 no. employees at the site during the ground works stage of the development and 40 staff during the turbine construction stage. The details of additional vehicular movements are estimated in section 13.1 of the EIS. The EIS includes a junction capacity analysis, which used industry standard software to model peak hour traffic flows at the N59/Doon road junction taking the construction traffic into account. This found Ratio to Flow Capacity (RFC) to be well within the generally acceptable limit of 85%.

The proposed turbine transport route to the site is via Galway city (probably Galway Port), i.e. along the N59 and the upgraded Doon Road. No other route would be used for the transport of materials or turbine components. The greatest impact on the local road network would probably be during the 29 no. days when very large turbine components would be delivered to the site, 7 'extended artic' loads per day. These deliveries would take place outside of normal peak hours. It is proposed that a detailed traffic management plan can be agreed with Galway County Council and the Gardaí for these days. Appendix A provides an autotrack assessment of relevant junctions in Galway city. There is also an analysis of junctions within the development site, including temporary areas to be constructed to provide run over for turbine delivery vehicles.

Significant improvements to the local roads infrastructure have already been permitted in order to facilitate the adjacent wind energy developments. Permission was granted to upgrade the Doon road and its junction with the N59 under 13/658, these works had commended when the development site was inspected. In the wider area, works have already begun on the permitted works to the N59 Moycullen bypass, ref. PL07.HA0036. SSE Renewables is currently seeking permission for further works at

the N59/Doon road junction, ref. 15/813, which would involve the creation of a 'Doon residential area bypass' with the retention of an existing 975m long construction access road, parking area and a temporary junction with the N59. The applicant has not yet responded to a further information request by Galway County Council at the time of writing, therefore a decision is pending. However, given the above analysis, it is considered that this development would not be essential to the achievement of a satisfactory turbine delivery route to the proposed development.

Having regard to the permitted and ongoing road improvements in the vicinity, and to the EIS traffic analysis, I am satisfied that the construction of the proposed development would not have a significant adverse impact on traffic in the vicinity The EIS notes that the turbine delivery route is the same as that previously permitted for other wind farms in the vicinity and this point is accepted. While the development would undoubtedly involve large volumes of construction traffic, this would be temporary in nature. I note that the Roads and Transportation report submitted by Galway County Council does not raise any substantial concerns. In addition, the potential for cumulative impacts does not arise if the development is carefully phased to avoid coinciding with the construction of other wind energy developments.

11.11 Archaeology

11.11.1 I note that refusal reason no. 1 of the Knockranny wind energy development to the immediate east, ref. PL07.243094, stated:

"*The archaeological surveys submitted on file identify an archaeological landscape of post-medieval settlements with intact associated field systems, and several prehistoric features newly-documented on the site, including fulachtaí fia, kilns and huts. It is considered that the number and layout of wind turbines, and the locations of the associated access roads, do not take account of the archaeological heritage of the site. The development, as proposed, would therefore be seriously detrimental to the archaeological and cultural heritage of the site. Furthermore, recorded national monument GA067-029 is located at the peak of Knockranny Hill, and the Board is not satisfied, on the basis of the submissions on file, that the turbine layout, which surrounds this hill, takes sufficient account of the visual impact on this monument or would not seriously injure the setting of the monument*. "

11.11.2 Several of the observers have raised concerns about archaeological issues. These relate to the contravention of County Development Plan policies on the protection of heritage and to impacts on a wider archaeological landscape of hilltop cairns and the Recorded Monuments on the adjacent Knockranny site. Points were also raised relating to the possible historic location of a jail at the development, to other historic vernacular architecture and to the possibility of a historic mill at Lough Naweelan in the southern part of the site. Michael Gibbons, an expert in the archaeology of the Connemara, made a submission on behalf of the applicant at the Oral Hearing, which responded to several of these points, as summarised above.

11.11.3 <u>Archaeological Features in the Vicinity of the Development Site</u>

There is one no. Recorded Monument within the development site, ref. GA067-021. This is an enclosure associated with Letter Lodge, which has existed since at least 1840. The EIS describes the monument as a non-antiquity, consisting of a large stone

enclosure measuring 50m north-south by 42m east-west, formed by a dry stone wall measuring approximately 1m high. It is probably an animal enclosure. The EIS notes that there are several townland boundaries within the development site, which consist of low dry-stone walls and associated post-and-wire fencing. There is a possible ruined clachan in Letter townland south west of Letter Lodge, 200m east of T11 and another at Tullatree Hill in Ardderroo, 190m south of T20. There are 2 no. Recorded Monuments within the Uggool site to the immediate west, ref. GA067-028, a standing stone and GA067-023, a sheepfold associated with pre-famine settlement. Recorded monument GA080-002 is another enclosure located to the south of the development site in Leitir Meas. The Knockranny site contains several features including a children's burial ground, ref. GA067-033, 760m east of the development site boundary and the remains of a possible hut site, GA067-032. The development site is located in a wider area associated with Bronze Age burial features of cairns and cists. There is a cist associated with a cairn at Knockranny, to the east of the development site, ref. GA067-029. There are 3 no. other cairns at Derryvoghill/Uggool, Kilaguile and Doon (ref. GA067-025, A067-030 and GA067-031 respectively), which are intervisible and part of a series of cairns in the area.

11.11.4 Impacts on Hilltop Cairns

The proposed turbines would be visible in the intervening distance between the cairn on Buffy Hill, to the north of the site, ref. GA067-030 and that at Knockranny, ref. GA067-029. However, as noted in the submission of Michael Gibbons, the hilltop cairns in the vicinity are not prominently visible. Unlike the large hilltop cairn at Oughterard, these cairns are low visibility and were not built to be seen. The EIS states that the turbines will not be visible between cairns GA067-025 and -030, -030 and -031, -031 and -029. Where turbines will be visible within a view between two cairns they will not prevent or block the view but will form part of it. It is submitted that the setting of the monuments has already been changed by plantation forestry and by other permitted wind farm developments. On this basis, the EIS describes visual impact on the cairns as 'slight' but concludes that the setting will not be altered to a significant degree.

I am satisfied that the proposed development would not have any significant adverse impact on hilltop cairns with regard to the following matters:

- The distance of the proposed turbines from the nearest cairn at Buffy Hill would prevent any direct impact on its setting;
- Having viewed the development site from the cairn at the top of Buffy Hill< I am satisfied that, while the development would be visible from this point, it would not prevent intervisibilty between this hilltop and the others in the area;
- I note the comments of Michael Gibbons at the Oral Hearing regarding the archaeological significance of the cairn at Buffy Hill and the other cairns in the vicinity of the development site. They are probably date to the Bronze Age but could be considerably later, up to Bronze Age. They were burial monuments, which were built on hilltops to be close to heavenly gods but not to be seen, unlike the large hilltop tomb at Oughterard. They are assessed to be of local significance.

11.11.5 Impacts on Other Archaeological Features

Proposed mitigation measures comprise a 30m buffer zone around GA067-021 during construction works, also archaeological monitoring of the ground works. No residual

impacts are identified. There is potential for negative visual impacts at GA067-021, however the EIS notes that it has limited amenity value due to its inaccessibility and to the presence of the surrounding forestry. The EIS identifies a slight to imperceptible residual impact. No cumulative archaeological impacts are envisaged.

The submission of Michael Gibbons notes the possible presence of other settlement remains within the development site at Letter and Tullatee Hill. These are probably related to the settlement of this marginal location during the 19th century, when there was a much higher population density in Connemara. There is a series of such abandoned settlements in the area, which were planted with forestry in the 1950s. They have no relationship to historic monuments built thousands of years earlier. With regard to the possibility of a prison at the site, it is noted that the term 'priosún' in Connemara can refer to a natural hollow or swampy area. The name 'Lough Naweelan' is derived from 'Loch na bhFaoilean', or lake of the seagulls, as recorded in the mid 19th century. The proposed development has been designed to avoid these features and would have no impact.

Given the intervening distance, there is unlikely to be any significant impact on any archaeological features present in adjacent sites. No cumulative impacts are envisaged.

11.11.6 Archaeological Impacts Conclusion

I do not consider that the proposal would alter, damage or destroy any registered archaeological features or features of interest to the antiquity of the area. While the proposal would alter the setting and character of the area, I do not consider that this alteration is an inappropriate change in the context of the archaeological features of interest.

11.12 Impacts on Residential Amenities (Noise and Shadow Flicker)

11.12.1 Location of Residential Properties in the Vicinity

There is one residential property on the site, however this would be acquired in the course of the proposed development and would not be occupied when the development is operational. The nearest residential property to the site boundary is located within the adjacent Uggool wind farm site to the immediate west. This dwelling belongs to a landowner that has contributed land to the proposed development. It is located 44m from the nearest turbine within the Uggool wind farm and it is 970m from the nearest turbine within the proposed development. There are two main clusters of residential development in the wider vicinity, i.e. housing to the east of the site, accessed by local roads off the N59 and a much smaller cluster of houses on a local road to the south of the site. The EIS identifies a total of 81 no residential properties within a 2.8 km radius of the site, including unoccupied properties and sites where planning permission has been granted for a house.

11.12.2 Noise Impacts

The Wind Energy Guidelines state:

"*In general, a lower fixed limit of 45 dB(A)[10] or a maximum increase of 5 dB(A) above background noise at nearby noise sensitive locations is considered appropriate to provide protection to wind energy development neighbours … in low noise environments where background noise is less than 30 dB(A), it is recommended that the daytime level of the $LA_{90,\ 10min}$ be limited to an absolute level within the range of 35-40 dB(A) … A fixed limit of 43 dB(A)will protect sleep inside properties during the night.* "

Also:

"*In general, noise is unlikely to be a significant problem where the distance from the nearest turbine to any noise sensitive property is more than 500 metres.*"

The EIS notes that the Wind Energy Guidelines are based on detailed recommendations set out in the UK Department of Trade & Industry Energy Technology Support Unit (ETSU) publication "*The Assessment and Rating of Noise from Wind Farms*" (1996).

The proposed revisions to the 2006 Wind Energy Guidelines include the following recommendations in relation to noise impacts:

- Minimum separation of 500m between any commercial scale wind turbine and the nearest point of the curtilage of any property in the vicinity.
- An absolute outdoor noise limit of 40 dB(A) at noise sensitive properties at any wind speed, irrespective of time day or night. This limit applies to the combined sound level of all turbines in the area irrespective of which wind farm development they may be associated with.
- For areas of special amenity value the 40dBA limit applies at the boundaries of such areas identified in a development / local area plan.

However, as these proposals have not been adopted as ministerial guidance, the following assessment is based on the recommendations of the 2006 Wind Energy Guidelines.

The noise impact analysis in Chapter 10 of the EIS considers potential noise impacts in relation to the background noise levels at the site, established by carrying out noise monitoring at 4 no. locations around the site:

- Location A, 'Letter Lodge', the existing house within the development site, which will remain unoccupied as part of the development.
- Location B (H01), a house within the Uggool wind farm site to the immediate west.
- Location C (H02), a house within the residential cluster to the south of the development site.
- Location D (H35), a house within the residential cluster at Doon to the north east of the development site.

All properties in the vicinity have low ambient day time and night time noise levels at various wind speeds, generally in the range of 26-52 $L_{A90,\ 10\ min}$.

The predicted noise levels for construction noise plus ambient noise at these locations are in the range of 31-49 dB $L_{Aeq,\ 1\ hr}$, i.e. below the appropriate day time Category A value of 65dB $_{LAeq,\ 1hr}$ as recommended by BS 5228-1. Therefore a significant effect is

not predicted. The EIS considers potential noise impacts from the excavation of the borrow pits, including blasting and rock breaking operations. The predicated noise levels are within the acceptable parameters, however there is no analysis of combined impacts (i.e. borrow pit excavation and other construction noise). General mitigation measures are proposed for construction noise. Mitigation measures are proposed for blasting at borrow pits and vibration is not anticipated to be a likely impact.

The predicted operational noise impacts were modelled using noise calculation software for a total of 81 no. noise sensitive locations (houses) in the vicinity. The predicted noise levels included cumulative noise levels for the proposed, existing and permitted wind farm sites in the study area. Predicted noise levels were measured against a daytime threshold levels of 40 dB(A) or a maximum increase of 5dB(A) above background level. A night time criterion of 43dB $LA_{90,\ 10min}$ was adopted as per the Wind Energy Guidelines. These criteria were exceeded at only one location i.e. H1, the house located within the adjacent Uggool wind farm site. The EIS states that the predicted noise levels at that location would increase by 0.5dB from 46.1 $dB_{LA90,\ 10min}$ to 46.6 $dB_{LA90,\ 10min}$. A change in noise levels of this order of magnitude is imperceptible to the human ear. H1 is also the only location where the absolute noise level criterion of 40 $dB_{LA90,\ 10min}$,as set out in the proposed amendment to the DoECLG Guidelines, is exceeded. The proposed substation would result in increased noise levels at 7 no. locations, i.e. houses nos. 1-7. The worst case predicted level would be expected to be in the order of 3 dB(A) at H001 and H002. This impact is not considered significant. The EIS considers that the potential for complaints associated with low frequency noise and the phenomenon of amplitude modulation are likely to be low. Several UK studies are cited in support of this point. No mitigation measures are proposed for the operational phase but noise monitoring is to be carried out.

The EIS addendum does not add any new analysis to the above. The revised substation is located at a greater distance from nearby noise sensitive locations H001 and H002. Increases in noise levels are therefore not expected.

It is considered that there are some deficiencies in the EIS assessment of noise impacts. The consideration of construction impacts is restricted to activity at the development site and does not assess potential noise impacts from vehicular traffic on local roads around the site. These are likely to be considerable in the Doon area, given the large number of vehicular movements involved. I note in particular that some of the larger deliveries may be scheduled at night time. While the cumulative assessment does consider existing/permitted/proposed wind farms, it does not assess the cumulative impacts of wind farm noise, substation and adjacent meteorological masts, also permitted transmission lines. There is some consideration of amplitude modulation but no assessment of potential effects associated with this. However, it is accepted that there are currently no reliable means of predicting the occurrence of excessive amplitude modulation or impulsiveness during the planning stage of a wind farm development. On balance, significant noise impacts are unlikely given the overall distance to residential properties. Although the construction impacts could be significant, they would be temporary in nature and, as discussed elsewhere in this report, could be staged such that they do not coincide with works on other wind energy developments in the vicinity.

11.12.3 Shadow Flicker

The Wind Energy Development Guidelines note that shadow flicker effects last for a short period and happen only in certain specific combined circumstances, i.e. when the sun is shining and is at a low angle (after dawn and before sunset), and the turbine is directly between the sun and the affected property, and there is enough wind energy to ensure that the turbine blades are moving. The Guidelines note that potential for shadow flicker is very low at distances greater than 10 rotor diameters from a turbine. They recommend that shadow flicker at neighbouring dwellings within 500m should not exceed 30 hours per year or 30 minutes per day. The 2013 consultation draft document produced from a review of the Guidelines states:

"*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 EIS uses a proprietary software package to predict the level of shadow flicker associated with the 29 proposed turbines. The assessment was carried out on a total of 81 no. residential properties within 2.8km of the site boundary. The simulation was calculated applying a worst case scenario, i.e. sun shining during all daylight hours, turbines operational at all times. The assessment results are presented in tables 5.10 and 5.11 of the EIS. The DoEHLG recommended minimum of 30 minutes per day is exceeded at one property, H1 located within the adjacent Uggool wind farm site. The threshold would be exceeded for 28 days per annum at that location. Of the remaining 80 no. residential properties modelled, some shadow flicker would occur at 7 properties, these are all located to the south of the site. Aside from H1, the maximum no. of daily shadow flicker hours at each property range between 0.14 at H7 and 0.45 at H4, with the annual total no. of hours ranging between 1.6 at H7 and 31.3 at H4, a dwelling to the south of the site. The 30 day per year threshold would be exceeded H1 and H4. The EIS notes that Met Eireann data recorded at Claremorris shows that the sun shines for 25% of the daylight hours per year in the region. When this factor is applied, H1 had a maximum annual shadow flicker of 12.275 days and H4 had a maximum of 7.825 days, i.e. both were well below the threshold. This point is creditable and is accepted.

The EIS considers cumulative shadow flicker impacts on the 81 residential properties in the study area with regard to adjacent proposed/permitted wind farms. The daily and annual thresholds were exceeded at H1 only. There are no cumulative impacts at H4. H1 received an additional 55.4 hours of shadow flicker per year from other permitted projects in the vicinity, bringing the total annual worst case scenario cumulative impact to 116.5 hours per annum. This falls to 29.125 hours, i.e. just below threshold, when the regional sunshine average of 25% is taken into account.

The EIS proposes a shadow flicker mitigation strategy for H1 involving three main elements:

- Assessment of the presence of any screening features in the immediate vicinity of the house.

- Provision of screening measures at the property, e.g. window blinds, vegetation and other site specific measures, at the cost of the applicant.
- Wind turbine control measures, i.e. changes to the operational mode of the turbines under conditions when shadow flicker is likely to occur, using the wind farm's SCADA control system.

The EIS identifies a slight long term residual impact from shadow flicker at H1.

Having regard to this analysis, I am satisfied that the proposed development will not have a significant adverse impact on residential amenities by way of shadow flicker.

11.13 Community Gain Proposals

11.13.1 The application includes the development of recreation and amenity facilities at the site and the provision of a 'Community Gain Fund' for various purposes. These may be considered separately as follows.

The applicant proposes to develop the site as a series of marked trails with related signage. The following marked trails are proposed, as indicated in figure 4.24 of the EIS:

- 3.5km 'Hill Climb' at the northern end of the site, starting at the car park.
- An 8.8km 'Lake Loop' walk at the southern end of the site, starting and finishing at the Doon Road.
- A 15.5km 'Lowland Look' at the south western side of the site, starting at the boundary with the adjacent Uggool wind farm.
- It is also proposed to upgrade a disused section of the existing 'Slí Chonamara' marked walking route, which currently ends at a local road that meets the southern site boundary.

The construction compound at the main site access road would be converted to a 25 space car park to serve the amenity walkways. There would be an adjacent services building with toilets and a semi-enclosed sheltered area. It is submitted that there is potential to develop links with similar recreational proposals on adjacent wind farm sites. These proposal are considered acceptable and are desirable aspects of the scheme, subject to the implementation of mitigation measures as set out in the EIS. I note the planning authority recommendation that all signage be in Irish, this matter could be required by condition if the Board is minded to grant permission.

11.13.2 The applicant proposes contribute €1,500 per turbine (€43,500 for 29 turbines) per annum to a Community Gain Fund, to be used as follows, along with additional proposed contributions:

- €150,000 to be used to develop recreation and amenity facilities at the site as outlined above.
- A once off financial contribution of €150,000 towards the Connemara Greenway project. This is a walking/cycle track along the dismantled Connemara to Clifden railway line. It is being developed by local community groups with support from Fáilte Ireland, Galway County Council and Forum Connemara Ltd. It will form part of the National Cycle Network.
- The provision of a once off dedicated fund of €50,000 for the protection and enhancement of the fisheries resource in the catchments local and adjacent to the site during the construction phase of the project. This would be followed by an annual contribution of €500 per turbine for the same purpose. Applications to the

Community Gain Fund Committee would be invited from local fisheries groups, fishing clubs or statutory bodies whose aims and objectives are to protect and enhance the fisheries resource.

- A portion of the Community Gain Fund would be allocated to a 'Renewable Energy Fund' for local residents. This would be used to provide direct payments to local residents to cover the cost of their annual electricity bill from a renewable energy supplier of their choosing, also possibly to fund improvements to residential properties to improve energy efficiency.
- Part of the Community Gain Fund would be used as a dedicated annual 'Community and Voluntary Group Fund' for local community groups and voluntary organisations around the proposed site.

11.13.3 It is proposed that the fund would be managed by a Community Fund Committee consisting of 3 no. independent members of the local community, 3 no. elected representatives (TD's or County Councillors) from the area around the site, a representative from the wind farm company and a staff member from Galway County Council. The local authority would be responsible for the administration of the fund and would retain executive administrative authority over the fund. These proposals are generally acceptable and represent desirable aspects of the scheme. I note that the elected members of Galway County Council require an increase in the community gain fund to €200,000 per annum, which represents a substantial increase on the €58,000 committed to above and has no legal basis as it would be outside of the Development Contribution Scheme. In addition, the developer would also pay commercial rates to Galway County Council during the operation of the development. I recommend that a condition requiring the payment of a community gain fund, as proposed, is imposed in the event of permission being granted.

11.14 Other Issues

11.14.1 Public Consultation

Several third parties complained of inadequate public consultation. The applicant carried out a public consultation process during the preparation of the EIS, prior to the submission of the planning application, as set out in sections 2.6 and 2.7 of the EIS. It is evident that the applicant has attempted to engage with the public, notwithstanding claims by the objectors that the level of consultation was inadequate, in fact third parties refer to meeting the applicant's agent on several occasions. I note that the applicant has submitted a Community Impact Statement, which is a requirement of the WES. This outlines potential community impacts including potential socio-economic community impact, and sets out community gain proposals.

11.14.2 Irish Language Issues

There are a number of issues raised in respect of the Irish language. One such issue is that the proposal will impact on the Gaeltacht by discouraging people from living in the area which is within the Gaeltacht area. I would not that the area in which the site is situated is extremely remote and particularly when one leaves the vicinity of the junctions with the N59, the area is very sparsely populated. In this regard I do not consider that population levels in the Gaeltacht area would be affected.

The submission of Máire Ní Raghallaigh queried why observers could not view the EIS in the Irish language however, it was noted that the observers did not request such a document. I note that the relevant public notices were produced in both languages and that all observers were given the opportunity of making their submissions in writing and at the Oral Hearing in Irish if they wished to do so.

11.14.3 Perceptions of Wind Farms and Health Issues

The observers state concerns about potential health issues relating to wind energy developments including psychological effects. The observer Peter Sweetman submitted a paper entitled '*Wind Turbines and Health*' by Professor Emeritus Alun Evans (June 25th 2015) at the Oral Hearing. The matter of health impacts as a result of wind energy developments is a contentious one and I do not consider that the Board is in a position to bring any clarity to this debate beyond the application of standards and policies set out at national and local level, much of which are formulated to address issues of noise, vibration and shadow flicker.

11.15 Planning Conclusion

The proposed development adjoins an emerging cluster of wind energy developments. It is in accordance with the provisions of the 2009-2015 Galway County Development Plan and the current 2015 County Development Plan and is in an area zoned as 'strategic' under the Co. Galway Wind Energy Strategy. It would facilitate the optimum use of existing and permitted roads and electricity infrastructure in the area. Having visited the development site several times and viewed it from various vantage points during extensive assessment of the surrounding area, I am satisfied that the development would not have an undue adverse visual impact such as would warrant a recommendation of refusal, either from vantage points close to the development site, or in the wider area. The development would not have any significant adverse impact on any specially designated views or prospects or tourist routes and is generally in accordance with the landscape recommendations of the Wind Energy Guidelines.

Having regard to the EIS assessment of peatland and hydrology impacts, it is considered that the proposed development will not result in significant adverse impacts on habitats at the site, or at linked habitats in the vicinity, subject to the strict implementation of the detailed mitigation measures provided. The proposed development would not have any significant impacts on the Recorded Monument within the site or on any of the Recorded Monuments in the vicinity, including the series of hilltop cairns. It would not result in adverse impacts on residential amenities due to noise or shadow flicker. Roads and traffic impacts are acceptable. The submitted community gain proposals are a desirable aspect of the scheme.

However, the bird survey work carried out at the site is inadequate in its duration and extent to allow for a comprehensive picture of bird distribution and flight activity, or the usage of the development site by key bird species and their movements in this area. Given the presence of several Natura 2000 designated sites in the wider area, including the Connemara Bog Complex SPA and the Lough Corrib SPA, both in close proximity to the development site, it is considered that there is insufficient information available to enable the Board to carry out a robust assessment of potential ornithological impacts and corresponding impacts on designated sites. In addition, the

duration of the bat surveys undertaken is also considered inadequate as it is insufficient to accurately determine bat usage of the study site throughout the bat year. Thus, there is insufficient information to assess potential impacts on bats in general and in particular on the known Lesser Horseshoe Bat breeding colony within the Ross Lake and Woods SAC, c. 3.5 km from the development site.

12.0 ENVIRONMENTAL IMPACT ASSESSMENT

12.1 General

12.1.1 In accordance with the requirements of Article 3 of the European Directive, Directive 85/337/EEC, as amended by Council Directive 97/11/EC of 3rd March 1997, by Directive 2003/35/EC of the European Parliament and of the Council of 26th May 2003, and Section 171A of the Planning & Development Act 2000-2010, the submitted EIS is required to be assessed by An Bord Pleanála, as the competent authority. It is a requirement that the direct and indirect effects of the proposed project are identified, described and assessed in an appropriate manner, in accordance with Articles 4 to 11 of the EIA Directive. The following is an assessment of the main impacts identified, and which I consider to be most relevant to the subject site and development. Category 3(i) of schedule 5 of Part 2 of The Planning and Development Regulations 2001, provides that an EIS shall be prepared in respect of a planning application for the following development:

"*Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts*."

As the application involves a wind farm of 29 turbines with a maximum output of approximately 87 MW, the proposed development is subject to mandatory EIA.

12.1.2 The EIS is presented in 3 volumes as follows:

Volume 1 Non-Technical Summary and Main Report
Volume 2 EIS Photomontage Layouts
Volume 3 Appendices

12.1.3 The introductory chapters of the EIS provide background information regarding the EIS project team; the need for the proposed development; the national, regional and local policy context; the planning history of the area and scoping and consultation carried out by the applicant. Chapter 3 of the EIS sets out the site selection process and provides details of 7 possible alternative sites considered with regard to criteria including grid connection and electricity infrastructure, policy context, wind resource, locations of designated sites, landscape impacts and river catchments. Section 3.5 sets out site design considerations and alternatives. The subject site emerged as the optimum to accommodate a medium to large scale wind farm. In the context of the Gate 3 connection process, the proposed 87MW wind farm at Ardderoo would be the last substantial wind farm development in west Co. Galway to accommodate the Gate 3 grid connection capacity assigned to the area. Wind farm development at the subject site would consolidate the majority of Co. Galway Gate 3 wind energy development into a single geographical location. Section 4.8 states that the construction phase will take approx. 22 months from starting on site to commissioning the electrical system. Construction will not commence during the breeding bird season

from April to July inclusive. Details of proposed construction sequencing are provided, i.e. 11 months civil engineering works, 4 months electrical works, 7 months turbines erection and commissioning, also construction and monitoring, including a preliminary construction and environmental management plan.

12.1.4 Having regard to the information provided, it is clear that the site selection process, route selection process and choice of transmission infrastructure and technology have each included a rigorous and iterative approach incorporating an analysis of alternatives with extensive public consultation at every stage of the project. Thus the final selections have been arrived at following a comprehensive and transparent process which has involved consultation with relevant stakeholders, prescribed bodies and potentially affected landholders and has evolved throughout this process by the application of a flexible approach incorporating the optimum solutions based on a rigorous analysis of the options available. I am satisfied therefore that the process has been robust and has included an appropriate analysis of alternatives.

12.1.5 Section 2.8 of the EIS sets out the additional projects taken into consideration of cumulative impacts. The following wind farm projects are considered: Uggool, Cloosh, Seecon, Knockranny, Knockalough, Shannagurraun, Lettergunnet, Inverin. The following other projects are included in the cumulative assessment:

- Road improvements to R336 Scrib to Bearna via Rossavil.
- 110kV overhead line between Screeb substation and Galway city.
- Letter 110/38kV electricity substation and the Letter-Galway 110kV underground cable.
- N59 Moycullen bypass and Maam Cross to Oughterard upgrade.
- Connemara Greenway walking/cycling track.

Having regard to section 2.8 and to the assessment of individual potential impacts, I am satisfied that the EIS has given due consideration to potential cumulative impacts.

12.1.6 The EIS assesses the effects of the proposal on the environment under the following headings: human beings, flora and fauna, soils and geology, water, air and climate, noise and vibration, landscape, archaeology and cultural heritage, material assets and interaction of the foregoing. In terms of each of these environmental impacts, it provides a description of: the existing environment; likely significant impacts; proposed mitigation measures; and residual impacts. The EIS addendum submitted as further information provides additional assessment relating to flora and fauna, geology and soils, water, air and climate, noise, cultural heritage and archaeology, including cumulative impacts. The additional documentation submitted as further information includes an EIA of the proposed replanting areas, which is summarised below.

12.2 Likely Significant Direct and Indirect Effects

12.2.1 There is a large degree of commonality between the significant issues identified and assessed under the planning assessment and AA and the likely significant direct and indirect effects of the proposed development on the environment. The Environmental Impact Assessment as set out below should, therefore, be read in conjunction with the general planning assessment at section 11 above and the AA at section 13 below. The main effects identified in the EIS may be summarised as follows, the following

order reflects that of the EIS document submitted. Impacts identified in the EIS addendum are included under the relevant headings.

12.2.2 Human Beings (including Shadow Flicker)

This section of the EIS considers potential impacts on population, employment and economic activity, land use, residential amenity, community facilities and services, tourism, shadow flicker and health and safety. The area around the site has a very low population density (2.9 persons per km^2), as the majority of settlement in the area is focussed in built up areas near towns and villages. The nearest settlement is Roscahill, located on the N59 between Moycullen and Oughterard. The nearest school is approximately 3km east of the site.

There are currently no tourist attractions in the vicinity except for the disused 'Slí Chomamara' walk at the southern end of the site. The EIS refers to the 2008 Fáilte Ireland study "*Visitor Attitudes on the Environment: Wind Farms*". It states that almost 75% of respondents claimed that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a strong or fairly strong positive impact on future visits to Ireland.

The EIS states that there is currently no published credible scientific evidence to positively link wind turbines with adverse health effects. The EIS presents various studies and publications supporting this view.

The EIS refers to the largest study of the impact on wind farms on property values carried out to date, "*The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis*", December 2009, Lawrence Berkley National Laboratory (LNBL) for the U.S. Department of Energy. It is stated that the study found no evidence that home prices surrounding wind facilities are consistently, measurable, and significantly affected by either the view of wind facilities or the distance of the home to those facilities. An update of the study by LNBL in 2013 concluded that there was no statistical evidence that home prices near wind turbines were affected in either the post construction or post announcement / pre construction periods.

Section 5.7 of the EIS provides a detailed analysis of shadow flicker impacts. It models potential shadow flicker impacts at the 81 no. residential properties within 2.8km of the site. The DoEHLG daily threshold is exceeded at one property, H1, located within the adjacent Uggool wind farm site. It is noted that H1 belongs to a landowner that has consented to and provided lands for the proposed development. The annual threshold was exceeded at two locations, i.e. H1 to the west and H4 to the south of the site, based on a worst case scenario which assumes 100% sunshine during daytime hours. When Met Eireann data on regional sunshine levels is applied, both properties were well below the threshold. The EIS considers cumulative shadow flicker impacts with regard to adjacent permitted wind farms and the proposed development at Knockranny. Both the daily and the annual thresholds were exceeded at H1 only, however levels were below threshold when the Met Eireann data was taken into account. The EIS proposes a shadow flicker mitigation strategy for a case where a house is predicted to exceed the DoEHLG thresholds.

The EIS identifies short term negative impacts for the construction phase of the development associated with health and safety, noise, dust and traffic, however mitigation measures are proposed. A preliminary Construction and Environmetnal Management Plan is submitted as Appendix 4 of the EIS. The construction would have positive impacts on employment and investment. The operational phase would have impacts associated with noise and traffic, these are considered in the relevant sections of the EIS. There would be positive impacts on renewable energy production and the reduction of greenhouse gas emissions and tourism. There would be a slight long term residual impact from shadow flicker at H1. There would be no impacts relating to interference with communication systems.

12.2.3 Flora and Fauna

This chapter describes impacts on habitats, flora and fauna, including birds and bats. The assessment is based on monthly site inspections carried out during the period February to December 2013 and in January, April, May, June and August 2014. Bird survey work was carried out during winter, spring and summer 2013 using VP surveys and breeding bird transect methods. A specialised Red grouse tape-luring survey was also carried out on 27th March 2013. Dedicated bat surveys were conducted using broadband bat detectors during April, May, June, July and September 2013. Aquatic invertebrates were sampled at three points in the Owenboliska catchment. Marsh Fritallary habitat assessment work was carried out in September 2013.

The following significant impacts are identified.

- Direct habitat loss comprising less than 3% of the study area. 90% of the habitat affected will be forestry habitats and loss of Annex I habitats will be negligible.
- Annex I bird species recorded at the site comprise Hen Harrier, Merlin, Peregrine, Whooper Swan, Common/Arctic Tern and Woodcock. None of the first three species were recorded during the breeding season. Breeding birds recorded within the study area included Mallard, Teal, Common Sandpiper and Snipe, White-tailed Eagle, Greenland White-fronted Goose. Red Grouse and Golden Plover were not recorded. The EIS concludes that there would be a long term negligible negative impact of turbine collision on birds (Peregrine, Hen Harrier and Whooper Swan), also a long term slight negative impact of avoidance of the vicinity of the turbines by birds (secondary habitat loss).
- Neither Kerry Slug nor Marsh Fritillary were recorded at the site despite specific survey effort to do so.
- A night roost used by Lesser Horseshoe bat was discovered within a shed at Letter Lodge, which is to be demolished to facilitate the proposed development. The original EIS proposes an alternative night roost site and habitat enhancement to mitigate this loss. The revised EIS proposes the retention of the building containing the roost and the relocation of the substation. The EIS concludes that there would be a long term negligible/slight negative impact of turbine collision on bats. The EIS addendum concludes that the revised development would have no direct impact on the identified Lesser Horseshoe Bat night roost and no significant indirect impacts on the species.
- There is potential for impacts on aquatic habitat and water quality on lands (including Natura 2000 designated sites) downstream of the study area within the Owenboliska River Catchment. However, permanent negative impacts are unlikely

with the proposed drainage design and site management mitigation proposed in place.

As discussed above, the DoAHG submission on file identifies various deficiencies in the Flora and Fauna chapter of the EIS. The EIS Addendum submitted to address these issues comprises further analysis of ornithological and bats impacts but does not include the results of any additional survey work at the development site. I have several concerns regarding the baseline surveys on which the conclusions of the Flora and Fauna chapter of the EIS are based:

- The habitats assessment is based on site inspections during April, May and June 2014 and other, undated site inspections. The EIS does not provide full details of the site survey work carried out to map and identify habitats present.
- The bat surveys do not represent a comprehensive and robust evaluation of the usage by bats of the development site due to the short time-scale of surveys.
- The VP bird surveys of the site are inadequate in duration and extent and in other respects outlined above.

While acknowledging the work undertaken, it is considered that the detail of the botanical and habitat surveys is insufficient to inform an EIA as regards to the presence, location or extent of habitats listed on Annex I of the EU Habitats Directive. The reliability of the conclusions in the EIS is, therefore, strongly questionable.

12.2.4 Soils and Geology

The soils and geology impact assessment is based on a desk study and site investigations including circa 1,400 peat probes at the development site. Site investigations were undertaken by Hydro Environmental Services on 31st October 2013 and on 17th and 18th April 2014. Appendix 13 of the EIS comprises an assessment of peat stability at the site carried out by AGEC Ltd, which is based on further site investigations carried out on 29th October and 1st November 2013, on 29th and 30th April 2014, on 4th June 2014 and on 6th August 2014.

The peat depth probes recorded depths ranging from 0 to 7.2m with an average of 1.8m. A total of 5 no. peat probes were carried out at each proposed turbine location. Table 7.4 of the EIS summarises the findings with peat depths ranging from 0.1 at the substation and 0.2 at T7 on the northern side of the site to 4.3 at T25 at the southern end of the site. The EIS sets out the aspects of the proposed development that are likely to have impacts on peat stability:

- Excavation of peat, subsoil and bedrock will result in a permanent removal of peat, subsoil and bedrock at excavation locations. Estimated volumes of peat and bedrock to be removed are summarised in Table 7.8 and Table 7.9 of the EIS. The EIS sets out proposed mitigation measures including turbine placement, use of floating roads and removal of a minimal volume of peat and subsoil. Residual impacts are negative, direct, slight, high probability, permanent impact on peat and bedrock.
- Potential contamination of soil by leakages and spillages and alteration of peat/soil geochemistry. Proposed mitigation measures include management and storage of fuels and other possible contaminants. Residual impacts are imperceptible, direct, short term and low probability.

- Potential erosion of exposed subsoils and peat during tree felling, access road and turbine base construction work, due to vehicle movement, surface water and wind action. Proposed mitigation measures include careful storage of removed peat for reuse. Residual impacts identified are negative, slight, direct, medium probability impact on peat, subsoils and weathered bedrock.
- Risk of peat instability or failure due to vehicle movement and excavations. The site has an acceptable margin of safety and the recommendations and control measures of the AGEC report will be adhered to. The measures will be applied to both access roads and turbine sites. On this basis, the EIS concludes that there is a low to medium risk of peat instability / failure at the site.
- The EIS concludes that there are no residual impacts anticipated on the soils and geological environment.

The peat stability assessment report by AGEC uses a Factor of Stability analysis, along with the results of site investigations. Geotechnical investigations were carried out for each turbine location, also peat depth measurements and shear strength testing. Over 400 locations were analysed in total. The approach includes a qualitative risk assessment that takes into account factors such as the presence of mechanically cut peat, quaking peat, bog pools, sub peat water flow and slope characteristics. The analysis showed peat shear strengths in the range 5 to 50kPa, with an average value of 15kPa, this is significantly higher than those recorded at sites of known peat failures. Table 7.6 of the EIS summarises the FoS results for each turbine location. All are above the minimum parameter of 1.3. Table 7.7 presents the FoS results for the drained condition. Again, all are above 1.3. The report identifies deep weak peat areas, which have an elevated construction risk and recommends additional mitigation measures for these areas. The analysis concludes that the site generally has an acceptable margin of safety and there is considered to be a low to medium risk of peat instability / failure at the site. Localised areas of deeper peat deposits are present which may require specific construction methods, but do not represent a peat slide risk.

Proposed mitigation measures comprise avoidance of areas of deeper peat for turbines; use of existing road network were possible, removal of minimal volumes of peat. Proposed mitigation measures relate to management of fuel at the site, bunding of the electrical storage building and the Environmental Management Plan. Proposed peat storage areas at the 3 no. borrow pits. The Peat Management Plan (Appendix 3) and the preliminary Construction and Environment Management Plan include additional details of proposed mitigation measures. A revised Peatland Impact Assessment, Peat Management Plan and preliminary Construction and Environment Management Plan were submitted with the EIS Addendum, along with a Habitat Enhancement and Bog Restoration Plan.

The EIS concludes a residual negative direct, slight, high probability, permanent impact on peat and bedrock. The EIS addendum identifies a negative, direct, slight, high probability, permanent impact on peat and bedrock.

With regard to the above discussion, I am satisfied that the applicant has carried out a robust assessment of potential impacts on soils and geology and the potential for peat failure at the development site.

12.2.5 Water

Potential impacts on water quality generally relate to surface waters as the blanket bog covering the site results in low rates of recharge and prevents contamination from reaching the water table. Most of the site is located in the Owenboliska River catchment. A very small section of the northern part of the site is located in the Lough Corrib Catchment but none of the proposed turbines are located in this area. The site is drained by two main rivers and their tributaries, i.e. the Ardderroo River to the east and the Owenboliska River to the west. The Owenboliska River originates in Seecon Lough and flows southwards after leaving the site, through the Connemara Bog Complex SAC and pNHA and the Owenboliska Lough Public Water Supply. The Ardderroo River drains into Loch na nArd-doiriú at the southern site boundary and then into the Owenboliska River. The site is also drained by a network of forestry drains. There are culverts at locations where forestry roads cross streams. There is no record of flooding incidents within the site boundary. The site is hydrologically connected to the Connemara Bog Complex SAC but not to any other designated site.

EPA data on waters in the vicinity generally indicates 'Good Status'. Water sampling carried out at 3 locations at the site on 31st October 2013 and 18th April 2014 found water quality in the 'High Status' range. The overall WFD status of SWBs in the Owenboliska River catchment is "Good", Loughanillaunmore has "High status".

Potential adverse impacts primarily arise during the construction stage of the development. There is a buffer zone of 50m to natural drainage features. The EIS includes a suite of mitigation measures to prevent suspended solids from entering surface waters during construction including specific additional mitigation measures for tree felling, earthworks, peat storage, excavations and wastewater management. The proposed drainage design is to be integrated with the existing forestry drainage network. The EIS states that mitigation measures will ensure that surface water runoff from the development will be of a high quality and therefore will not impact on the quality of downstream water bodies. There will be no direct discharge of run-off from the development into any existing watercourse. Any introduced drainage works at the site will mimic the existing hydrological regime thereby avoiding changes to flow volumes leaving the site.

Groundwater impacts are not envisaged, the EIS sets out mitigation measures to prevent groundwater contamination by hydrocarbons and cementitious materials during construction. The proposed borrow pits will not involve dewatering and there will be no significant impact on groundwater levels.

The EIS Addendum assesses potential water impacts arising from the constriction of the proposed new substation on the Doon road. Proposed mitigation measures are outlined, these are the same as for the rest of the development. The construction and operation of the substation are not expected to have any hydrological or water quality impacts.

The above assessment is satisfactory and the development is considered to be acceptable in terms of the potential impact on surface and ground waters, subject to the strict implementation of the submitted mitigation measures.

12.2.6 Air and Climate

It is expected that the air quality in the existing environment is good since there are no major sources of air pollution in the vicinity. There are no direct emissions from the operational phase of the development. The EIS analyses potential carbon losses and savings with regard to climate change impacts (carbon balance), using a Scottish guideline methodology. The development would result in emission savings of CO_2, oxides of nitrogen and sulphur dioxide but would cause the loss of carbon fixing plants and have impacts on the natural hydrological regime of peatlands, thus allowing the decomposition of carbon. The development would result in a loss of 154,576 tonnes of CO_2 to the atmosphere, which would be offset in the first 15.4 months of operation. The operational phase of the development therefore has a long term moderate positive impact. Potential impacts during the construction phase relate to dust and emissions associated with construction vehicles and plant. These would result in short term slight negative impacts however mitigation measures are proposed. On balance, the proposed development is considered to be acceptable in terms of the potential impact on air quality and climate.

The EIS addendum notes that the revised location for the electricity substation gives rise to minor changes in the volumes of peat to be excavated and managed onsite and the area of forestry to be felled as part of the proposed development. Revised calculations for carbon loss and savings are presented, such that the development would result in an expected loss of 154,936 tonnes of CO_2 to the atmosphere over its 25 year lifespan, assuming that the hydrology and habitats at the site are restored at the end of this period. This figure represents 5.8% of the total amount of CO_2 emissions that would be offset by the development over its lifetime. The carbon loss of 154,936 tonnes would be offset by the proposed development in 17.3 months of operation.

12.2.7 Noise and Vibration

The EIS noise methodology is based on the recommendations of the UK Department of Trade & Industry Energy Technology Support Unit (ETSU) publication "*The Assessment and Rating of Noise from Wind Farms*" (1996). Predicted construction plus ambient noise levels at NSLs were modelled based on the guidance of BS 5228 and were below the relevant 'Category A' value, the most sensitive category in BS 5228. Predicted operational noise impacts were measured against a daytime threshold levels of 40dB(A) or a maximum increase of 5dB(A) above background level and a night time criterion of 43dB $L_{A90,\ 10min.}$ These criteria were exceeded at only one location i.e. H1, the house located within the adjacent Uggool wind farm site. H1 is also the only location where the absolute noise level criterion of 40dB $L_{A90,\ 10min}$, as set out in the proposed amendment to the DoECLG Guidelines, is exceeded. The proposed substation would result in increased noise levels at 4 no. locations, i.e. H1, H2, H3 and H4, H5, H6 and H7. The worst case predicted level would be expected to be in the order of 3dB(A) at H001 and H002. This impact is not considered significant.

Mitigation measures are proposed for blasting at borrow pits and vibration is not anticipated to be a likely impact. Vibration associated with turbine operations is not anticipated for houses in the area.

As discussed above, it considered that there are some deficiencies in the EIS assessment of noise impacts. There is a lack of assessment of the combined impacts of total construction noise (i.e. borrow pit excavation and other construction noise), however it is accepted that the conditions would probably prevail for short periods only. In addition, the EIS does not assess the impacts of noise associated with construction traffic on residences on the Doon road. This is of much greater significance as the construction phase involves a large number of vehicular movements over a longer period, however it is accepted that these impacts would be temporary. The EIS considers potential cumulative operational impacts from the subject development along with the other permitted/proposed wind farms in the vicinity but does not assess the cumulative impacts of wind farm noise, substation and adjacent meteorological masts, also permitted transmission lines. There is some consideration of amplitude modulation but no assessment of potential effects associated with this.

On balance, given the intervening distance between the proposed turbines, it is considered that significant noise impacts and the EIS noise impacts assessment is considered acceptable.

12.2.8 Landscape and Visual

The EIS considers landscape and visual impacts within a 20km radius from the site, including Galway City and a small area within Co. Mayo to the north. A detailed methodology is provided and possible limitations are considered. The methodology is based on establishing a Zone of Theoretical Visibility (ZTV) using proprietary software, based on a Digital Terrain Model of the area. The ZTV indicates where the wind farm is likely to be visible, how much of it will be visible and the extent and pattern of visibility. The assessment is based on a 'worst case scenario', i.e. no land cover, absence of all natural or man-made features from the landscape. The ZTV maps indicate that the areas of greatest visibility are generally to the immediate east and west of the site and a wider area to the south, although not extending to the south of the R336. This includes the cumulative ZTV. No rationale is provided for the selection of a 20km radius, however, having extensively viewed the development site from many locations in the wider area, I am satisfied that that the ZTV is a reasonable representation of views 'on the ground'. The overall Landscape and Visual Impact Assessment (LVIA) methodology and approach are in accordance with guidance provided in the Wind Energy Development Guidelines, also the SNH document '*Visual Assessment of Windfarms: Best Practice*' (2002) and subsequent SNH guidance documents published in 2012 and 2014, as set out above.

The EIS considers potential impacts with regard to the Co. Galway Landscape Character Assessment (2002), the Wind Energy Development Guidelines (2006) and the WES. Of key importance is the 'Strategic' zoning of most of the site under the Co. Galway WES. Potential impacts on LCAs within the 20 km radius are assessed but no significant adverse impacts are identified. Potential impacts on LCAs within Co. Mayo are also considered, impacts would be negligible due to the intervening distance and topography

The landscape context of the development includes screening by a number of hills to the north, west and east of the site, which help to restrict visibility from local populated areas and transport routes. The EIS uses photomontages to provide baseline

information and to assess visual impacts on 23 no. viewpoints within the ZTV. I am satisfied that the viewpoints selected allow for an adequate assessment of overall visual impacts, particularly from sensitive locations such as residential areas and designated views. Using the ZTV methodology, the EIS concludes that the main impacts are on areas to the south and areas in the immediate vicinity of the study area where most turbines will be visible. Two viewpoints to the south of the site are deemed to have significant impacts but the overall impact is deemed to be slight to moderate.

Potential impacts on focal points/views listed for preservation in the County Development Plan are considered. The most relevant view is No. 80, i.e. view of several peaks south of the N59. Views towards the site from the N59 tend to be intermittent as screening by vegetation, structures and varying topography prevents clear and uninterrupted views. Views from local roads west of the N59 are also intermittent. Views from the R336 to the south are also intermittent.

Cumulative visibility includes areas to the northwest, west and southwest of the study area, as well as areas along the south coast and R336. The greatest cumulative visibility in in two main areas, i.e. to the immediate south of the development site and an area comprising Lough Corrib and shoreline to the east. However, most of this visibility is due to existing/permitted turbines and there is very little additional visibility of turbines as a result of the proposed development. The EIS concludes that there would be a long term, slight to moderate cumulative impact overall.

I am satisfied that the EIS assessment of landscape and visual impacts is adequate and that visual impacts resulting from the development are acceptable.

12.2.9 Archaeology and Cultural Heritage

The area was subject to an extensive field survey as well as an assessment of available maps, photographic sources and archaeological inventories. The development has been designed to avoid any archaeological features. Section 12.4 of the EIS lists the recorded monuments present at the site and in the vicinity. Their significance is assessed in section 12.4.1.3. Site investigations found the remains of a possible clachan recently revealed after tree felling, 200m east of T11 and another in Ardderroo, 190m south of T20. The EIS does not anticipate any significant impacts on these features. The Recorded Monument within the site. RMP GA067-021 is a large stone enclosure. The EIS does not identify any direct residual impacts on it subject to mitigation measures including a 30m buffer zone around the monument during construction works. There is potential for a slight to imperceptible residual negative visual impact. The EIS considers potential indirect visual impacts on recorded monuments within 2km of the development. The proposed turbines will be visible in the intervening landscape between a series of cairns. It is submitted that the setting of the monuments has already been changed by plantation forestry and by other permitted wind farm developments. On this basis, the EIS describes visual impact on the cairns as ‘slight’ but concludes that the setting will not be altered to a significant degree.

These conclusions are acceptable and I am satisfied that the development would not have any significant adverse archaeological impacts.

12.2.10 Material Assets

Sections 13.1 and 13.2 of the EIS analyse traffic and transport impacts, which primarily relate to the construction phase of the development. It sets out projected construction traffic volumes for each stage of the development, i.e. site preparation and groundworks, concrete foundation pouring and turbine construction. Projected volumes and available NRA data on traffic flows on the N59 are used to model traffic movements at the N59/Doon road junction. The results are well below the acceptable RFC of 85%. There would be 29 days, each with 7 deliveries of large turbine components on 'extended artics' from Galway city to the development site. The EIS includes autotrack assessment and proposed traffic management measures for such deliveries. It is noted that road works on the N59 and Doon road, which were permitted to facilitate other wind energy developments in the area, are already underway. The EIS concludes that there would be a moderate but temporary impact during the 29 no. days when the concrete foundations are poured. Impacts would be negligible during the remaining 200 days of site preparation and ground works. There would be slight but temporary impacts during the 29 days when general construction materials are delivered. There would be significant but temporary impacts during the 29 days when large turbine components are delivered but this impact may be reduced to slight if such deliveries are restricted to night time. Impacts during the operational phase would be negligible as there would be a maximum of 3 no. staff members on the site at any one time. I am satisfied that the EIS includes a realistic assessment of potential traffic impacts and the above conclusions are considered reasonable.

Section 13.3 of the EIS considers telecommunications and aviation impacts. Wind turbines can interfere with television and radio signals, however this issue can be addressed by the installation of deflectors and repeaters where required, as recommended in the Wind Energy Guidelines. The applicant has consulted with telecommunications providers in the vicinity, notably those present at the telecommunications cluster at Buffy Hill nearby to the north of the development site. The existence of point-to-point radio links through the site was highlighted by several providers, however the development has been designed to avoid impacts on such links. The EIS does not envisage impacts on broadcasting, fixed line or mobile telephone operations. No likely cumulative impacts are identified. This analysis is considered satisfactory.

12.2.11 Interactions of the Foregoing

Table 14.1 provides a matrix of interactions. Potential negative interactions are generally associated with the interactions between human beings, flora and fauna and soils and geology, watery and hydrology, air, noise, landscape and material assets. It is submitted that all of the potential interactions are addressed in the relevant individual chapters of the EIS, which presents an integrated report of findings from the impact assessment process rather than a collection of individual assessments. This point is accepted.

12.2.12 EIA of Proposed Replanting Areas

This document is an EIS of the proposed replanting scheme to replace areas of forest felled to facilitate the subject development, as required by the Forestry Act 1946 and regulated under *Statutory Instrument 558 of 2010, European Communities (Forest*

Consent and Assessment) Regulations 2010, as amended. The EIS is submitted as further information, in response to the following statement in the DoAHG comment on file:

"*An EIS is required to assess all likely significant effects arising from a project, including, in this case, the effects of forestry clearfelling and the obligations to replant in other locations. According to the EIS, a total of 53ha must be replanted to address losses arising from the current project, and it is acknowledged that this can occur anywhere in the State. At present, the areas to be afforested are not identified and there is no assessment of the likely effects of this requirement and aspect of the overall project.*"

The revised development (including the new substation location) involves a total of 51.2 ha of felling and consequent requirement for replanting. A total 4 no. replanting areas are identified, which have been granted Forest Service Technical Approval for afforestation and these or similarly approved will be used for replanting in the event of permission for the proposed wind farm. The introductory chapters of the EIS describe the proposed project and set out relevant planning and forestry policy and history, also proposed afforestation techniques and drainage details. Planting is to be carried out in accordance with the 'Forestry Schemes Manual', Forest Service, 2011. The following sites are proposed:

No.	**Location**	**Area (ha)**
1.	Cloonfad, Co. Roscomon. Adjacent to N83, approx. 2km south of the village of Cloonfad.	7.29
2.	Corlis & Ballindollaghan, Castlerea, Co. Roscommon (2 separate properties). Approx. 5 and 5.9km northeast of Castlerea. Corlis Ballindollaghan	 10.22 4.08
3.	Cloonyconry, Broadford, Co. Clare. Located south of the R466 approx. 4km southeast of Broadford village.	17.91
4.	Clonfad, Mullingar, Co. Westmeath. Located 0.5km west of the N52 Mullingar/Tyrellspass road. Approx 2km sough of Dalystown village and approx. 6.3km west of Rochfortbridge, Co. Westmeath	15.52
Total		**55.02**

The EIS then assesses likely environmental impacts under the following headings: Flora and Fauna; Soils and Geology; Hydrology and Hydrogeology; Landscape; Cultural Heritage; Air, Climate and Noise; Human Beings; Material Assets. The EIS considers potential impacts on the basis of a desk study of available data, a review of aerial photography and a review of the information contained in the Technical Applications supplied to the Department of Agriculture, Food and the Marine in relation to the relevant sites, also relevant local planning policies and planning history. Consideration is given to designated sites within 15km of each replanting site and to potential source-pathway-receptor links to any designated site, also to the presence of any protected habitats or species at the proposed replanting sites. No site survey data is submitted/considered.

The main impacts identified for each site are summarised in Appendix I of this report. I note that no significant negative impacts are identified for any of the proposed

replanting sites. Mitigation measures are proposed. The submitted EIS is limited in scope and methodology, being based on desktop assessments only and does not include any results of site surveys. It therefore provides only a general indication of potential impacts. However, I accept that all of the proposed sites have received Forest Service Technical Approval for the proposed replanting, the approval documents are included in the EIS. These applications are referred to the relevant Forest Service inspector for approval and are referred to the NPWS if any environmental considerations are identified. I note that EIS is required for sites >50ha, which does not apply in this case. Having regard to the technical approval granted for the proposed replanting sites and to the lack of negative impacts identified in the submitted EIS, it is considered that the proposals are acceptable.

12.3 EIA Conclusion

I have considered the EIS and all submissions received which are relevant to impacts on the environment, inspected the site, and have assessed the direct, indirect and cumulative effects of the development on the environment.

The submitted EIS has been considered with regard to the guidance provided in the DoECLG document '*Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment*' (March 2013). It is clear that the EIS is based on a long and iterative process and that a genuine effort has been made to provide a comprehensive and holistic assessment of potential direct and indirect environmental impacts at the site and in the area. However, although the assessments provided in many of the individual chapters of the EIS are satisfactory, as discussed, it is considered that the bird survey data and bat survey data on which the assessment of potential impacts is based are both inadequate. The comments on file of the DoAHG are noted in this regard. It is considered that the applicant has not fully addressed the stated concerns, specifically in relation to birds and bats impacts. Therefore, I am of the view that the information contained in the EIS submitted does not accord with the provisions of Article 94 and Schedule 6 of the Planning and Development Regulations 2001. In particular, Schedule 6(1)(c) specifies that an EIS must contain:

"*The data required to identify and assess the main effects which the proposed development is likely to have on the environment.*"

It is considered that the submitted EIS does not comply with this requirement due to the inadequate survey information of birds and bats.

13.0 APPROPRIATE ASSESSMENT

13.1 Introduction

13.1.1 The obligation to undertake AA derives from Article 6(3) and 6(4) of the Habitats Directive. AA involves consideration of whether the plan or project alone or in combination with other projects or plans will adversely affect the integrity of a Natura 2000 site in view of the site's Conservation Objectives and includes consideration of any mitigation measures to avoid, reduce or offset negative effects. Natura 2000 (also known as European) sites comprise Special Areas of Conservation (SACs),

designated under the EU Habitats Directive and Special Protection Areas (SPAs), designated under the EU Birds Directive (92/43/EEC). Ireland is obliged under both national and European legislation to maintain SACs at a favourable conservation status, i.e. ensuring their ecological integrity. Under the Habitats directive, the test for this favourable conservation status of a habitat is achieved when:

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

Favourable conservation status is achieved for a species when:

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

13.1.2 The AA determination must be carried out before a decision is made or consent given for the proposed plan or project. Consent can only be given after having determined that the proposed development would not adversely affect the integrity of a European Site in view of its Conservation Objectives. Case law of the Court of Justice of the European Union as established that the assessment carried out under Article 6(3) 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 a project on a European site (Case C-258/11, Sweetman and others).

13.1.3 This section of the report considers the likely significant effects of the proposal on the European sites with each of the potential significant impacts assessed in respect of each of the Natura 2000 sites considered to be at risk and the significance of same. The assessment is based on the submitted Natura Impact Statement (NIS) and the revised NIS submitted in response to the further information request.

13.2 The Project and Its Characteristics

13.2.1 Section 1.2 of the original NIS provides a description of the proposed project, comprising:

- 29 no. wind turbines;
- 1 no. meteorological mast;
- Wind farm access roads;
- 1 no. substation with 2 no. wind farm control buildings;
- 3 no. borrow pits;
- Demolition of existing agricultural shed;
- Electrical cabling for grid connection;
- 2 no. temporary construction compounds;
- Recreation and amenity works including the provision of walkways, re-purposing of a temporary construction compound as a car park, provision of toilet/shelter building, etc;

The permanent footprint measures approximately 33.5 ha.

13.2.2 The revised NIS deals with the revised development such that the proposed substation is relocated 150m to the east and the agricultural building is to be retained. It also specifies that the requirement for replacement planting of forestry as a condition of the felling licence will be met be providing additional sites to be afforested that are located elsewhere. These sites have been identified and have been granted technical approval by the Forestry Service. The sites have been subject to AA screening by the Forestry Service, as the competent authority, as part of that approval process.

13.3 The European Sites Likely to be Affected

13.3.1 Both the original and revised NIS set out the screening process in detail. There are no designated sites within the development site boundary. The original NIS considers the 8 no. designated sites within a 15km radius, i.e.:

- Connemara Bog Complex SAC (Site Code 002034)
- Connemara Bog Complex SPA (Site code 004161)
- Lough Corrib SAC (Site Code 000297)
- Ross Lake and Woods SAC (Site Code 001312)
- Gortnanandarragh Limestone Pavement (Site Code 001271)
- Lough Corrib SPA (Site Code 004042)
- Galway Bay Complex SAC (Site Code 000268)
- Inner Galway Bay SPA (Site Code 004031)

The comment on file of the DoAHG states concerns in relation to this screening process, as summarised above. The revised NIS, submitted to address these concerns, also considers the potential for direct, indirect and cumulative impacts on Natura sites beyond 15km from the development site, with regard to the potential existence of pathways for impacts (source-pathway-receptor model). A potential pathway was identified at Lough Mask SPA, which is designated for the protection of some species of migratory waterbirds. The screening assessment therefore identifies the following 9 no. sites, which are subject to detailed screening assessment:

Name of Site Site Code	**Distance to Wind Farm Site**	**Qualifying Interests and Conservation Objectives**	**NIS Screening Conclusion**
Connemara Bog Complex SAC 002034	Adjoining most of southern site boundary.	The conservation objectives for the Connemara Bog Complex SAC generally relate to the maintenance of a favourable conservation condition of Annex I habitats and Annex II species: Annex I Habitats: • Coastal lagoons* [1150] • Reefs [1170] • Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]	**Screened In** Potential pathways for impacts on aquatic species and on the following habitats hydrologically connected to the development site: • Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] • Water courses of plain to montane levels with the

		• Natural dystrophic lakes and ponds [3160] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • Northern Atlantic wet heaths with Erica tetralix [4010] • European dry heaths [4030] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] • Blanket bogs (* if active bog) [7130] • Transition mires and quaking bogs [7140] • Depressions on peat substrates of the Rhynchosporion [7150] • Alkaline fens [7230] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Annex II Species: • Euphydryas aurinia (Marsh Fritillary) [1065] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355] • Najas flexilis (Slender Naiad) [1833]	Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • Transition mires and quaking bogs [7140] • Alkaline fens [7230] Also aquatic species listed as qualifying interests. A very sight possibility of temporary disturbance to Otter. Hydrological impacts are not expected on the Blanket Bog [7130] habitat within the SAC due to the distance between the footprint of the proposed development and the designated site (150m). No pathways for any indirect impacts identified. Similarly, no impacts are anticipated on the habitat Depressions on peat substrates of the Rhynchosporion [7150]. The development site does not have any suitable habitat for the Euphydryas aurinia (Marsh Fritillary) [1065], therefore no impacts on this species are expected.
Connemara Bog Complex SPA 004181	800m south west	The conservation objectives for Connemara Bog Complex SPA generally relate to the maintenance of the bird species listed as Special Conservation Interests for the SPA: • Cormorant (Phalacrocorax carbo) [A017] • Merlin (Falco columbarius) [A098] • Golden Plover (Pluvialis apricaria) [A140] • Common Gull (Larus canus) [A182]	**Screened In** This site is screened in due to potential pathways for impacts on the bird species for which the site is designated. I note that this site was screened out in the original NIS but is screened in and given further consideration in the revised NIS.
Lough Corrib SAC	2km north west	The conservation objectives for Lough Corrib SAC generally relate to the maintenance of a	**Screened Out** This site is screened out on

000297		favourable conservation condition of Annex I habitats and Annex II species. Annex I Habitats: • Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] • Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] • Active raised bogs [7110] • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150] • Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] • Petrifying springs with tufa formation (Cratoneurion) [7220] • Alkaline fens [7230] • Limestone pavements [8240] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Bog woodland [91D0] Annex II Species: • Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	the basis that it is a separate hydrological catchment from the development footprint with no pathways for impacts that could potentially result in an adverse impact on the integrity of the SAC. The nearest known roosts of Lesser Horseshoe Bat within the SAC are 8-9km from the study area (extreme foraging range for breeding females of this species) and impacts on SAC populations are considered unlikely. Otter living within the SAC are unlikely to be affected by disturbance, but this species can have large home ranges and cross over watersheds into more than one catchment area. Any impacts are considered highly unlikely and limited to the construction phase only.

		• Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Salmo salar (Salmon) [1106] • Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] • Lutra lutra (Otter) [1355] • Drepanocladus vernicosus (Slender Green Feather-moss) [1393] • Najas flexilis (Slender Naiad) [1833]	
Lough Corrib SPA 004042	6.2km north west	The conservation objectives for Lough Corrib SPA generally relate to the maintenance of the bird species listed as Special Conservation Interests for the SPA: • Greenland white-fronted goose (Anser albifrons flavirostris) • Pochard (Aythya farina) • Tufted Duck (Aythya Fuligula) • Gadwall (Anas strepera) • Shoveler (anas clypeata) • Coot (Fulica atra) • Hen harrier (Circus cyaneus) • Golden Plover (Pluvialis apricaria) • Common Scoter (melanitta nigra) • Common Tern (Sterna hirundo) • Arctic Tern (Sterna paradise) • Common Gull (Larus canus) • Black-headed Gull (Chroicocephalus ridibundus) There is also an objective to maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	**Screened Out** The site is screened out due to the intervening distance and lack of hydrological connection. Of the 13 special conservation interests in the SPA, 10 were not recorded during surveys of the development site. Hen Harrier was recorded on 3 occasions in the study area. It is possible that only one individual was involved. Collision risk assessment indicates that there may be no collisions of this species in the 25 year life span of the wind farm. The development site is 15.5km from a known winter roost site of the species within the SPA. It is not considered that there will be negative impacts on the wintering/ roosting population. Common and Arctic Tern were recorded at the site. one sighting of 'Commic' (indistinguishable), flying at a height higher than the swept height of the wind turbines.
Ross Lake and	2.6km	The conservation objectives for	**Screened In**

Woods SAC 001312	east	Ross Lake and Woods SAC generally relate to the maintenance of a favourable conservation condition of Annex I habitat and Annex II species. Annex I Habitat: • Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Annex II Species: • Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	Potential impacts on Lesser Horseshoe Bat. Habitats impacts are not expected as the development footprint does not lie within the same catchment as the SAC.
Gortnandarragh Limestone Pavement SAC 001271	4.2km north east	The conservation objectives for Gortnandarragh Limestone Pavement SAC generally relate to the maintenance of a favourable conservation condition of Annex I habitat: • Limestone pavements* [8240]	**Screened Out** The site is screened out on the basis that it is in a separate hydrological catchment from the proposed development with no pathways for impacts.
Galway Bay Complex SAC 000268	13.1km south east	The conservation objectives for Galway Bay Complex SAC relate to the maintenance of a favourable conservation condition of Annex I habitats and Annex II species. There are detailed targets for each habitat and species. Annex I Habitats: • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Turloughs [3180] • Juniperus communis	**Screened Out** Impacts are not expected due to the intervening distance, lack of direct hydrological connection and lack of pathways for impacts.

		formations on heaths or calcareous grasslands [5130] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] • Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] • Alkaline fens [7230] Annex II Species: • Lutra lutra (Otter) [1355] • Phoca vitulina (Common Seal) [1365]	
Inner Galway Bay SPA 004031	14.2km south east	The conservation objectives for Inner Galway Bay SPA relate to the maintenance of the bird species listed as Special Conservation Interests for the SPA. There are detailed targets for each species. • Great Northern Diver (Gavia immer) [A003] • Cormorant (Phalacrocorax carbo) [A017] • Grey Heron (Ardea cinerea) [A028] • Light-bellied Brent Goose (Branta bernicla hrota) [A046] • Wigeon (Anas penelope) [A050] • Teal (Anas crecca) [A052] • Shoveler (Anas clypeata) [A056] • Red-breasted Merganser (Mergus serrator) [A069] • Ringed Plover (Charadrius hiaticula) [A137] • Golden Plover (Pluvialis apricaria) [A140] • Lapwing (Vanellus vanellus) [A142] • Dunlin (Calidris alpina) [A149] • Bar-tailed Godwit (Limosa lapponica) [A157] • Curlew (Numenius arquata) [A160]	**Screened Out** This site is screened out primarily on the basis of the intervening distance. Any potential pathways for impact are so minor that they are extremely unlikely to result in any adverse impacts on the integrity of the site. Of the 20 special conservation interests of the SPA, only 4 were recorded at the site, i.e. Cormorant, Grey Heron, Teal and Common ('Commic') tern were recorded at the development site. The nearest SPA breeding colony of Common Tern is 18km from the study area, effectively outside the foraging range of this species from its breeding colony.

		• Redshank (Tringa totanus) [A162] • Turnstone (Arenaria interpres) [A169] • Black-headed Gull (Chroicocephalus ridibundus) [A179] • Common Gull (Larus canus) [A182] • Sandwich Tern (Sterna sandvicensis) [A191] • Common Tern (Sterna hirundo) [A193] There is also an objective to maintain the favourable conservation condition of wetland habitat in Inner Galway Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it, such that the permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 13,267ha, other than that occurring from natural patterns of variation	
Kilkieran Bay & Islands SAC 002111	12.5km north west	The conservation objectives for Kilkieran Bay & Islands SAC relate to the maintenance of a favourable conservation condition of Annex I habitats and Annex II species. There are detailed targets for each habitat and species. Annex I Habitats: • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Machairs (* in Ireland) [21A0]	**Screened Out** This site is screened out on the basis of intervening distance and the lack of pathways for impacts as it is in a separate hydrological catchment from the development site.

		• Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Annex II Species: • Lutra lutra (Otter) [1355] • Phoca vitulina (Common Seal) [1365] • Najas flexilis (Slender Naiad) [1833]	
Cloughmoyne SAC 000479	14.2km north east	The conservation objectives for Cloughmoyne SAC generally relate to the maintenance of a favourable conservation condition of Annex I habitat. • Limestone pavements* [8240]	**Screened Out** This site is screened out due to the intervening distance to the development site and to its location within a separate hydrological catchment.
Lough Mask SPA 004062	20.5km north	The conservation objectives for Lough Mask SPA generally relate to the maintenance of the bird species listed as Special Conservation Interests for the SPA: • Tufted Duck (Aythya fuligula) [A061] • Black-headed Gull (Chroicocephalus ridibundus) [A179] • Common Gull (Larus canus) [A182] • Lesser Black-backed Gull (Larus fuscus) [A183] • Common Tern (Sterna hirundo) [A193] • Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] There is also an objective to maintain or restore the favourable conservation condition of the wetland habitat at Lough Mask SPA as a resource for the regularly-occurring migratory waterbirds that utilise it	**Screened Out** This site is screened out due to the intervening distance and the lack of any potential pathways for impacts.

*Priority habitat/species

13.3.3 I accept that Lough Corrib SAC is not hydrologically linked to the development site and that there is no pathway for potential impacts on aquatic species. However, I note

that the Lesser Horseshoe Bat is also a qualifying interest of this site. The NIS states that the nearest known roosts within the SAC are located 8-9km from the development site. Individuals usually range within 5km of the roost, although extreme ranging distances have been recorded by radio tracking surveys in Ireland at a maximum of 9km from roosts. The NIS concludes that '*Impacts on the SAC population of this qualifying interest are extremely unlikely*". I note that the Ross Lake and Woods SAC is screened in on the bases that female Lesser Horseshoe Bats "*… can range as far as 8 km from the maternity roost [although usually within 5 km of the maternity roost]*". It would appear that the Lough Corrib SAC should have been included for assessment of potential impacts on the qualifying interest Lesser Horseshoe Bat on this basis.

13.3.4 The Lough Corrib SPA is screened out on the basis that it is over 6.2km from the development site with any potential pathways for impact so minor that they are extremely unlikely to result in any adverse impacts. However, I note that several of the species listed as qualifying interests of the SPA were found to be present at the development site, i.e. Hen Harrier and Common/Arctic Tern. While it is accepted that there is a significant intervening distance, I note that several of the species listed as qualifying interests are known to be present in the area of the development site and that, due to inadequate survey data, the full extent of their use of the development site and wider area is uncertain, i.e. Golden Plover, GWF Goose. The SNH guidance document *Assessing Connectivity with Special Protection Areas* (July 2013) notes the following typical connectivity distances:

Species	**Range**
Hen Harrier	Foraging distance during breeding season: Core range of 2km, maximum range 10km. Distance between alternative nest sites: Generally within 1km.
Golden Plover	Foraging distance during breeding season: Core range of 3km, with maximum range of 11km
GWF Goose	Foraging range from night roost during winter season: Core range of 5-8km.

The SNH guidance states that in most cases the core range should be used when determining whether there is connectivity between the proposal and the qualifying interests. However, given the uncertainty regarding bird movements in the area, it is considered that potential impacts on the qualifying interests Hen Harrier, Golden Plover and GWF Goose cannot be ruled out. This is a significant lacuna in the information provided in the NIS, which impacts upon the Board's ability to carry out AA.

13.3.5 The Inner Galway Bay SPA, which is one of the most important ornithological sites of the Western region, supports several wintering waterbirds that are known to be present at the development site, i.e. Cormorant, Teal, Golden Plover. Grey Heron are also present in notable numbers. It has a nationally important breeding population of Common Tern and a larger Cormorant colony. All of these species are listed as qualifying interests for this designated site. It is considered that potential impacts on these qualifying interests cannot be ruled out given that several species are known to be present at the development site.

13.4 Potential Impacts on Connemara Bog Complex SAC (site code 002034)

13.4.1 Impacts on Species within the SAC

The NIS screening concludes that there are potential pathways for impacts on the following aquatic species, which are qualifying interests of the SAC:

- Euphydryas aurinia (Marsh Fritillary) [1065]
- Salmo salar (Salmon) [1106]
- Lutra lutra (Otter) [1355]
- Najas flexilis (Slender Naiad) [1833]

Each may be considered separately as follows. It is noted that there are no detailed Conservation Objectives for this SAC.

Marsh Fritillary:
It is noted that the development site was assessed for potential breeding sites for this species, none were discovered. There were no signs that the species had been feeding on the foodplant Devilsbit, which is present at the development site. The species therefore does not appear to be present. This point is accepted.

Salmon:
There are potential pathways for pollution during the construction and operational stages of the wind farm development. The NPWS document '*The Status of EU Protected Habitats and Species in Ireland*' has identified the issues '*Diffuse pollution to surface waters [not due to agricultural and forestry activities] [high importance]*' and '*Forest replanting [non native trees] [medium importance]*' as threats to this species. The habitat has been assessed as 'Favourable' and future prospects for the species 'Inadequate' but 'Stable'. Habitat for this species was not recorded within the development site, however it is likely to be present within the aquatic habitats of the site. Potential impacts to Salmon relate to water pollution during the construction and operational stages of the wind farm. The NIS includes the proposed hydrology/hydrogeology mitigation measures as set out in the EIS. It concludes that these measures will ensure that the development would not result in pollution of waters that flow into the Owenboliska Catchment or the lakes within it that support suitable habitat for this species or prevent it from maintaining favourable status as defined in Article I of the EU Habitats Directive. Having regard to the detailed assessment of potential hydrological impacts above, this conclusion is considered reasonable.

Otter:
The NPWS document notes that Ireland remains a strong hold for this species despite dramatic declines in populations in many European populations during the latter half of the 20th century. Otters have 2 basic requirements: aquatic prey and safe refuges where they can rest. In Ireland, otter populations are found along clean rivers and lakes. Otters maintain territories, which can stretch up to 10 or 20km on smaller rivers or in upland areas where food tends to be les abundant. Impacts that reduce the availability of quality of, or cause disturbance to, their terrestrial or aquatic habitats are likely to affect otters. The issue '*Pollution to surface waters [limnic & terrestrial, marine & brackish] [low importance]*' is identified as a threat to the species. The range and habitat for the species are assessed as 'Favourable' by the NPWS. The development site was investigated for Otter signs during site surveys as outlined in the EIS. The

species was not noted at the site, nor any signs of its presence. However, it is likely to be present in the streams and lakes within and adjacent to the study area, at least on occasion. Potential impacts on Otter within the SAC also relate to water pollution. As above, the development has been designed to avoid these impacts and mitigation measures are proposed. Significant impacts on this qualifying interest are therefore not considered likely.

Slender Naiad:
The NPWS document notes that this species grows permanently submerged in the lower eutrophic depths of clear-water lowland lakes of the northwest and Kerry. The issues '*Diffuse pollution to surface waters due to other sources not listed [high importance]*' and '*Mechanical removal of peat [high importance]*' are listed as threats to the species. The range for this species has been assessed as 'Favourable' by the NPWS, while the population is assessed as 'inadequate' but 'stable'. Habitat for this species was not encountered within the development site. Potential impacts on Slender Naiad within the SAC also relate to water pollution. As above, the development has been designed to avoid these impacts and mitigation measures are proposed. Significant impacts on this qualifying interest are therefore not considered likely.

13.4.2 Impacts on Habitats Within the SAC

The NIS screening assessment concludes that there are potential pathways for impacts on the following Annex I habitats within the SAC, as they are hydrologically connected to the development site:

- Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
- Transition mires and quaking bogs [7140]
- Alkaline fens [7230]

Each may be considered separately as follows.

Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae):
The NPWS document notes that this habitat occurs in soft water, nutrient poor lakes frequently associated with acid bedrock such as granite overlain by peatland. Ireland is a stronghold for the habitat. The range and area of this habitat have been assessed as 'Favourable' by the NPWS, however the specific structures and functions and future prospects for the habitat have been assessed as 'Bad [declining]'. The issues '*Mechanical removal of peat [high importance]*' and '*Diffuse pollution to surface waters due to other sources not listed [high importance]*' are listed as threats to the species by the NPWS. This habitat was not encountered within the development site. Potential impacts on this habitat within the SAC relate to water pollution and peat removal. As above, the development has been designed to avoid these impacts and mitigation measures are proposed. Significant impacts on this qualifying interest are therefore not considered likely.

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

The NPWS document notes that the description of this habitat is broad, covering rivers from upland bryophyte and macroalgal dominated stretches, to lowland depositing rivers with pondweeds and starworts. A number of sub-habitats of this type exist in Ireland. The range and area of the habitat have been assessed as 'Favourable' by the NPWS, however the specific structures and functions have been assessed as 'Inadequate [declining]'. The issue '*Mechanical removal of peat [medium importance]* is listed as a threat to the species by the NPWS. This habitat was not encountered within the development site, however there are potential pathways for water pollution from the development site to the habitat within the SAC. As above, the development has been designed to avoid these impacts and mitigation measures are proposed. Significant impacts on this qualifying interest are therefore not considered likely.

Transition mires and quaking bogs:
The NPWS document notes that this habitat is characterised by a broad range of physically unstable peat-forming vegetation communities floating on surface water, typically occurring in the wettest parts of raised bog, blanket bog or fen or at transition areas of open water and may reflect the actual succession from fen to bog. The range of the habitat has been assessed as 'Favourable' and the area assessed as 'Inadequate [declining]' by the NPWS. The specific structures and function have been assessed as 'Bad [unknown] and the future prospects as 'Bad [Improving]'. The issues '*Artificial planting on open ground [non-native trees] [medium importance] and roads/motorways [low importance]*' are listed as threats to this habitat. Potential impacts on the habitat within the SAC relate to water pollution. As above, the development has been designed to avoid these impacts and mitigation measures are proposed. Hydrogeological impacts on the habitat within the SAC as a result of excavation are not considered likely due to the 150m distance between the footprint of the development and the designated site. Significant impacts on this qualifying interest are therefore not considered likely. I note that the NIS states that this habitat was not encountered at the development site, however this is contradicted in table 6.6 of the EIS, which lists the habitat as present at the site (0.08ha).

Alkaline fens:
The NPWS document notes that Alkaline fens are typically base-rich basing or flush fen systems with extensive areas of species-rich small sedge communities of the alliance Caricon davallianae. These fen systems are often a complex mosaic of habitats, with tall sedge beds, reedbeds, wet grasslands, springs and open water often occurring at a fen site. The most extensive areas of fens in Ireland are thought to occur in lowland basins associated with limestone groundwater bodies with a karstic or poorly productive flow regime. Alkaline fens within flushes in upland and lowland regions along the fringes of calcareous lakes and within turloughs, dune slacks and machair are thought to be more limited in extent but more widespread. The range and area of the habitat in Ireland is assessed as 'Inadequate' by the NPWS. The specific structures and functions [including species] and future prospects for the habitat have both been assessed as 'Bad [unknown]'. The issues '*Artificial planting on open ground [non-native trees] [medium importance]* is listed as a threat to this habitat. The habitat was not encountered at the development site, no direct impacts are identified. Potential impacts within the SAC relate to water pollution. As above, the development has been designed to avoid these impacts and mitigation measures are proposed. Significant impacts on this qualifying interest are therefore not considered likely.

I note that the NIS does not consider potential impact on the habitat Dystrophic Lakes [3160] within the SAC. This omission is potentially significant as the development site is hydrologically connected to the SAC and may therefore impact on this habitat type if there is a hydrological link. The NIS does not provide any explanation for this omission.

13.5 Potential Impacts on Connemara Bog Complex SPA (site code 004181)

13.5.1 This screening process identified the potential for impacts on the following bird species, which are listed as Special Conservation Interests for the SPA:

- Cormorant (Phalacrocorax carbo) [A017]
- Merlin (Falco columbarius) [A098]
- Golden Plover (Pluvialis apricaria) [A140]
- Common Gull (Larus canus) [A182]

Potential impacts on each species within the SPA may be considered separately as follows, this analysis should be read in conjunction with the EIA consideration of ornithological impacts above. It is noted that there are only generic Conservation Objectives for this SPA.

13.5.2 Cormorant (Phalacrocorax carbo)

The NIS notes that single birds were recorded on 22 occasions within the development site. Only 4 of those were flying at heights within the swept area of the proposed turbines. The NIS concludes that this is a relatively small number of occasions. The nearest known Cormorant colony is 14km from the study area and the largest colony within the SPA is >40km distant (Lough Scannive, located within Roundstone Bog, supports a nationally important breeding population of Cormorant). The NIS includes the EIS assessment of collision risk, construction disturbance, secondary habitat loss due to displacement and interference with flightlines/commuting /migration or fragmentation of habitats. It notes the conclusion that there will be no significant impacts on Cormorant within the Connemara Bog Complex SPA. I note that no collision risk analysis was carried out for this species. In addition, the concerns stated above regarding the reliability of the bird survey data apply.

13.5.3 Merlin (Falco columbarius)

A partial survey in 2009 recorded 8 pairs of Merlin at various locations throughout the SPA; 15 breeding locations for the species were recorded within the SPA in a survey undertaken in 1986/86. The bird surveys at the development site recorded Merlin on 2 occasions during winter, both times at flight heights below the swept area of the turbines. As above, the NIS includes the EIS assessment of collision risk, construction disturbance, secondary habitat loss due to displacement and interference with flightlines/commuting/migration or fragmentation of habitats. It notes the conclusion that there will be no significant impacts on Merlin within the Connemara Bog Complex SPA. I have concerns regarding the reliability of this conclusion as above.

13.5.4 Golden Plover (Pluvialis apricaria)

This species was not observed during the bird surveys of the development site. As above, the NIS includes the EIS assessment of collision risk, construction disturbance, secondary habitat loss due to displacement and interference with flightlines/commuting /migration or fragmentation of habitats. It notes the conclusion that there will be no significant impacts on Golden Plover within the Connemara Bog Complex SPA. I have concerns regarding the reliability of this conclusion as above.

13.5.5 Common Gull (Larus canus)

The numerous lakes scattered throughout the SPA provide suitable breeding locations for the species. A survey in 2010 recorded 40 pairs within the SPA. This species was not observed during bird surveys of the development site. As above, the NIS includes the EIS assessment of collision risk, construction disturbance, secondary habitat loss due to displacement and interference with flightlines/commuting/migration or fragmentation of habitats. It notes the conclusion that there will be no significant impacts on Common Gull within the Connemara Bog Complex SPA. I have concerns regarding the reliability of this conclusion as above, particularly given that lakes within the development site were not surveyed.

13.6 Potential Impacts on Ross Lake & Woods SAC (site code 001312)

13.6.1 This AA screening concluded that there are potential impacts on the following species, which is a qualifying feature of the SAC:

- Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]

There are no detailed Conservation Objectives for the SAC.

13.6.2 Potential Impacts on Lesser Horseshoe Bat within the SAC

This analysis should be read in conjunction with the EIA consideration of bats impacts above.

The NPWS document '*The Status of EU Protected Habitats and Species in Ireland*' (2013) notes that this species is confined to 6 west coast counties in Ireland, i.e. Mayo, Galway, Clare, Limerick, Cork and Kerry. Summer roosting sites are often in the attics of old or derelict buildings. The bats are faithful to a roost site and will return to the same site each year. Hibernation sites are typically caves, souterrains, cellars and icehouses. The species relies on linear landscape features, e.g. treelines, stonewalls and hedgerows to navigate and commute from roosts to feeding sites and are reluctant to fly out in the open. The bats forage on flying insects predominantly in deciduous woodland and riparian vegetation normally within a few km of their roosts. They are sensitive to disturbance and normally do not occupy the same buildings as humans. Loss of roosting sites due to deterioration or renovation of old buildings, loss of commuting routes linking roosts to foraging sites and unsympathetic management of foraging sites are major threats to the species. The NPWS assesses the population and range for the species in Ireland as 'Favourable'.

There is a breeding colony at an outbuilding beside Ross House within the SAC. The population at the site is rated as of International importance. Potential pathways for impacts as identified in the original NIS relate to the demolition of a Lesser Horseshoe Bat roost at the development site in order to facilitate the construction of an electricity substation, however this is not now proposed. The revised scheme involves the

retention of the existing roost building and the constriction of the substation c. 160m further east. The revised site is surrounded by coniferous forestry and was specifically chosen to avoid disturbance to the roost or potential commuting routes to or from it.

The species was not recorded during other bat surveys undertaken at the development site. The majority of the site is considered to be sub-optimal for the species. There is considered to be no risk from turbine collision. The NIS concludes that significant impacts on this qualifying interest are not considered likely. This finding is considered reasonable with regard to the potential impacts on Lesser Horseshoe bats as identified in the EIS. However, as discussed above, the bat survey data for the development site is considered deficient. It therefore cannot be used to reach a scientifically robust conclusion with regard to the usage of the development site by bat species, or conclusions regarding potential impacts on this species in the wider area.

13.7 Mitigation Measures and Residual Impacts

13.7.1 Construction activity resulting in flow of pollutants to the watercourses outside the site – Connemara Bog Complex SAC

Potential impacts on the qualifying interests of this SAC relate to impacts on water quality within the Owenboliska catchment. The development has been designed with the objective of breaking all overland and groundwater pathways between the development site and the downstream watercourses within the SAC. The hydrology/hydrogeologiy assessment of the EIS is included as an appendix to the NIS and includes a suite of mitigation measures to prevent pollution of watercourses during construction. A copy of the Construction Environmental Management Plan is also included with the NIS.

Keyhole felling of coniferous plantation. A total of 36.6 ha of existing plantation forestry is to be permanently felled to facilitate the scheme, along with an additional 14ha of turbulence felling. Potential impacts on surface water arising from felling activities that result in the entrainment of suspended sediment into surface waters, also the release of sediment and nutrients from timber in stacking areas. Proposed mitigation measures involve use of forestry best practice and are listed as in the EIS. Minimum buffer zones are to be used between forestry and aquatic zones as per the Forest Service guidance document "*Forestry and Water Quality Guidelines*", with a buffer zone of 50m to be maintained for all streams and lakes where possible. Silt traps are to be used. Particulars of drain inspection and maintenance and surface water quality monitoring are provided. Residual impacts are identified as "indirect, negative, slight, short term, low probability."

Potential impacts relating to earthworks (removal of vegetation cover, excavations and stock piling) resulting in suspended solids entrainment in surface waters. Table 7.1 indicates that a total of 306,050m^3 of peat and overburden are to be removed at the site, including road and turbine excavations. The proposed development areas are away from buffer zones except for existing road upgrades. The proposed site drainage measures are summarised as per the EIS, including silt fences and silt bags and management of runoff from peat storage areas. Apart from interceptor drains, which dispose of clean runoff to the downstream drainage system, there will be no direct discharge into the existing site drainage network. Residual impacts are

identified as 'Negative, indirect, imperceptible, short term, low probability". Ongoing monitoring of the on-site drainage system is proposed, details are provided.

This conclusion is considered reasonable with regard to the above assessment of potential surface water impacts.

13.7.2 Excavation Activity Impacts on Groundwater and Surface Water – Connemara Bog Complex SAC

Dewatering of the borrow pits could impact on local groundwater levels, with consequent impacts on the aquatic habitats and species for which the site is selected. Release of contaminants within excavations could impact on groundwater quality. The proposed borrow pit areas comprise outcropping bedrock on elevated ground. No groundwater dewatering will be required as rock excavation will progress in a horizontal manner into the side of outcropping bedrock. Therefore no significant impacts on groundwater levels. Contamination of groundwater is unlikely due to the nature of the granite bedrock. Mitigation measures to prevent pollution by hydrocarbons during construction are proposed. Residual impacts are identified as "direct and indirect, negligible, short term, medium probability"

With regard to impacts on surface water, groundwater seepages are likely to occur at turbine base excavations. Proposed measures for interceptor drainage and pumping if necessary are set out. There is no direct discharge to surface watercourses. Residual impacts are identified as "Indirect, negligible, sort term, low probability".

This conclusion is considered reasonable with regard to the above assessment of groundwater impacts.

13.7.3 Contamination of Surface Waters within the Connemara Bog Complex SAC

These potential impacts relate to release of hydrocarbons, cement based products and wastewater disposal.

Hydrocarbons:
Possible accidental spillage during construction, risk to ground and surface water and associated ecosystems and to terrestrial ecology. Proposed mitigation measures to prevent and manage spills are set out. Residual impacts are identified as "Indirect, negative, imperceptible, short term, low probability".

Groundwater and surface water contamination from wastewater disposal:
Potential impacts of effluent from wastewater treatment systems. Self-contained toilet facilities with integrated waste holding tanks are to be provided and maintained at the site. Water supply for staff facilities is be imported and removed from the site. No residual impacts are identified.

Release of cement based products:
Potentially very dangerous for aquatic species. Peat ecosystems with low ph hydrochemistry are particularly sensitive to the introduction of high pH alkaline waters. No batching of wet cement products will occur at the site. Special measures for washing out related plant are proposed. Residual impacts are identified as "Negative, indirect, imperceptible, short term, moderate probability". This conclusion is

considered reasonable with regard to the above assessment of potential surface water impacts.

13.7.4 Morphological Changes to Surface Water Courses & Drainage Patterns – Connemara Bog Complex SAC

A total of 4 no. new stream crossings and 10 no. existing stream crossing upgrades are proposed. Details of construction methodologies are provided, as in the EIS. Existing banks are to remain undisturbed. Near stream construction work will only be carried out during the period permitted by Inland Fisheries Ireland for such works, i.e. may to September inclusive. All river/stream crossings will require a Section 50 application. There will be a requirement for a power cable stream crossing south of T18 and T24, which will involve directional drilling beneath the stream bed with no interference with the stream bed or banks. Residual impacts are identified as "Negative, direct, negligible, short term, low probability". This conclusion is considered reasonable with regard to the above assessment of potential surface water impacts and mitigation measures as set out in the EIS.

13.7.5 Potential Disturbance to Fauna during Construction – Connemara Bog Complex SAC, SPA and Ross Lake and Woods SAC

The NIS outlines the following main mitigation measures:

- No felling of conifers, individual trees or bushes during the general bird breeding season (1st March to 31st August inclusive).
- Surveys for Badger setts prior to construction.
- Disturbance to Otter unlikely due to a 50m buffer to watercourses.
- Relocation of substation to prevent impacts to Lesser Horseshoe Bat.

No significant residual impacts are identified. This conclusion is considered further below.

13.7.6 Disturbance to Fauna During Operation – Connemara Bog Complex SAC, SPA, Ross Lake and Woods SAC

Collision risk analysis results are included as Appendix 3-1 of the NIS. Conditions where there is a possibility of large scale mortality do not exist at the site. Significant impacts are not expected on the bird species that are qualifying interests of the SPA. Analysis of secondary impacts due to habitat loss concludes that disturbance effects on the SPA population are unlikely to occur. Analysis of the potential existence of flightlines at the development site indicates that disturbance effects on the SPA population are unlikely to be significant in all cases. Analysis of potential for fragmentation of habitats provide as Appendix 3.1 of the NIS concludes that disturbance effects on the SPA population are unlikely to be significant in all cases. No direct mitigation measures are proposed or residual impacts identified. As discussed above, the usage of the development site and surrounding area by bird species cannot be determined with any scientific accuracy and precision due to the inadequacies of the available bird survey data.

Potential impacts on Lesser Horseshoe Bat population at Ross Lake and Woods SAC relate to collision risk and to barotrauma due to low pressure vortices close to moving wind blades. Bats in Ireland are known to undertake short distance migration and

autumn swarming. Long distance migration has not been observed in Ireland. Collision risk occurs at heights between 39.5 and 156.5m (turbine blade height of the proposed development). Most Irish species do not fly at these heights and usually have some kind of association with shrub or tree cover, all turbine blades will be 50m from the nearest trees. Following the *Natural England Technical Information Note* '*Bats and Onshore Wind Farms'* (2014), Lesser Horseshoe is considered to be a low risk species in terms of risk from turbine collision or barotrauma. It is also considered to be a low risk species in terms of population impacts. Proposed mitigation comprises turbine felling such that there is a distance of 70m in all directions from the turbine base. Residual impacts Lesser Horseshoe Bats are considered to be negligible. While the general points regarding impacts on the Lesser Horseshoe Bat are accepted, as discussed above, the bat survey data for the development site is considered deficient and therefore cannot be used to reach scientifically robust conclusions regarding potential impacts on this species in the wider area.

13.8 Other Plans or Projects (In Combination Effects)

13.8.1 The cumulative impact assessment of the NIS takes the following other developments into account:

Wind Energy Development	**No. of Turbines**	**No. of Turbines in Owenboliska Catchment**
Uggool permitted	16	16
Cloosh permitted	22	17
Knockranny proposed	11	9
Seecon permitted	23	16
Knockalough permitted	7	1
Lettercraffroe permitted	8	1
Shannagurraun operating	7	1
Inverin operating	5	0
Lettergunnet operating	10	0
TOTALS **+ subject proposal (29 turbines)**	**109**	**60** **89**
Non Wind Energy Development	**Development in Owenboliska Catchment**	
Eirgrid Letter 110kV electricity substation	Yes	
Doon Road upgrade	Yes	
110 kV Letter-Galway underground power line	No	
110 kV Galway to Screeb overhead power line	No	
R336 Screeb to Bearna upgrade	Yes	
N59 Moycullen Bypass	No	
N59 Clifden-Oughterard upgrade	No	
Connemara Greenway	No	

The NIS eliminates potential cumulative impacts from the last 4 developments listed above, on the basis of the generally confined nature of the work sites. Potential cumulative impacts mainly relate to the following issues:

- Direct habitat loss

- Bird mortality due to collisions
- Secondary habitat loss for birds due to avoidance of turbines
- Climate change
- Water Quality, Hydrological / hydrogeological impacts
- Cumulative impact with other plans.

Each may be considered separately as follows.

13.8.2 Direct Habitat Loss

The NIS provides the following figures for the development site and other permitted/proposed developments in the vicinity, based on relevant EISs or environmental reports:

Project No. of Turbines	**Area of Habitat Loss (ha)**	**Type of Habitat**
Subject development 29 turbines	46.5	Overwhelmingly forestry habitat.
Cloosh Wind Farm 22 turbines	56.3	Conifer plantation 38.8 ha to be replanted, resulting in a permanent loss of 17.5 ha of conifer plantation.
Knockranny Wind Farm 11 turbines	15.7 6.83 0.33 0.15 1.0 5.25 0.05 0.23 0.05 Unquantified	Conifer plantation. Of the 17.5 ha felled, 7.7 ha will accommodate the development, c. 7ha for ecological enhancement/restoration (blanket bog restoration programme) and c. 1 had for riparian ecological improvement measures. Wet heath habitat. Lowland blanket bog. Blanket bog/wet mosaic Acid grassland / wet heath mosaic Cutover bog Scrub Acid grassland / dense bracken mosaic Acid grassland, dense bracken and wet grassland mosaic Patches of poor fen and flush
Uggool Wind Farm 16 turbines	Exact areas not quantified in EIS	Largely in areas of degraded blanket bog / wet heath or acid grassland. Habitat restoration measures are proposed, residual impacts are deemed negligible to low.
Seecon Wind Farm 23 turbines	68.6 0.04	Conifer plantation. 37.3 ha to be replanted. Marginal, modified upland blanket bog. 174 ha of bog is to be subject to restoration measures, which aim to create an ecological corridor between the Connemara Bog Complex SAC and the Oughterard Dstrict Bog

		NHA.
Doon Road Upgade	5 1	Road margin habitats over most of this area. Wider area of woodland, trees, scrub and stone walls to be removed at Doon Road / N59 junction. Reduction of road width to 4.5m once compete will allow substantial revegetation of verge habtiats. Conifer plantation to be felled.
Letter 110kV Substation and 110kV underground cable	2.55 Unquantified.	Conifer plantation to be lost due to the development of the substation and 3 no. associated material deposit areas, all within the development site. Cable track to be excavated in marginal degraded bog adjacent to the road. Backfilling and eventual revegetation.
110kV Galway to Screeb overhead line	47	Conifer plantation

The NIS notes that the majority of the habitat loss for the above projects will be conifer plantation. It is estimated that a total of 91.35 ha will be permanently felled, taking into account replanting. The NIS concludes that the loss of semi-natural habitat is small in scale, with the majority of habitat loss in marginal roadside locations or in damaged and modified examples of various habitats. Phasing of project construction in the area will reduce cumulative impacts on habitats. Habitat restoration measures will also offset habitat loss to some extent. No impacts on any specific species or qualifying interest are identified.

13.8.3 Bird Mortality due to Collisions with Turbines

Multiple wind farm developments can have a cumulative impact of collision mortality in a wider landscape area. The combined bird mortality can have a significant effect on species populations. Species that do not fly regularly at heights that take them through the turbine swept area (e.g. Red Grouse and many small passerines) are unlikely to be affected. The most likely impacts are on species where the number of individuals in a local population are few. The predicted wind collision risks for Peregrine, Whooper Swan and Hen Harrier were very low at the development site, in all cases to the extent that there might not be a collision death in the working lifetime of the proposed development. The above stated concerns regarding potential impacts on bird species are noted, it is considered that due to a lack of adequate bird survey data, scientifically robust conclusions regarding birds impacts cannot be reached.

13.8.4 Secondary Habitat Loss for Birds

This arises due to avoidance of wind turbines. If a worst case scenario of 110% avoidance of the area within 100m of a wind turbine is used. The NIS estimates that a total permitted and proposed turbines in the area, including the development site, would result in a total secondary habitat loss of approx. 449ha or 1.4% of the c. 330 sq.km. area of partially forested hill and flat bogland. The NIS concludes that, given that 100% of avoidance is unlikely, it is reasonable to assume that the effect of any

secondary habitat (avoidance) loss is likely to be negligible. The above stated concerns regarding potential impacts on bird species are noted.

13.8.5 Water, Hydrology, Hydrogeology

A total of 4 other wind energy developments are located within the Owenboliska catchment, also the road and electrical infrastructure works at Letter and Doon. The NIS considers that residual impacts of the development on surface water quality will be imperceptible/negligible. Therefore, there will be no cumulative impacts on surface water quality. Having regard to the above assessment of potential surface and groundwater impacts, I am satisfied that the proposed development would not result in any significant additional water impacts, subject to the satisfactory implementation of the proposed mitigation measures.

13.8.6 Climate Change

The cumulative impact on wind energy developments in the area may be to contribute to the amelioration of climate events that threaten to make bird species like Merlin and other upland birds extinct as breeding birds in the Republic of Ireland. This point is accepted.

13.8.7 Cumulative Impact with Other Plans

The NIS lists the following plans, which could have cumulative impacts:

- National Spatial Strategy
- Western Regional Planning Guidelines
- Galway County Development Plan 2009-2015
- Draft Galway County Development Plan 2015-2021
- Galway City Development Plan 2011-2017
- Moycullen Local Area Plan 2012-2018
- Bearna Local Area Plan 207-2013
- Oughterard Local Area Plan 2003-2009
- Gaeltacht Local Area Plan 2008-2018
- Grid 25 Strategy
- Western River Basin District 2009-2015

No potential cumulative impacts are identified. This assessment is accepted.

13.9 NIS Conclusion

13.9.1 The NIS concludes that there will be no direct impacts on the Connemara Bog Complex SAC, Connemara Bog Complex SPA, the Ross Lake and Woods SAC, or any other Natura 2000 site. Any indirect impacts on the Lough Corrib SAC and SPA are likely to be insignificant due to the design of the proposed development and mitigation measures. The works themselves will involve little disturbance or disruption to the ecological processes in the area.

13.10 Appropriate Assessment Conclusion

13.10.1 I have several concerns regarding the submitted NIS and revised NIS. I am not satisfied with the basis on which the Lough Corrib SAC was screened out, as there is potential for impacts on Lesser Horseshoe Bat, which is a qualifying interest of the SAC. It is also considered that potential impacts on the qualifying interests of the Lough Corrib Complex SPA and the Inner Galway Bay SPA cannot be ruled out in view of the known and possible presence of several of the qualifying interests of each SPA at the development site. Due to the inadequacy of the available bat survey data, it is considered that scientifically robust conclusions cannot be reached regarding potential impacts on the Lesser Horseshoe Bat qualifying interest of the Ross Lake and Woods SAC and Lough Corrib SAC. The NIS consideration of potential impacts on the Connemara bog Complex SAC does not assess potential impacts on the habitat 'Dystrophic Lakes [3160]', which is a qualifying interest of the SAC. Given that the development is hydrologically connected to the SAC, it is considered that potential effects cannot be ruled out and should have been given further consideration in the NIS. In addition, I consider that the NIS does not prove beyond reasonable scientific doubt that there would not be adverse effects on the qualifying interests Cormorant, Merlin, Golden Plover, Common Gull, Teal and Grey Heron, with consequent impacts on the integrity of the Connemara Bog Complex SPA, Lough Corrib SPA and Inner Galway Bay SPA, having regard to their conservation objectives. The impacts of the proposed development on the Natura 2000 network is, therefore, uncertain. Where impacts of a proposed development are unclear or uncertain, the precautionary principle must apply and the project should not proceed.

14.0 CONCLUSION

14.1 The proposed development is considered to be in accordance with the provisions of the Co. Galway WES with regard to the zoning of most of the site as a 'Strategic Area' and the remainder of the site as 'Open to Consideration' for wind energy development. However, having regard to the above planning assessment, Environmental Impact Assessment and Appropriate Assessment, it is considered that, due to the identified inadequacies of the birds and bats survey work carried out, there is insufficient information on which to base a robust assessment of potential impacts on birds and bat species, or to consider potential impacts on the qualifying interests of several Natura 2000 sites in the vicinity.

15.0 RECOMMENDATION

Having considered the contents of the application including the Environmental Impact Assessment and the Natura Impact Statement, the planning history of the site and its vicinity, the provisions of the Galway County Development Plan 2009-2015 and 2015-2021, the County Galway Wind Energy Strategy, the provisions of the Guidelines for Planning Authorities in Wind Farm Development and Wind Energy Development (2006), the observations made in writing to the Board, and the submissions made at the Oral Hearing. I recommend that permission be refused for the reasons and considerations set out hereunder:

REASONS AND CONSIDERATIONS

The bird and bat survey data in the EIS is inadequate in duration and scope with regard to best international practice. On this basis, The Board is of the view that the information contained in the EIS submitted does not accord with the provisions of Article 94 and Schedule 6 of the Planning and Development Regulations 2001. In particular, Schedule 6(1)(c) specifies that an EIS must contain:

> "The data required to identify and assess the main effects which the proposed development is likely to have on the environment."

The proposed development would therefore be contrary to the proper planning and development of the area.

The appeal site lies within 15km of 10 statutorily designated European sites (Special Areas of Conservation and Special Protection Areas) and the site itself hosts bird species which are listed of Special Conservation Interest in Special Protection Areas in the vicinity of the site (Connemara Bog Complex SPA, site code 004181, Lough Corrib SPA, site code 004042 and Inner Galway Bay SPA, site code 004031) and a bat species that is listed as a Qualifying Interest of several Special Areas of Conservation in the vicinity (Ross Lake and Woods SAC, site code 001312 and Lough Corrib SAC, site code 000297). The Board is not satisfied on the basis of the information contained in the Natura Impact Statement and other documentation supporting the planning application, that an appropriate or adequate assessment of the effects of the development on the environment has been carried out in accordance with Article 6(3) of the EU Habitats Directive or that the integrity of Special Areas of Conservation and Special Protection Areas would not be adversely affected by the proposed development, in particular, by virtue of the disturbance, barrier effects to movement and collision risk arising from the construction and operation of the wind farm on birds of Special Conservation Interest known to traverse the site and the network of SPA's in the vicinity of the site, notably the Cormorant, Merlin, Golden Plover, Common Gull, Teal and Grey Heron, Red Grouse, or on the Lesser Horseshoe Bat, which is known to be present at the development site. In addition, screening assessment of the NIS screens out sites which may have pathways for impacts from the proposed development, i.e. the Lough Corrib SAC (site code 000297), the Lough Corrib SPA (site code 004042) and the Inner Galway Bay SPA (site code 004031). In these circumstances, the proposed development would be contrary to Article 6(3) of the EU Habitats Directive and would, therefore, be contrary to the proper planning and sustainable development of the area.

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Sarah Moran
Senior Planning Inspector
28th October 2015

Appendix I EIA of Proposed Forestry Replanting

Summary of main potential impacts identified at each proposed replanting site.

Area 1 Cloonfad, Co. Roscommon
The site is currently in agricultural use and completely surrounded by man-made boundaries. The Technical Approval document identifies a 'waterlogged section' of the site measuring 0.53ha, which is to be managed as a biodiversity area. It is likely that the habitats at the site correspond to Wet Grassland and associated Drainage Ditch and Hedgerow. The site is on an upland that has been highly modified by agriculture and forestry. It is significantly altered from its natural state by drainage and planting activities. It may have supported Bog or Wet Heath habitats in the past, which may have corresponded to habitats that were listed on Annex I of the EU Habitats directive. The EIS considers proximity and possible source-pathway-receptor connections to Natura 2000 sites within a 15km radius. Aside from Lough Corrib SAC (site code 000297), all other Natura sites, NHAs and pNHAs are screened out on the basis of distance from the proposed planting site, lack of a direct connection and scale of the proposed planting. Lough Corrib SAC is located 1.7 km from the planting site. Flora and Fauna impacts: Loss of floral habitat – long term slight negative impact Loss of faunal habitat – long term neutral impact Water pollution – short term minor negative impact A section of the site is to be retained as a biodiversity area. Cumulative impact – slight negative impact Soil and Geology Impacts: The site has a cutover peat subsoil type. No likely impacts on underlying geology, some minor disturbance of soils. No residual impacts identified. Hydrology and Hydrogeology: The site is within the Lough Corrib catchment. The lands are to be drained in accordance with Forestry Guidelines, details of standard forestry drainage are provided. Ground level elevations range between approx. 95m to 105m OD. No streams or rivers within or adjacent to the site. The nearest surface watercourses are located c. 500m to the north and 750m to the east. No flood risk is identified. The local rivers and associated lakes are known to be of trout potential and are important locally for fishing. Groundwater at the site is sensitive to pollution because the sandstone bedrock is classified as a locally important aquifer. However, the peat covering the site protects the underlying aquifer from pollution. Proposed mitigation measures to be carried out during planting and drainage works are set out, including measures for control of sediment release and hydrocarbons. The EIS identifies a 'slight, direct, short term, low probability' impact. The residual impact is 'indirect, negative, imperceptible, short term, low probability'. There could potentially be an "imperceptible, short term, low probability impact" on local streams and rivers but this would be very localised and over a very short time period. Therefore, direct or indirect impacts on the Lough Corrib SAC will not occur. Landscape and Visual: No impacts on scenic routes identified. The site is within LCA 26 Cloonfad Bog and Upland

of the Co. Roscommon Landscape Character Assessment 2008, this area is classified as 'Moderate', which is the lowest category of value in the county. The development is in accordance with the guidance provided for the '*Mountain and Farmland Complex*' landscape character type as identified in the Forest Service document '*Forestry and the Landscape Guidelines'* (2000). The site is of low sensitivity due to its modified nature, use for commercial forestry and agriculture and lack of distinctive or special features or any features designated for special protection such as Recorded Monuments. The site is visible from the N83. The EIS identifies the landscape impacts, including the cumulative impact associated with adjacent forestry, as long term, imperceptible, neutral.

Cultural Heritage:
No recorded archaeological features on or in the vicinity. No direct, indirect or cumulative impacts predicted.

Air, Climate and Noise:
The EIS identifies a long term slight positive impact on air quality and climate as the growth of trees will result in the fixation of atmospheric carbon and the production of oxygen. The nearest NSL is a dwelling adjacent to the north eastern site boundary. There are short term slight/imperceptible negative noise impacts associated with construction and harvesting. Mitigation measures are proposed. Residual impacts are imperceptible and temporary.

Human Beings:
There are intermittent houses along the N83 adjacent to the site. The nearest dwelling, adjacent to the northern site boundary, is to be consulted in advance of planting, there is a potential short term negative impact on its residential amenity. The Cloonfad Slí na Sláinte walking route is located approx. 0.97km northeast of the site. The Derrylahan Resource Centre, located in Cloonfad, has identified a number of Scenic Walks around Cloonfad and the Slieve Dart area. Of these walks, the Easgaigh walk passes adjacent to the proposed replanting site, turning off the N30 onto a forestry tack directly east of the site. No impacts on these walks are identified.

Material Assets:
The EIS does not identify any significant impacts on transportation infrastructure or land use practices. The use of the site for forestry will have a positive impact on economic assets.

Area 2 Corlis and Ballindollaghan, Co. Roscommon

The sites are currently in agricultural use. It is likely that habitats on the sites correspond to Improved Wet Grassland, Drainage Ditch, Tree Line and Hedgerow. There is a watercourse that drains the bog to the north of the sites, which is highly modified through drainage. All Natura sites within 15km screened out. No pathways identified to sites outside 15km.

Flora and Fauna:
Loss of floral habitat – long term slight negative impact.
Loss of faunal habitat – long term neutral habitat
Water pollution – short term minor negative impact
A section of the site to be retained as a biodiversity area.
Cumulative impacts not anticipated.

Soils and Geology:
Limestone and sandstone underlying geology. Sandstone till and cutover peat soil types.

No potential impacts identified.

Hydrology and Hydrogeology:
The sites are within the Shannon catchment. Ground level elevations range between approx. 85m and 95m OD for Corlis and between approx. 95m and 110m OD for Ballindollaghan. There are no lakes present at the sites. The River Termon passes along the northern boundary of the Collis site. There are no streams or rivers within the Ballindollaghan site boundary. No flood risk is identified except for the noirthern end of the Corlis site, which is within the fluvial flood extent area of the River Termon. This are will not be planted in accordance with the buffer exclusion zones applied to aquatic features. The site is to be drained in accordance with the Forestry Guidelines, as above. Groundwater in the area is very sensitive to pollution because the bedrock is classified as a locally and regionally important aquifer. However, the majority of the sites are covered in till and peat which act as a protective cover to the underlying aquifer. The local rivers and associated lakes are known to be of trout potential and are important locally for fishing. Proposed mitigation measures to be carried out during planting and drainage works are set out, including measures for control of sediment release and hydrocarbons. The EIS identifies an indirect, negative, slight, short term, low probability impact.

Landscape and Visual:
No potential impacts on scenic routes. The sites are within LCA area 28 'Tulsk and Rathcroaghan Plateau' of the Co. Roscommon Landscape Character Assessment, 2008. This area is a plateau of higher ground, which has a concentration of archaeological monuments at Rathcroaghan Cross Roads described as visually striking, in particular a large mound to the west of the N5 Ballaghaderreen Road, this is 6km+ from the sites. The LCA is classed as of 'Exceptional' value, which is the highest category in the county, this is due to the rich archaeological heritage of the area. The Ballindollaghan site is c. 6.2km to the west of the Rathcrogan Cross Roads area and the Corlis site is c. 7.3km to the east, no impacts are identified. The development is in accordance with the guidance provided for the 'Mountain and Farmland Complex' landscape character type as identified in the Forest Service document 'Forestry and the Landscape Guidelines' (2000). The sites are of low landscape sensitivity with regard to the modified qualify of the landscape in the area, the lack of distinctive or special features. The EIS identifies impacts on landscape character and visual amenity, including cumulative impacts with adjacent forestry, as long term, imperceptible, neutral.

Cultural Heritage:
There is one Recorded Monument within the Corlis site, RMP no. RO021-100, a 'mound barrow'. It is described as a circular grass-covered and flat-topped mound, with a diameter of 9.8m at its base and a height of 0.6m. Barrows are earthen monuments associated with burial. There are also 2 no. ringforts located c. 80m and 300m west of the site. No direct impact on the Recorded Monument is anticipated as there is to be an exclusion area of 20m around the monument. Mitigation measures are outlined, including measures to be undertaken in the event of any archaeological finds during operations. No indirect or cumulative impacts are expected. The comment on file by the DoAHG recommending archaeological conditions is noted.

Air, Climate and Noise:
The EIS identifies a long term slight positive impact on air quality and climate as the growth of trees will result in the fixation of atmospheric carbon and the production of oxygen. The nearest NSLs to the Corlis site are a dwelling adjacent to the eastern site boundary and a

dwelling 20m south of the site. The nearest NSL to the Ballindollaghan site is a dwelling 440m to the west. There are negative slight/imperceptible short term noise impacts during constriction and harvesting. Mitigation measures are proposed. Residual impacts are imperceptible and temporary.

Human Beings:
The overall level of residential development around both sites if low, restricted to occasional one off houses adjacent to local roads. The Corlis site is traversed by a local road. There are two houses along the road as it traverses the site. The Ballindollaghan site is located off a local road, adjacent to an existing forestry access road. The nearest house is approx. 0.4km to the south west. There is an existing conifer stand between the house and the proposed replanting site. Adjoining property owners are to be consulted in advance of planting. Planting at the site will have a slight, short term negative impact on the residential amenity of the dwellings located closest to the site.

Material Assets:
The EIS does not identify any significant impacts on transportation infrastructure or land use practices. The use of the sites for forestry will have a positive impact on economic assets.

Area 3 CLOONYCONRY, CO. CLARE

The site is located on the eastern slope of a hill at Fermoyle Beg and is steeply sloping. The R466 and the Glenomra river run along the valley floor at the base of the hill. The site is wet agricultural grassland. It is surrounded by a mix of conifer plantations and agricultural fields. It is currently in agricultural use. It is likely that the habitats present correspond to Agricultural Grassland, Agricultural Wet Grassland, Treeline, Scrub, Hedgerow and Drainage Ditch. Very steep and encroaching with scrub and overgrown hedges. It is considered unlikely that the site supports Annex I habitats, however there is wet heathlands to the west of the site on higher ground, which may correspond to Annex I heath habitats. All Natura sites within 15km screened out. No pathways identified to sites outside 15km.

Flora and Fauna:
Loss of floral habitat – long term slight negative impact.
Loss of faulal habitat – long term slight negative impact. Potential loss of sub-optimal foraging habitat for Hen Harrier at the site, however afforestation could also provide suitable breeding habitat for the species.
Water pollution – short term minor negative impact.
Area of the site to be retained as a biodiversity area.
Cumulative impacts not anticipated.

Soils and Geology:
Sandstone underlying geology. The soils are thin cutover peat, sandstone shale and till and sandstone gravels. There is bedrock at the surface in places. There is a small pocket of blanket peat approx. 210m south of the site. No impacts on soils and geology are identified.

Hydrology and Hydrogeology:
The site is within the Bunratty catchment. Ground level elevations range between approx. 75m to 201m OD, with a northerly aspect. No streams or rivers within the site. The Broadford river is located approx. 250m to the north. The site is to be drained in accordance with the Forestry Guidelines, as above. No flood risk is identified. The Slieve

Bernagh Bog extends to approximately 2.5km north east of the site but is not hydrologically connected to the site. Groundwater at the site is very sensitive to pollution as the aquifer is extremely vulnerable or has bedrock at the surface. However, the aquifer is of poor importance (PI), the topography has a steep gradient and part of the site is covered in till or peat, which acts as a protective cover to the underlying aquifer. Proposed mitigation measures to be carried out during planting and drainage works are set out, including measures for control of sediment release and hydrocarbons. The residual impacts are indirect, negative, imperceptible, short term, low probability.

Landscape and Visual :
The site is located within a 'settled landscape' as per Map 16A of the Clare County Development Plan 2011-2017. Forestry is one of the uses envisaged for this landscape type. The R466, listed as Scenic Route no. 26 between Broadford and O'Briensbridge, passes to the east of the planting site. The site is on a slope southwest of the scenic route and the main views are towards the Slieve Bernagh Hills, north and northeast of the scenic route. The site is located within LCA 8, 'Slieve Bernagh Uplands' in landscape Type 26 uplands. It is extensively planted with coniferous plantations in parts. The development is in accordance with the guidance provided for the 'Mountain and Farmland Complex' landscape character type as identified in the Forest Service document 'Forestry and the Landscape Guidelines' (2000). The site is of low landscape sensitivity with regard to the modified qualify of the landscape in the area, the lack of distinctive or special features. The EIS identifies the impact on landscape character and visual amenity, including cumulative impacts associated with adjacent forestry, as long term, imperceptible, neutral.

Cultural Heritage:
There are no recorded archaeological features on or in the vicinity of the Cloonyconry site. No direct, indirect or cumulative impacts are predicted.

Air, Climate and Noise:
The EIS identifies a long term slight positive impact on air quality and climate as the growth of trees will result in the fixation of atmospheric carbon and the production of oxygen. The nearest NSL is a dwelling adjacent to the northern site boundary. There are a small number of dwellings near the northern half of the site. The nearest dwelling to the south of the site is approx. 670m. There are negative slight/imperceptible short term noise impacts during constriction and harvesting. Mitigation measures are proposed. Residual impacts are imperceptible and temporary.

Human Beings:
There are 3 no. houses located close to the northern site boundary. The East Clare Way walking route is located approx. 1.4km north of the proposed site. This route travels between Broadford and Killaloe, using many of the existing forestry roads in the hills to the north and south of the village. Planting at the site will have a slight, short term negative impact on the residential amenity of the dwellings located closest to the site.

Material Assets:
The EIS does not identify any significant impacts on transportation infrastructure or land use practices. The use of the site for forestry will have a positive impact on economic assets.

Area 4 Clonfad Co. Westmeath

The site is relatively flat and comprises wet grassland with a small clump of trees. The site is in agricultural use. There are agricultural grasslands to the north, east and south.

Woodland borders most of the western side, with coniferous forests further west. Peat extraction is a common land use in the wider area. It is proposed to leave 10% Broadleaf in non-plot formation. Habitats at the site likely to correspond to Wet Grassland, Drainage Ditch, Treeline and Hedgerow. Also some areas of Scrub and a small area of Woodland, likely to be Mixed Broadleaved Woodland and Scrub. It is possible that the site may have supported Bog or Wet Heath habitats in the past, which may have corresponded to habitats that are listed in Annex I of the EU Habitats Directive. Much of the surrounding habitat includes Conifer Forestry Plantations, Raised Bog that has been cut over and Improved Agricultural Grassland. All Natura sites within 15km screened out except for the following:

Lough Ennell SAC (site code 000685) 1.5km from site
Lough Ennell SPA (site code 004004) 1.5km from site

Also the following NHA, pNHA
Cloncrow Bog (New Forest) NHA (site code 000677) 1.8km from site.
Lough Ennell pNHA (site code 000685) 1.5 km from site, concurrent with the SAC.

No pathways for impact identified for sites outside 15km. Lough Ennell SPA, SAC conservation interests are listed. No further assessment provided.

Flora and Fauna:
Loss of floral habitat – long term slight negative impact
Loss of faunal habitat – long term neutral impact
Water pollution – short term minor negative impact.
Cumulative impacts not anticipated.

Soils and Geology:
Limestone bedrock. Cutover peat and limestone till soil types. The planting will result in a minor disturbance of soils associated with the construction of drains through the site. No impacts on soils or geology are identified.

Hydrology and Hydrogeology:
The site is located within the Shannon catchment. Ground level elevations range between approx. 88m to 96m OD. No streams or rivers within or adjacent to the site. An unnamed stream begins approx. 80m to the south of the site, while another begins approx. 180m west of the site. Both of these flow into the River Brosna, which flows from north to south approx. 1.1km away at its nearest point. The site is to be drained in accordance with the Forestry Guidelines, as above. No flood risk is identified. The Lough Ennell SAC extends to c. 1.6km north west of the site, however the subcatchments in which the site is located eventually discharge into the Shannon SAC. Groundwater at the site is sensitive to pollution as the limestone bedrock is classified as a locally important Aquifer. However, the peat soils at the site act as a protective cover to the underlying aquifer. Proposed mitigation measures to be carried out during planting and drainage works are set out, including measures for control of sediment release and hydrocarbons. The residual impacts are indirect, slight, short term, low probability.

Landscape and Visual:
The site is not within a High Amenity Area as per the Westmeath County Development Plan 2014-2020, also the Landscape Character Assessment of Co. Westmeath. No impacts on designated views or prospects. The site is located within LCA 11 South

Westmeath Eskers. Objective O-SW1 of the LCA aims to support the designation of the South Westmeath esker landscape as a UNESCO geo park. Policy P-LLM9 aims to maintain a broadleaf planting target of over 30% in new plantations. The Clonfad site is best described as 'rolling fertile farmland' as per the landscape character types set out in the 'Forestry and the Landscape Guidelines' (2000). The proposed replanting is generally in accordance with the guidance for this landscape type and has been granted Technical Approval by the Forest Service. The site is of low landscape sensitivity with regard to the modified quality of the landscape in the area and the lack of distinctive or special features. Views from and around the site are restricted due to intermittent roadside vegetation. The EIS identifies impacts on landscape character and visual amenity as long term, imperceptible, neutral, including cumulative impacts associated with existing adjacent forestry.

Cultural Heritage:
There are no recorded archaeological features on or in the vicinity of the Clonfad site. No direct, indirect or cumulative impacts are predicted.

Air, Climate and Noise:
The EIS identifies a long term slight positive impact on air quality and climate as the growth of trees will result in the fixation of atmospheric carbon and the production of oxygen. The nearest NSL is a dwelling adjacent to the northern tip of the site. There are several other dwellings close to the other site boundaries. There are negative slight/imperceptible short term noise impacts during constriction and harvesting. Mitigation measures are proposed. Residual impacts are imperceptible and temporary.

Human Beings:
The overall level of residential development within 1km of the site is low, with intermittent houses along local roads. The nearest dwelling is adjacent to the northern site boundary. Planting at the site will have a slight, short term negative impact on the residential amenity of this dwelling.

Material Assets:
The EIS does not identify any significant impacts on transportation infrastructure or land use practices. The use of the site for forestry will have a positive impact on economic assets.