An Bord Pleanála

Inspector's Report ABP-303592-19

Development	A 10-year planning permission for the construction of a wind farm comprising 24 no. wind turbines, 1 no. 110kV substation and all related works.
Location	Derryadd Wind Farm at Lanesborough, Co. Longford.
Planning Authority	Longford County Council
Planning Authority Reg. Ref.	
Applicant(s)	Powergen Ltd
Type of Application	Strategic Infrastructure Development
Observations	24no. – Jim McCausland & Dominic McGrath; No to Derryadd Windfarm Community Group; Elspeth Hall; Andrea & James McCausland; Niall Dennigan; John Kiernan; BoM Cloontagh NS; Charlie Sorohan; John Duffy; Stephen & Fiona Coffey; Peter Sweetman; Cllr John Browne; Irish Wildlife Trust; John & Mary O'Brien; Stephen & Marie Peters; Michael & Aoife Farrell; Margaret Peg Farrell; Marie Farrell; Irish Peatlands Council; Birdwatch

	Ireland; ISPCA; Andrew Kiely; Michael O'Donnell; and Cllr Micheál Carrigy
Date(s) of Site Inspection	16/05/19, 05/06/19 and 12/06/19
Inspector	John Desmond

Contents

1.0 Site Location and Description

1.1. The application relates to a site of 1,908ha stated area situated in the southwest of Longford County, c.8km to the southwest of Longford town and c.20km north of Athlone town. The site is within c.1km of the River Shannon, northwest of Lough Ree. The site boundary extends along a narrow spur east to the Royal Canal.

1.2. The site is irregular in shape, extending approximately 11km in length (NW to SE) and c.5km (W to E) at the greatest dimension and is primarily in three main sections subdivided by the public road network (the N63 and R398), which are referred to in the documentation as (from north to south):

- Derryaroge Bog
- Lough Bannow Bog
- Derryadd Bog

A small portion (c.6.3ha) of Derryshannoge bog is included within the site to the west of the R392. The site covers a large number of townlands which I do not consider necessary to refer to here.

1.3. The site predominantly comprises extensive areas of drained boglands that have been or are currently being harvested for peat on an industrial scale, with the usual ancillary infrastructure (e.g. rail) extant on site. However significant portions of the site are no longer being actively harvested and broadleaf woodlands (mainly Birch) have naturally revegetated over large areas. The site is undulating. Derryaroge Bog ranges from c.37m OD to 45m OD, Lough Bannow Bog from c.41m OD to 50m OD, and Derryadd Bog from 45m OD to 55m OD. A dense network of parallel drains crosses the site (see EIAR Figures 8.3A, 8.3B and 8.3C), draining (by pumping and gravity) to the surrounding watercourses (Ballynakill to the north, Bilberry / Ledwithstown to the south, and Lough Bannow stream to the west) which ultimately drain to the Shannon.

1.4. The wider landscape is generally flat, but becomes more gently rolling to the east, and is interspersed by field hedgerows with mature trees. There are extensive boglands surrounding the site in all directions; the majority of which has been subject of industrial peat harvesting and but with others only having been subject to small,

domestic scale operations. In addition, there is extensive agricultural lands surrounding the site, interspersed with forestry plantations.

1.5. It is a deeply rural area, with some one-off rural housing dispersed along the surrounding road network. The nearest significant settlement is the village of Lanesborough (a local service town) to the west of the northern section of the site, the settlement boundary being within c.770m of the application site boundary. The designated settlement of Keenagh village is located c.516m to the east. Other rural villages or hamlets include Derraghan and Killashee. Derraghan is located at the junction of the R398 and the R392, c.70m from the southwest of the site as measured to its designated development boundary. The existing development within the settlement is c.160m distant. Killashee is situated on the N63 c.1km to the northeast of the mid-section of the site. Cloontagh National School and some one-off housing are situated along the R398 between the middle section and southern section of the site.

1.6. Figure 5.1 of the EIAR indicates the location of dwellings and sensitive receptors within a 2km buffer zone of the proposed turbines locations. Drawing no.BNM-NB-OG-01-03 submitted with the pre-SID consultations (17/03/18) provides more detailed separation distance contours and, although the site boundary is altered from the consultation drawing, the turbine locations appear very similar and the Board may find this a useful drawing for indicative purposes.

1.7. The applicant has identified Lough Ree Power, located to the west of Derryaroge Bog, as significant energy infrastructure with associated grid infrastructure in the form of 110kV pylons network (Lanesborough / Richmond and Lanesborough / Mullingar lines). Sliabh Bawn Wind Farm is located within County Roscommon on the western side of the Shannon, c.8km northwest of the application site. Roosky Wind Farm is located c.14.5km to the north and Skrine Wind Farm is located c.19km to the south-west.

2.0 Proposed Development

2.1. Summary description:

- The application is for a 10-year permission and a 30-year operational life from date of commissioning;
- 24no. wind turbines of 185m tip height and associated hard-standing areas;
- 5no. borrow pits;
- 3no. permanent anemometry masts of up to 120m height;
- New internal access roads (permanent and temporary), passing bays, cycleways, car parking and associated drainage;
- 1no. electricity substation (two location options provided for – (option A) Cloonfore townland or (option B) Derraghan More townland) with 2no. control buildings, associated electrical plant and equipment, battery storage containers and wastewater holding tank;
- Battery storage forming part of the electricity substation (8no. battery storage containers indicated in plan);
- All associated underground electrical and communications cabling connecting wind turbines to the proposed substation;
- All works associated with the connection of the proposed wind farm to the national electrical grid via either the existing Lanesborough/Richmond 110kV line via an overhead line (option A) or the existing Lanesborough Mullingar 110kV line via an underground or overhead line (option B).
- Removal of existing meteorological masts;
- New Access junctions, improvements and temporary modifications to existing public road infrastructure to facilitate delivery of abnormal loads and construction access, including locations on the N6, N61, N63, R398, L11554, L1136 roads, access onto the local road in the townland of Cloonkeel and in the townland of Mount Davys and amenity access from the Royal Canal towpath (off L5239);

- 5no. temporary construction compounds in townlands of Cloonfore, Cloontabeg, Deeraghan More and (2no. in) Rappareehill;
- All related site works and ancillary development.

2.2. Accompanying documentation

- EIAR
- EIAR appendices
- NIS
- Drawings
- Photomontages

3.0 Planning History

An extensive list of planning applicant made on site and on lands within 750m of the site boundary has been provided by the planning authority. Another list has been provided by the applicant in Appendix 4.1 of the EIAR, with a short list under section 4.3 of the EIAR.

Relevant Planning History on site -

PL14.PC0233 – The Board determined (22/06/18) that the development of 24no. wind turbines on this site **IS** strategic infrastructure development.

Reg.Ref.15/86 – Permission **GRANTED** by the planning authority (25/08/15) for a monitoring mast at Derrynaskea (Lough Bannow Bog) for a period of 5 years.

Reg.Ref.14/35 – Permission **GRANTED** by the planning authority (06/05/14) for retention of a wind monitoring mast at Derryaroge for a period of five years.

Reg.Ref 08/623 – Permission **GRANTED** by the planning authority (20/03/09) for a wind monitoring mast at Derryaroge for a period of five years.

Relevant Planning History off site –

Reg.Ref.18/135 – Permission **GRANTED** by the planning authority (15/08/18) for a 30-year period for 216,000m2 solar photo voltaic, with capacity of 35-50MW electrical generation, on c.51ha site near Killashee, c.1.4km to the northeast of the current application site.

PL14.248470 / Reg.Ref.17/47 – Permission **GRANTED** by the Board, overturning the decision of the planning authority to refuse permission for a solar farm with an export capacity of c.11.1MW comprising of photovoltaic panels on ground mounted frames on a 19ha site, with associated infrastructure and access tracks. This application is for a 10-year permission with 25-year operational period at a site within the townland of Cleggill, Co. Longford, c.6.5km to the northeast of the current site.

PL14.246850 / Reg.Ref.16/81 – Permission **GRANTED** by the Board, upholding the decision of the planning authority to grant permission for a solar farm with an export capacity of c.4.2MVA comprising photovoltaic panels on ground mounted frames on a c.14.5ha site and associated works. The application is for a 10-year permission and 25-year operational period, at Lisnageeragh, Edgeworthstown, Co. Longford, c.16km to the east of the current application site.

Relevant Planning History County Roscommon -

Reg.Ref.18/320 / ABP-302597-18 – Permission **GRANTED** by the Board (19/03/19) for refurbishment of the existing Cloon to Lanesboro 110 kV Overhead Line of approximately 65 kilometres in length, upholding the decision of the planning authority.

Reg.Ref.07/2255 (Reg.Ref.13/3005 extension of duration) (Roscommon CC) – Permission **GRANTED** by the planning authority (11/03/13) for extension of duration of permission to erect 2no. wind turbines (c.170m tip height) at Ballaghnaderreen, Co. Roscommon (Roosky wind farm), c.14.5km to the north of the current application site.

PL20.239743 / Reg.Ref.10/507 (Roscommon CC) – Permission **GRANTED** by the Board (27/03/12), upholding the decision of the planning authority to grant permission for 20no. wind turbines (c.131.5m tip height) at Sliabh Bawn, 5km south of Strokestown, Co. Roscommon, c.8km to the northwest of current application site.

PL20.208733 / Reg.Reg.04/103 (Roscommon CC) – Permission **GRANTED** by the Board (19/01/05), upholding the decision of the planning authority to grant permission for 2no. wind turbines (c.99m tip height) at Skryne, Athleague, Co. Roscommon, c.20km southwest of the current application site.

4.0 Other relevant consents

EPA IPC License no.504 – Activities licensed (09/05/2000; subject of technical amendment 26/09/12): the extraction of peat in the course of business which involves an area exceeding 50 hectares at lands labelled as Mount Dillon Group on Location Map Drawings 2.1 and 2.2 (Attachment 2) of the IPC Application subject to the following fourteen Conditions, including condition no.10 requiring the implementation of a cutaway bog permanent rehabilitation plan to be agreed with the EPA, stating as follows:

10.1 *Following termination of use or involvement of all or part of the site in the licensed activity, the licensee shall:*

10.1.1 *Decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution.*

10.1.2 *Implement the agreed cutaway bog rehabilitation plan (refer Condition 10.2).*

10.2 *Cutaway Bog Rehabilitation Plan:*

10.2.1 *The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of the cutaway boglands within the licensed area. This plan shall be submitted to the Agency for agreement within eighteen months of the date of grant of this licence.*

10.2.2 *The plan shall be reviewed every two years and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the written agreement of the Agency.*

10.3 *The Rehabilitation Plan shall include as a minimum, the following:*

10.3.1 *A scope statement for the plan; to include outcome of consultations with*

relevant Agencies, Authorities and affected parties (to be identified by the licensee).

10.3.2 *The criteria which define the successful rehabilitation of the activity or part thereof, which ensures minimum impact to the environment.*

10.3.3 *A programme to achieve the stated criteria.*

10.3.4 *Where relevant, a test programme to demonstrate the successful implementation of the rehabilitation plan.*

10.3.5 *A programme for aftercare and maintenance.*

10.4 *A final validation report to include a certificate of completion for the Rehabilitation Plan, for all or part of the site as necessary, shall be submitted to the Agency within six months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment.*

Reason: To make provision for the proper closure of the activity ensuring protection of the environment.

5.0 Policy Context

5.1. International Energy Policy Framework

Ireland is a party to the **UN Framework on Climate Change** (UNFCCC) and the **Kyoto Protocol** which provide an international legal framework to address climate change. On November 4th 2016 Ireland and the EU ratified and made effective the **Paris Agreement** which aims to keep global temperature rise this century to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C. This is a legally binding agreement to achieve net zero emissions by the second half of this century, through increasing national determined contributions (NDCs) over time. The NDC for Ireland and all member states will be determined by the EU which has committed to reduce GHG emission by at least 40% by 2030 compared to 1990 levels.

In September 2015, Ireland adopted the non-legally binding United Nations' 2030 Agenda (***Transforming Our World*, the 2030 Agenda for Sustainable**

Development) along with all 193 Member States of the UN, which aims to deliver a more sustainable, prosperous and peaceful future for the entire world, and sets out a framework for how to achieve this by 2030. It sets out 17 Sustainable Development Goals (SDGs) covering the social, economic and environmental requirements for a sustainable future, including, inter alia mitigating climate change and providing affordable clean energy.

5.2. European Energy Policy

2020 Climate and Energy Package[1] – This set three key targets - 20% cut in greenhouse gas emissions (from 1990 levels), 20% of EU energy to be from renewables, and 20% improvement in energy efficiency, which was agreed in 2007 and enacted in legislation in 2009. The EU's ***Effort Sharing Decision*** addresses the emissions including from housing, agriculture, waste and transport (excluding aviation) through binding annual national targets to 2020. Under the ***2030 Climate and Energy Policy Framework*** (European Council, adopted 24/10/14, with targets revised 2018) binding EU targets of at least 40% reduction in GHG emissions and at least 23% share of renewable energy for all energy consumed in the EU by in 2030, and at least 32.5% improvement in energy efficiency. The EU's ***Effort Sharing Regulation (EU) 2018/842*** lays down obligations on Member States with respect to their minimum contributions for the period from 2021 to 2030 to fulfilling the Union's target of reducing its greenhouse gas emissions by 30% below 2005 levels in 2030 in the various sectors and contributes to achieving the objectives of the Paris Agreement. A GHG reduction target of at least 30% applies to Ireland.

Renewable Energy Directive 2009/28/EC (23/04/09) – Concerns the promotion of the use of energy from renewable sources. Article 4 requires each member state to produce a national renewable energy plan to achieve an overall reduction in GHG emissions of 20%, a 20% increase in energy efficiency and 20% of energy consumption across the EU to come from renewable energy by 2020. Member states are to achieve their individual binding target across the heat, transport and electricity sectors and apart from a sub-target of a minimum of 10% in the transport sector that applies to all Member States. There is flexibility for each country to

[1] https://ec.europa.eu/clima/policies/strategies/2020_en#tab-0-0 (03/04/19)

choose how to achieve their individual target across the sectors. Ireland's overall target is to achieve 16% of energy from renewable sources by 2020.

Revised Renewable Energy Directive 2018/2001/EU (January 2019) – Sets new target for share of energy from renewable sources in the EU of at least 32% for 2030, with a view to increasing the target through legislation by 2023. Member States shall set national targets to meet, collectively, the binding Union target through integrated national energy and climate plans. The final share of energy from renewable sources for Ireland's gross final consumption of energy from 1st January 2021 shall not be lower than 16% and Ireland will be obliged to take the necessary measures to ensure compliance with same,

5.3. National Energy & Climate Policy

Climate Action Plan 2019, To Tackle Climate Breakdown (Government of Ireland, June 2019): This *Action Plan* supports the ambition for net zero GHG emissions target by 2050 and comprises a sectoral roadmap of measures for, inter alia, the electricity sector and the agriculture, forestry and land-use sectors. It reports that Ireland will miss the target set for the period 2013 to 2020 for renewables by about one eighth and for cumulative GHG emissions by a little under 5% but is on a trajectory to be >25% off target for the next 2021-2030 accounting period.

The projected CO_2 savings through *Project Ireland 2040* (16.4 Mt CO_2 eq.) and through investment in the national forestry strategy (21 Mt CO_2 eq.) are insufficient to address the projected 101 MtCO_2 eq. emissions excess.

Regarding electricity, measures include the phasing out of fossil fuels (closing peat and coal plants; with BnM to transition away from pea by 2028) an increase in harnessing renewable energy, increasing from 30% to 70% (through RESS; target of at least 3.5 GW of offshore renewable energy, up to 1.5 GW of grid-scale solar energy, an increase in onshore wind capacity of up to 8.2 GW).

Regarding agriculture, forestry and land-use sector, it is proposed to better manage peatlands and soils to deliver carbon abatement from land-use. It notes peatlands

cover 21% of the state's land area and accounts for 64% of its total soil organic carbon stock, but is very vulnerable to drainage for forestry, grazing and extraction. Measures to develop and manage this carbon sink include:

- Undertake further research to assess the potential to sequester, store and reduce emissions of carbon through the management, restoration and rehabilitation of peatlands as outlined in the *National Peatlands Strategy*;
- Develop best-practice guidelines for wetland management, including the management of degraded sites and peatlands currently exploited for energy peat extraction;
- Create additional incentives to adopt carbon-positive, post-production management options on Bord na Móna lands, and similar options on other commercial and private peat extraction sites;
- Develop further measures to help rehabilitate exploited and degraded peatlands, including as part of national land-use planning and the new CAP, and recognising that strategies may need to differ between regions.

The *Action Plan* includes an *Annex of Actions*, setting out 183no. actions. Action 133 – *Assess and implement mitigation options on post-production, peat extraction site* to be implemented with a number of sub-actions (the following four are pertinent):

- Assess the optimum post production after-use across all Bord na Móna peat extraction sites (Bord na Móna, Q3 2019)
- Timely implementation and optimum management practices on extraction sites as they retire from production (Bord na Móna Q3 2019 - ongoing)
- Establish a focused research and development programme to ensure robust National Inventory Systems are in place to report and account LULUCF emissions and removals (EPA, DAFM & Teagasc)
- Assess the status and mitigation potential for other commercial and private peat extraction across Ireland (EPA, NPWS & DAFM)

Project Ireland 2040, National Planning Framework (2018) – It is a goal (*r National Strategic Objective*) of the *Framework* to refocus planning to tackle Ireland's higher than average carbon-intensity per capita and enable a national transition to a competitive low carbon, climate resilient and environmentally sustainable economy by 2050, through harnessing our country's prodigious renewable energy potential, including, inter alia onshore and offshore wind energy.

The Government will support the roll-out of renewables and protection and enhancement of carbon pools such as forests, peatlands and permanent grasslands; and climate change being taken into account in planning-related decision-making processes. It sets out a series of National Policy Objectives, the following being pertinent to the proposed development:

- **NPO 52** - The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the requirements of all relevant environmental legislation and the sustainable management of our natural capital.
- **NPO 54** - Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions.
- **NPO 55** - Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050.

It anticipates that the forthcoming *Renewable Electricity Policy and Development Framework* will aim to identify strategic areas for the sustainable development of renewable electricity projects of scale, in a sustainable manner, compatible with environmental and cultural heritage, landscape and amenity considerations, and that the development of the Wind Energy Guidelines and the Renewable Electricity Development Plan will facilitate informed decision-making in relation to onshore renewable energy infrastructure.

National Mitigation Plan (DCCAE, July 2017) – Specifies the policy measures that required to manage GHG emissions and the removal of emissions to further the national transition objective, framed around decarbonising four main carbon emitting sectors - electricity generation; the built environment; transport; and agriculture. It recognises that Ireland is not likely to meet it GHG emissions reduction target, with a reduction of only 4%-6% below 2005 levels for all sectors, with emissions exceeding the effort sharing decision limit (337.9Mt CO_2eq) by 13.7Mt, compared to the 20% target. It refers to quantity of carbon stored in Irish peatlands (64% of total soil organic carbon stock present) and to the *National Peatland's Strategy* as setting out how to sustainably manage and protect / conserve this national resource, but it does not include any explicit reference to the potential for peatland restoration / rehabilitation to contribute to climate change mitigation.

Draft Renewable Electricity Policy and Development Framework - Draft Strategic Environmental Assessment Scoping Report – 2016 (DCENR). Intended to set out a clear national policy context to facilitate renewable electricity developments at large scale on land, identifying strategic areas for renewable electricity generation of scale and provide guidance to planning authorities, to supplement the guidance contained in the existing Wind Energy Development Guidelines for Planning Authorities, 2006.

Strategy for Renewable Energy 2012-2020 (DCENR, 2012) - Strategic Goal 1 - Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets, with a key action to support the delivery of the 40% target for renewable electricity, ensuring sufficient new renewable electricity is built to make a significant contribution to our legally binding 2020 target under Directive 2009/28/EC).

National Renewable Energy Action Plan (2010) - Sets the State's national 2020 targets for the share of energy from renewable energy sources (RES) at 16%, renewable electricity (RES-E) at 40%, renewable heating and cooling (RES-H) at 12% and renewable energy in transport (RES-T) at 10%.

The National Peatlands Strategy 2015-2025 (DAH&G, 2015) – The *Strategy* sets out clear principles to guide Government policy and to provide a long-term

framework for the responsible management of all peatlands to optimise their social, environmental and economic contribution to the State, including the role of peatlands within cross-cutting issue climate change.

It proposes (P19) that the potential contribution of peatlands rehabilitation, restoration and enhancement to climate change mitigation and adaptation to be fully explored, in addition (P21) to their potential to contribute to a low carbon economy through use as sites for renewable energy. It provides that:

(P5) *Semi State companies…and public authorities … discharge their functions in such a way to support the objectives of this Strategy*;

(P12) *future management of these State-owned peatlands will be in keeping with the objectives of the Strategy.*

(P13) *Bord na Móna will continue to assess and evaluate the potential of the company's land bank, using a land use review system. The assessment will help prepare a set of evidence based management plans for the various areas of peatland. These plans will also inform its cutaway bog rehabilitation programme*;

(P16) *generally, Bord na Móna cutaway bogs that flood naturally will be permitted to flood unless there is a clear environmental and/or economic case to maintain pumped drainage*;

(P17) *In deciding on the most appropriate afteruse of cutaway peatlands, consideration shall be given to encouraging, where possible, the return to a natural functioning peatland ecosystem. This will require re-wetting of the cutaway peatlands which may lead in time to the restoration of the peatland ecosystem*; and

(P18) *Environmentally, socially and economically viable options should be analysed to plan the future of industrial cutaway peatlands, in conjunction with limiting factors*[2] *as outlined in Bord na Móna's 'Strategic Framework for the Future Use of Peatlands'*

[2] The *Strategic Framework* notes one of the limiting factors to potential future uses is the propensity of at least half of all cutaway peatlands to eventually flood.

5.4. Regional Policy

Regional Planning Guidelines for the Midland Region 2010-2022

Chapter 3 Economic Development Strategy

S.3.3.4.5 Industrial Peatlands '*The potential of the peatlands and associated cutaway to accommodate large scale energy production in the form of wind farms and bioenergy fuel sources is acknowledged. There is also the potential to create new wetland based habitats on worked out peatlands and allied to this, provide a unique tourist product…*[and their] *utilisation … for educational and research purposes and … outdoor amenities. …. The RPGs therefore support the preparation of a Holistic Management Plan that will address the future uses of worked out industrial peatlands.*'

S.3.3.4.6 Renewable Energy, S.3.4.6 Green Enterprise, S.3.4.6.1 Renewable Energy, S.5.8 Energy Provision, S.5.8.1 Electricity Transmission and **S.5.8.1.1 Policy Framework for Electricity Provision** recognise the significant potential of the region to develop green enterprise including renewable energy, such as wind and biomass/biofuels, given the rural nature of the landscape, which includes worked out areas of peatlands with an extensive electricity transmission network in place, in view of national renewable energy targets.

5.5. Local Policy

Longford County Development Plan 2015-2021

S.4.5 Tourism – Strategic Tourism Policies – TOU 2 recognises the potential for all peatlands, included industrial peatlands in terms of providing opportunities for recreation and tourism... [such] development … will not exclude them for other purposes such as the generation of renewable energy including wind energy … [which] can be mutually inclusive and developed in an integrated way.

TOU 3 will seek to facilitate and promote, where appropriate the development of the MSWP and Corlea Archaeological and Biodiversity Project.

S.4.4 Agriculture – Policy ARG4: It is the policy of the Council, in accordance with the relevant Government agencies, to investigate the development of suitable areas of underutilised land, such as cutaway/cutover bog for the growing of

biomass/biofuels for the renewable energy industry. The use of cutaway/cutover bog shall be considered for the development of renewable energies. This shall be carried out in consultation with the National Parks and Wildlife Service in order to ensure the protection of areas with a high heritage value.

S.5.5.2 Renewable Energy Sources - … A favourable approach will be taken towards applications for renewable energy developments provided they are environmentally sustainable and are in accordance with general planning criteria… Accordingly, Council policy is as follows:

RE 1: The Council shall prepare, where resources permit, a Renewable Energy Strategy for the County which will support the development of renewable energy production and ancillary facilities in order to enhance the sustainability of the County, promoting a low carbon economy and lifestyle. The Strategy shall be subject to Appropriate Assessment and Strategic Environmental Assessment as relevant.

RE 2: The following criteria shall be used in the assessment of potential sites for the development of alternative energy sources:

– Significant wind energy potential
– Accessibility to the national grid
– Suitability of the site having regard to land uses
– Measures to minimise impact on other development

RE 3: The Council will consider the promotion of renewable energy and low energy / passive houses to be a high priority to help reduce global warming. The Council will support initiatives that encourage energy conservation and reduce reliance upon non-renewable sources of energy, including schemes for wind energy, biomass, photovoltaics, solar thermal installations, heat exchange, geothermal etc.

RE 7: Upon adoption, the Council shall implement the relevant recommendations contained within the National Peatland Strategy, Review of Raised Bog Natural Heritage Areas, National Raised Bog cSAC Management Plan and Rural Development Programme 2014-2020.

S.5.5.2.1 - Wind Energy: … In general, the Council will look favourably on the development of wind farms and the harnessing of wind energy in a manner that is consistent with proper planning and sustainable development of the County. …In addition …it is noted that the Midland Regional Planning Guidelines identify that the

worked out peatland areas offer potential for renewable energy installations including wind energy. Accordingly, Council policy is as follows:

WD 1: Developments for wind farms will be encouraged to locate in those areas identified as having wind potential within the County, as defined on the Map contained in Appendix 5.

WD 2: Proposals for large scale industrial wind farm developments shall be directed to areas of cutaway bogs subject to the following;
– Dependent on the completion of an investigation demonstrating suitability of the areas
– The preparation of revised Wind Energy Development Guidelines and the Renewable Energy Export Policy and Development Framework
– Compliance with the necessary environmental assessments

WD 4: In assessing an application for a wind farm the following shall be taken into consideration:-
a) Visual impact…
b) Predicted Noise Levels …
c) Design …
d) Impact of associated site works …
e) Construction …
f) Proximity to Dwellings - Wind turbines should generally not be located within 500m of any dwelling but this may vary from site to site.
g) Interference with navigation, television and communication signals …
h) Impact on environmental designations - … Wind farm developments should not be located within 100 metres of ancient monuments. The impact on migratory birds, in particular, will be assessed in consultation with the Irish Wildbird Conservancy (BirdWatch Ireland).
i) Decommissioning ...
j) Sensitivity of locations …
k) Location relative to water bodies. Wind farm developments should not be located within 150m of lakes or rivers.
l) Future extension proposals if known…

S.6.1.2.2. Air Quality – ENV 17: The Council shall investigate the potential uses of cutaway bogs in the County and shall particularly consider the development of sustainable and renewable energy projects.

Appendix Section C: Supporting Information

Appendix 5 Map: Areas of Windfarm Potential

Annex 6: Mid-Shannon Wilderness Park

5.6. Guidelines and reference documents

Wind Energy Development Guidelines (DoEHLG, 2006) – The WEDG 2006 constitutes s.28 statutory guidance for wind energy development, including on provisions of the development plan and, in development management, in the consideration of design, siting, spatial extent and scale, cumulative effect and spacing, layout and height of wind turbines having regard to its location within one of six landscape character types and their particular sensitivities.

The guidelines are **currently under review**, with the published "preferred draft approach" focusing on key aspects including:

- sound/ noise – proposing, consistent with WHO standards, a relative rated noise limit of 5dB(A) above existing background noise within the range of 35 to 43dB(A), a 43dB(A) maximum noise limit permitted, day or night, applicable to outdoor locations at any residential or noise sensitive properties, and taking account of tonal noise, LFN and amplitude modulation; and introduction of noise monitoring regime;
- visual amenity setback – 4 X tip-height setback from nearest point of curtilage to any residential property (500m minimum mandatory setback)
- shadow flicker – mitigated by technology;
- consultation obligations and community report;
- community dividend – measure to ensure enduring benefit for community;
- and grid connections – underground to be the standard approach.

The draft is currently subject of SEA, with the aim to issue the finalised Guidelines, following detailed analysis and consideration of the submissions and views received during the consultation phase, in mid-2019 (Ministerial response, Dáil Éireann Debates 22/01/19).

A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (UK Institute of Acoustics, May 2013) – The GPG was developed by a noise working group set up by the IOA at the request of the UK's Department of Energy and Climate Change (DECC), to progress (where possible) the recommendations of the Hayes McKenzie Partnership Report on '*Analysis of How Noise Impacts are considered in the Determination of Wind Farm Planning Applications*' (Ref HM: 2293/R1 dated 6th April 2011), based on capturing and reporting on good practice in the application on the UK's ETSU-R-97 methodology.

ETSU-R-97 – The Assessment and Rating of Noise from Wind Farms, the Working Group on Noise from Wind Farms, Final Report (Noise Working Group September 1996) – Recommends detailed noise limits for wind energy development.

Environmental Noise Guidelines for the European Region (WHO 2018) – S.3.4 Wind Turbine Noise - For average noise exposure, the GDG conditionally recommends reducing noise levels produced by wind turbines below 45 dB L_{den}, as wind turbine noise above this level is associated with adverse health effects. To reduce health effects, the GDG conditionally recommends that policy-makers implement suitable measures to reduce noise exposure from wind turbines in the population exposed to levels above the guideline values for average noise exposure. No evidence is available, however, to facilitate the recommendation of one particular type of intervention over another.

5.7. **Natural Heritage Designations**

Lough Ree SPA site code 004064 c.2.5km to the west.

Lough Ree SAC site code 000440 c.2.5km to the west.

Fortwilliam Turlough SAC site code 000448 c.3.8km to the southwest.

Ballykenny-Fisherstown Bog SPA site code 004101 c.4.4km to the northeast.

Lough Forbes Complex SAC site code 001818 c.4.4km to the northeast.

Mount Jessop Bog SAC site code 001450 c.3.2km to the northeast.

Brown Bog SAC site code 002346 c.5.9km to the northeast.

Corbo Bog SAC site code 002349 c.7.5km to the west.

Clooneen Bog SAC site code 002348 c.10.8km to the northeast.

5.8. EIA Screening

The proposed development falls within the definition of a project under the EIA Directive as amended by Directive 2014/52 and falls within the scope of Class 3 under Part 1 Schedule 5 of the Planning and Development Regulations, 2001-2018, Development for the Purposes of Part 10:

Energy Industry (j) 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.

EIA is required, and the applicant has submitted an EIAR.

6.0 Observations and submissions

6.1. Third Party Observers[3]

6.1.1. Jim McCausland (of Cloontaghmore [Cloontamore], Killahsee) and Dominic McGrath (of Derrygeel, Lanesboro) c/o Liam Madden, Vitruvius Hibernicus – The main points of the observation may be summarised as follows:

- **Technical objections** - documentation is seriously flawed and EIAR and / or NIS has lacunae; EIA studies refer to noise not sound (not serious issue); response to Q3 stating site has never flooded is wrong and misleading – it is flooded, it is a bogland; the trial pits were flooded and the land is saturated; the applicant intends depleting the boglands until 2030 at which time they will be gone, creating a 1908ha hole with a forest of wind turbines, which is not addressed sufficiently in the EIA [sic] or NIS;

[3] All addresses in County Longford unless stated otherwise.

- **Effects on humans (psychological)** - P.103/4 of the EIA [sic] and p.31 of the non-technical summary make passing reference to potential psychological effects on humans, real or perceived. E.g. the negative impact on property value of perception that EMF generated by WTs has adverse health impact would create real trauma; p.170 of the EIA [sic] confirms there have been no studies of effects on house prices in Ireland but assumes the market will behave as in the UK, which is a wild and unscientific guess; EIA [sic] is deficient in devoting a mere half page to issue of psychological effects; the Australian study referred to on pages 183/4 [of the EIAR] is of far too short a timescale (8.5 years) to draw conclusions and refers to '*pathological effects*' (which refers to disease, not psychological effects); appellant implies that they disagree with the suggestion that guidelines can solve disease problems; High Court cases *Harahan-v-Merck Sharpe Dohme* and Shivne-v-Enercon Windfarm Services et al.2011/9955P; psychological trauma is an indirect consequence;
- **Alternatives** – the applicant's consideration of the blue areas (lands under the applicant's control) as alternative locations are not alternative locations but are complementary areas which is time will supplement / augment this proposal; cumulative site and effects arise from the blue and red outlined areas taken together; suggests the Board consider 'Heliafilm' prototype solar:
- **Landscape and visual** – P.45 Chapter 9.3.1 [EIAR] confirms the area is one of high visual sensitivity but considers the landscape effects are not significant cumulative effects; contradicted by the omni-directional rated power turbine noise contours showing noise will be heard 2km away and the ZTV map showing WTs will be visible c.25km away which is inacceptable; WT will be more than 4 times higher than St Mel's Cathedral in Longford Town or one and a half times the height of The Spire on O'Connell St, which is not acceptable.
- **EMF** – the arguments put forward by the applicant from page 190 are not as definitive as suggested, with many authorities arguing otherwise and if cabling is put underground adverse EMF effect (real or imagined) cannot arise; undergrounding should be required by condition if permission is granted;
- **Sound-Noise** – 60-70dB levels may be common in urban areas (p.189) but this is a rural area; potential for c.5500ha vibrating with below 20Hz infrasound; not

credible that his would be imperceptible; yearly average of 43dB may be exceeded at least half the time; infrasound is used by military regimes on humans as a weapon; in tests on monkeys infrasound burst the eardrums; WTs could be likened to Weapons of Mass Destruction;

- **Habitat loss** – cumulative habitat loss resulting directly from fragmentation of land masses; the red and blue areas indicated on the Regional Map when added to the coloured areas on Longford County Council's 'Areas for Wind Farm Potential' are equivalent to half the county, an area that will be devoid of housing as human habitat;
- **Cumulative Impact Assessment** – disagrees with the EIA [sic] conclusion (p.412) that the negative long-term effects area not significant and are entirely reversible; the continued peat extraction to 2030 is not reversible; the Wildlife Service Ireland booklet 'Peatlands' is attached;
- **Natura Impact Statement** – suggests that the conclusion on p.99 of the AA that the proposed development will not, either individually or in combination adversely affect the integrity of the four specified European sites, conflicts with the conclusion of on table 7.1 of the NIS that the proposed development will adversely affect the four sites; bog waters are mildly acidic (4.0-6.5pH) and inhibit microbial growth and decomposition, whereas the Shannon and Lough Ree are full of nutrients which promote growth; the EIA [sic] cites the real potential for long-term adverse effects on Lough Ree and the Shannon from mildly acidic silt from the proposed works; the EIA water sampling points are on the periphery of the site, principally on rivers (c.f. table 8.5) and, as a consequence the pH findings are false or misleading as they show free flowing waters from lands other than bogland; para.7.9 of the AA [sic] confirms the likely significant adverse long-term effects without mitigation, but the proposed mitigation is counterproductive, entailing (at para.8.3.1.3) the discharge from internal site drawings to main drains to settlement ponds to external drains and streams, ultimately discharging acidic waters to the eutrophic Lough Ree and Shannon, which is the very issues the EIA [sic] and NIS consider a long-term serious risk;

- **Shadow flicker** – The studies confirm 119 houses likely to be adversely affected; 5 houses for 0.82 hours/day, 7 for 100 hours/year; 68 for <30mins/day and 83 for >30mins/day Sterilising almost half the county from residential development; refers the Board to www.radiokerry.ie Jerry Kerry O'Sullivan podcast and *Industrial Wind Farm Shadow Flicker* on YouTube; the EIA [sic] considers the impact slight and no mitigation is proposed; the applicant considers only the impact on the dwellings, not the dwelling sites, but persons are entitled to full enjoyment of their lands as well as their homes;
- **Residual impacts** – interference with telecommunications signals; the statement in section 11.6 is utterly absurd, farcical and unacceptable as it provides for investigation of the impact after the event contrary to the purpose of the EIA process; how can this long-term significant effect be reversible and mitigated and remedy a problem when '*this is beyond the scope of the assessment of interference*'? It is not legally possible to declare a long-term, irremediable and unmitigated adverse effect to be neutral and insignificant / imperceptible.
- **CJEU decision case C-258/11 Sweetman-v-An Bord Pleanála** - the standards in proof between EIA and NIS likened to difference in proofs between a civil case (balance of probabilities) and a criminal case (beyond all reasonable doubt); the case found that the competent authority must be certain that the plan or project will not have lasting effects on the integrity of the European site, '*That is so where there is no reasonable scientific doubt remains as to the absence of such effects.* [and] *an assessment cannot have lacunae and must contain complete, precise and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned*'; this standard of proof is at issue in the TIGL Golf Links appeal currently before the Board and the High Court; in the absence of proofs at the highest level, which have not successfully been provided by the applicant, the planning authority is obliged to refuse permission; serious lacuna in the matter of adverse effects on humans cf. psychology report;
- **Conclusion** – As the application is not just a SID application but a planning application, the development would cause serious long-term adverse effects on nearby residents, the appellants and their dwellings, would seriously affect their

residential amenities and property values and would therefore be contrary to proper planning and sustainable development in the special circumstances that the lands are **not zoned**.

- **Appendices –**

  Psychology Report prepared by Carmel Breadan Chartered Psychologist (Clinical Psychologist and Occupational Psychologist) appended to observation

  – EIA [sic] is incorrect in stating that psychological well-being '*is a more difficult matter to assess as there are no direct measurements one can use*'; it cannot be concluded, as the applicant has, that '*no significant adverse human health effects on psychological health are predicted as a result of the proposed wind farm*'; limited consideration; there are measures for stress levels, anxiety, depression, sleep, cognition, etc.;

  – The Government of Ireland and the EU is committed to protecting the physical and mental health of its people and has responsibility to ensure adequate evidence-based assessments are carried out for undertakings that may pose a risk; there is strong evidence that environmental noise / unwanted sound is one of the top environmental hazards to physical and mental health, with exposure associated with high risk of negative physiological and psychological health outcomes; new scientific evidence indicates that psychological health and well-being may also be affected by lower noise levels with annoyance and sleep disturbance being the most prevalent reported, but it is absent from the EIA [sic].

  – Wind turbine noise at two different frequencies – an audible whooshing noise at c.300Hz and mostly inaudible infrasound at 0 to 15hz; Infrasound and low frequency noise (LFN) are airborne pressure waves, mostly inaudible in the 20Hz to 0.001Hz (1mHz); humans can identify tones as low as 12Hz and tones / sensations of 7-8Hz under certain (*ideal laboratory*) conditions by ear but can also experience infrasound vibrations in some parts of the body; there is considerable variation between individuals; possible to perceive single cycles of sound and pressure on eardrums below 10Hz; study drew correlation between range of physical and psychological effects and infrasound measured at c.7Hz in '*sick buildings*';

infrasound used in sonic weaponry by military as aversive but not lethal means to incapacitate subjects with nausea and other gastro-intestinal disturbance, and by police for riot control; shielding is ineffective and may be counterproductive;

- Shadow flicker – there are reports in the literature of nuisance, annoyance and risks to driving behaviour accompanying concerns of lack of remedy or relief;
- Mental health – environmental stressors lead to psychological distress rather than to mental illness, and is linked to annoyance and sleep disturbance; mental ill-health refers to a range of symptoms and diagnoses (depressive episodes, anxiety disorders, emotional disorder, etc.,); noise is a known environmental stressor, effecting quality of life, well-being and mental health thought to operate via the stress-diathesis hypothesis; noise exposure results in increased psychological arousal via stimulation of the endocrine system and autonomic nervous system leading to increased stress hormones, and prolonged activation response can lead to depression and anxiety disorders; and psychological stress responses may be implicated in low mood, such as annoyance, which may directly activate physiological stress hormones;
- Literature review – WHO defines the relationship between exposure to type of noise and a range of adverse health outcomes, including physical and mental and psychological health; the WHO Regional Office for Europe launched its Environmental Guidelines for European Region on 10/10/18, including identifying WT noise due to the reported adverse impact issues on physical and mental health and well-being related to these effects and to the effects of infrasound and LFN;
- Literature review – scientific literature pertaining to WT noise impacts have been reviewed in-depth by the WHO, the Canadian Government and numerous academic institutions; literature and reports have addressed size and aesthetics, impact on land values, physical health, mental health and well-being, and level of noise, noise repetition, movement and shadow flicker as most often reported by individuals and communities living in

proximity to WTs; associated health issues have been reported since the 1960s, including symptoms of annoyance, vertigo, nausea, ear pressure and vision problems which could be caused by non-audible infrasound or LFN of WTs; research findings have indicated that infrasound can cause effects in the cochlea at moderate sound pressure levels less than 60dB and that infrasound can stimulate the vestibular system; scientific studies have reported that the frequency range thought to pose risk, if not danger, to humans if between 7-8Hz which is the resonant frequency of flesh, eyeballs and organs including the brain, with experiments using these frequencies finding participants reporting mood/emotion changes characterised by uneasiness, anxiety, fear, anger, agitation;

- Literature review – Wind Turbine Syndrome, a psychosomatic disorder identified by researchers and medical practitioners, which is reported to have several symptoms related to the vestibular systems (balance), organs, disturbed sleep, headaches, tinnitus, quivering / vibration, nervousness, rapid heartbeat, feelings of panic, nausea, difficulty of concentration and performance, memory loss, irritability and anger, which symptoms resolve at a remove from the WTs;
- Literature review – a second type of effect reported is vibroacoustic Disease (VAD) which involves direct organ/tissue damage which does not resolved at a remove from WTs; robust evidence on the subject matter is limited by several factors such that WT and WF psychological impact issues relating to environmental noise, infrasound, etc., is of low to moderate quality hampered by gaps in knowledge, but the sheer quantity and range of concerns reported must be addressed and cannot be ignored;
- Conclusion – The EIA [sic] conclusion of no significant adverse human effects on psychological health is without foundation and cannot be relied upon and has been made in the absence of psychological inquiry and expertise and should not be made without the qualification to do so; it does not provide any evidence regarding psychological health impacts and long-term and short-term adverse effects, from minor to major, direct and indirect have not been addressed in the EIA [sic] despite the wide range of concerns reported in numerous studies over several years and the EIA [sic]

appears to be advocating development in the absence of a scientific basis relating to psychological effects, which is ill-advised; there is sufficient evidence to date that there are clearly psychological, mental health and well-being concerns which must be acknowledged as they point to the fact that psychological impact issues related to infrasound need to be studied and not ignored; the lack of statistically significant findings does not necessarily mean there are no effects, but that the reported effects were not studied robustly scientifically and there is a potential for significant adverse effects that cannot be discounted;

Peatlands, Wastelands or Heritage? (Cross, J.R, Wildlife Service of Ireland, 1989).

Environmental Noise Guidelines for the European Region (WHO Regional Office for Europe, 2018).

Oral Hearing for Second Arva – Shankill 110kV Electricity Transmission Line, Comparison of Overhead and Underground Option: Brief of Evidence for Mark Winfield, Senior Consultant, Energy & Utility Consulting, PB Power (April 2008). Appellants highlighted the following sentence, '*There would be no electric fields from an underground cable*'.

Letter to the Editor, Irish Times, re underground power lines – Minister Eamon Ryan (22/12/08), and relevant news articles.

Legal aspects of EMF, a comparative study (Cotterell, John et al., 2000)

Understanding the Evidence: Wind Turbine Noise, the expert panel on wind turbine noise and human health (Council of Canadian Academies, 2015) – Concluding Chapter –

– The panel found sufficient evidence to establish a causal relationship between exposure to wind turbine noise and annoyance; noting that WTs generate sound at levels similar to other common sounds in the environment, some characteristics of sound are more common to WTs than other sources, including periodic amplitude modulation and variations linked to wind speed at the height of the blades and it suggests that continued research could help identify measurements of sound expose most relevant to possible health effects, as well as improve our understanding of the

mechanisms responsible for annoyance or other plausible health effects of exposer to sound from WTs

- The panel found limited evidence to establish a causal relationship between exposure to wind turbine noise and sleep disturbance;
- The panel found evidence suggesting lack of causality between exposure to wind turbine noise and hearing loss;
- The available evidence was inadequate to draw any conclusion regarding causation for all other health effects considered; suggests it would be beneficial to improve understanding of the potential risks arising from long-term exposure to WT noise and to further study the causal relationship between exposure to WT noise, sleep disturbance and stress within the context of cardiovascular diseases, responsible for c.1/3rd of deaths in Canada, and known to be affected by long-term annoyance, sleep disruption and stress;

Infrasound and LFN – does it affect human health? (Alves-Pereira, Dr M., January 2018) –

- Infrasound and LFN are airborne pressure waves that occur at frequencies at or less than 200Hz, which may or may not be heard by human beings;
- Explains the background to the Fletcher-Munson curves, the dBA metric and the A-frequency weighted scale and why it, and the use of standard 10-minute intervals and 1/3-octave frequency wave band segmenting, is not sufficient for all circumstances, may obscure much of what needs to be seen and current affordable, highly-portable equipment allow for post-analysis in sub-second increments at 1/36-octave resolution;
- Field study Ireland of 2-bedrooms in a house located between 590m to 1376m from 6 industrial wind turbines (IWT) in a single direction to compare the discrepancy between the overall dBA metric (reflecting the sound humans would hear) with the SPL in dBL (reflecting the amount of acoustic energy to which humans are concomitantly exposed (bedroom-1 34dBA v 74dBLin; bedroom-2 26dBA v 74dBLin).

- Field study found that the use of 10-minute averages, used in almost all legislation, hides variations of short-term events (in the region of 20-50Hz) and tonal components (at 10Hz and 20Hz) that are not steady in amplitude and may be amplitude modulated (i.e. the amplitude of the pressure is not continuous and varies periodically with time);
- Field study also found (periodogram in Fig.7) over same 10 minutes shows distinct tonal components that form harmonic series – IWTs as source of ILFN, with rotating blades generating repeating pressure waves as each blade replaces the previous one at any position; the harmonic series is formed by the 'blade pass frequency' as the fundamental frequency (0.8Hz in this example), constituting the wind turbine signature, impossible to identify using classical dBA, 1/3-octave, 10 minute average methodology;
- Accredited acousticians cannot ascertain compliance levels for ILFN as there are none; public health officials and agencies should be aware of the limitations of current noise guidelines and regulations, which need urgent updating in order to appropriately reflect ILFN levels that are dangerous to human health;

Infrasound – Brief Review of Toxicological Literature (November 2001)

- Infrasound is acoustic energy with frequencies up to 20Hz, having a wavelength of 17m or more and is seldom generated at high SPL (dB) without accompanying audible sound and is ubiquitous, generated by natural (earthquakes and wind) and man-made (autos, industrial machinery and household appliances) sources;
- Literature review of several biomedical databases, the National Technical Information Service file, and the internet on infrasound or infrasonic, identified 69 studies (34 in English) but had several limitations including language and lack of abstracts; with the effects studied being cardiovascular (the myocardium) and nervous systems, eye structure, hearing and vestibular function and endocrine modulation; specific CNS effects studied included annoyance, sleep and wakefulness, perception, evoked potentials, electroencephalographic changes, and cognition;

- Primary effect of infrasound on humans appears to be annoyance; low frequencies found to require greater SPL than higher frequencies to create annoyance, but small changes in SPL could then possibly cause significantly large changes in annoyance in the infrasonic region (studies referred to cite SPLs of 127-133dB, 150dB and 118dB);
- Not agreement found about the biological activity of infrasound; reported effects include those on the inner ear, vertigo, imbalance, etc., intolerable sensations, incapacitation, disorientation, nausea, vomiting and bowel spasm, and resonances in inner organs such as the heart;
- Infrasound studies on humans - observed to affect the pattern of sleep minutely: exposures to 6Hz and 16Hz at levels of 10dB above the auditory threshold have been associated with a reduction in wakefulness; the reported effects of 5Hz and 10Hz on workers related to SPLs of 100 and 135dB for 15 minutes and included a range of CNS effects and cardiovascular and respiratory effects, whereas study of effects on long distance truck drivers a 115dB found no statistically significant effects; the other studies of infrasound impacts found various effects (e.g. increase diastolic blood pressure and decrease in systolic blood pressure and pulse rate; decreased alertness, faster decrease in electrical resistance of the skin; alteration of hearing threshold and time perception) to SPLs from 95dB to 135dB; other studies found no changes in respiration, pulse and blood pressure for whole-body exposure to infrasound at 10Hz and 15Hz (SPL not stated);
- Infrasound studies on animals – the studies relating to acute exposure duration for SPL of 100dB to 17dB found a range of impacts (including permanent effects) on health and impacts on performance; studies relating to short-term exposure duration for LFN and infrasound at SPLs from 115dB to 145dB also found inter alia impacts on morphology, histopathology and histochemistry of the cardiovascular system, nervous system, ears, liver and other organs.

6.1.2. **No to Derryadd Wind Farm Community Group** c/o Environmental Management Services Environmental and Planning Consultants – The main points of the

observation, which is an objection to the granting of permission, may be summarised as follows:

- The local community consider the site to be inappropriate and unsuitable for the proposed development.
- The local community consider that the permitting of the wind farm would rule out alternative and potentially more suitable and less damaging uses of the subject lands.
- The No to Derryadd Wind Farm Community Group (NDWFCG) consists of residents, land-owners and others representing the interest and concern of people living in and around the areas of Lanesboro, Killashee, Keenagh and Longford County as a whole.
- Green alternative energy production must be done in a way which is environmentally sound, not damaging to tourism, safe for families, wildlife and livestock.
- In addition to the applicant's public meetings, the NDWFCG organised 4no. public meetings to which the applicant was invited but chose not to attend.
- 92no. objecting signatures appended, including from Rathcline GAA.
- Location – applicant did not include townlands of Magheraveen (Mahora) and Coralough in the address.
- Turbary rights – The rights of third parties were acquired for the specific purpose of the mechanical removal of peat for fuel production, with no question of other use.
- Longford County Development Plan 2015-2021 – the proposal would be in conflict with a significant number of Council policies and, '*while accepting the applicant's statement that the wind farm development site has been found to be a suitable location, based on a reduced number of criteria including wind speed and the general statement in the … Plan that any "proposals for large scale industrial wind farm developments shall be directed to areas of cutaway bog", we disagree that with applicant's conclusion that "the proposed development is in line with and supports the policies of Longford CDP and is predominantly*

located in a preferred area for such development as identified in the Longford County Development Plan 2015-2021".

Industry, Commercial and Business Development [4.2] policies, objectives and key aims are relevant to the proposed development as an industrial or commercial undertaking. In this regard:

- The WF would not improve the quality of the environment, attract inward investment, increase opportunities for further employment, or enhance the attractiveness of the area for workers to relocated or remain within the county, contrary to the key aim of the Plan;
- The WF would not result in any significant increase in local or rural employment or generate other business activity in the county and is therefore not supported by the key aim;
- Large scale commercial or industrial WF activity is not an appropriate use under policy ECON 6 of the Plan, especially where they adversely affect residential amenity, recreation or tourism.

S.4.4 Agriculture recognises the importance of agriculture and of small indigenous industry to the local economy and is relevant. In this regard:

- Re policy AGR 1, the lands are designated agricultural under the Plan and have never been zoned for industry despite the long-term peat removal use;
- The proposal would conflict with policy AGR 2 in that it would not promote the agricultural industry, or farm diversification and would have significant effects on natural, architectural and archaeological heritage;
- Re policy AGR 3, the proposal conflicts with the objectives of farm diversification, forestry potential, small-scale craft industry, tourism-based activities and educational facilities and would have an adverse impact on the potential for these activities due to its scale and size and location;
- Would conflict with the Council's intention to support and promote a holistic plan for the development of the industrial peatlands.

Tourism [s.4.5] recognises the importance of tourism, emphasizing a sustainable approach and its dependence on the protection of the environment, heritage and amenities and is relevant. In this regard:

- Cannot see how the development of the proposed large-scale industrial WF could be compatible with 'vision' for tourism, inclusive of the rehabilitated BnM bogs, under the Plan. Renewable energy projects should be limited to small-scale individual and locally owned wind turbines and solar energy installations which would not have a significant adverse effect on the landscape, wildlife and tourism potential;
- The proposed WF would not be compatible with the principle for the development of ecotourism under the Plan;
- The Strategic Tourism Policies TOU 2 (recognising the opportunities of peatlands for recreation and tourism) , TOU 3 (to facilitate and promote the Mid-Shannon Wilderness Park and Corlea Archaeological and Biodiversity Project) and TOU 6 (to promote and facilitate sustainable utilisation of natural, historical, cultural, geographic and aesthetic assets for tourism purposes) are welcomed and the proposed development is not supported by and would be in conflict with same.

S.5.3.2 Flooding policy on flood prevention and flood impact mitigation are supported by the appellants. In this regard:

- Concern that the proposed development will cause additional flooding in local streams and minor rivers which drain these boglands;
- The application does not include any detail or plan showing how the drainage system will be maintained or whether the major part of the subject will be re-wetted to promote the regrowth of sphagnum moss as a way of removing CO_2 from the atmosphere to mitigated climate change.

S.5.3.3 Climate Change adaptation, prevention and mitigation are over-arching policy issues referred to by the applicant to promote its development and is addressed further below.

S.5.5.2 Renewable Energy Sources

- The applicant has relied significantly on the provisions of s.5.5.2.1 of the Plan to support the development on cutaway bog (p.152 of EIAR) however the policy of encouraging wind farms is subject to a large number of constraints and other planning issues listed in Policy WD 4;

- The constraints under Policy WD 4 relate to impacts arising on or from: visual, noise emissions, design and appearance, of associated site works, construction, proximity to dwellings, shadow flicker, interference with navigation, tv and communications signals, environmental designated sites, migratory birds, biodiversity, amenity areas, sensitive landscapes, views and prospects, designated tourist areas, archaeological sites, protected structures and national monuments, sensitive water bodies, locations of folklore, mythology and religious significance, evidence of consultation with location community groups, and decommissioning:
- The concerns detailed in Policy WD 4 are shared by the appellants and should be considered cumulatively;
- This policy is based on the WEGD 2006, which is more than twelve years out of date and does not address the more serious impacts of the increased size of turbines proposed.

S.6 Environment, Heritage and Amenities (addressing Environment, Heritage and Landscape) provisions are relevant (pages 222 ,228 and 235 are referred to specifically). In this regard:

- Policy LCA 1 concerning protection of the landscape from developments which have a detrimental impact, and Policy HER 1 promoting protection and conservation of heritage sites and settings, etc., should be taken into consideration by the Board.

S.6.2.1 Archaeological Heritage (p.236) provisions are relevant including Policy ARC 1 (to protect known and unknown archaeological sites), Policy ARC 5 (to presume in favour of physical preservation in-situ of archaeological remains) and Policy ARC 6 (to strictly control development proposals on unzoned lands which may be detrimental to objects of archaeological significance or its interpretation or setting).

- Archaeological sites and their protection rate highly under the Plan and notes that there are '*almost certainly a number of unknown sites that have not yet been discovered within the County*';

- Bogs and wetlands have long been known for their rich abundance of archaeological deposits, including Corlea Trackway 0.6km from the windfarm site;
- The most appropriate long-term use for the area would be to consider using a portion of it for education and tourism similar to Corlea Bog.

S.6.2.2 Natural Heritage and Biodiversity provisions and policies are relevant (pages 240, 242 and 244). In particular:

- The Plan recognises the importance of protecting designated and non-designated sites which provide important habitats and a wide network of linked spaces contributing to natural heritage, including watercourses, lakes, hedgerows and woodlands;
- Policy NHB 1 to protect, conserve and enhance biodiversity and natural heritage and Policy NHB 8 to protect a representative sample of the County's wildlife habitats of importance not otherwise protected, and to protect Ramsar sites under the Convention on Wetlands of International Importance;
- The Council's statutory responsibility '*to promote biological diversity*' (p.244), a responsibility under S.9 of the Wildlife (Amendment) Act, 2000, applies equally to the Board;
- Policies NHB 19 to investigate establishment of wildlife areas and corridors in context of educational, recreational and amenity facilities, and Policy NHB 20 to enhance biodiversity, etc, by promoting appropriate recreational and amenity schemes;
- The Board should be aware of and take into consideration the current use of the partially flooded and worked-out boglands comprising the application site as a refuge for waterfowl (see appendix II).

• Regional Planning Guidelines for the Midland Region 2010-2022:

- Although the recognise wind energy (s.5.5.2.1), possible locations must take account of environmental and social objectives, including the issue of the number of inhabited dwelling houses and heritage sites which would be affected.

- The RPG places equal emphasise on the potential of these areas as new wetland habitats to provide a unique tourist product (s.3.3.4.5), would be a more appropriate and beneficial use of the site including through generation of much-needed employment, and would have regard to their protection through national and international designations and achieve a balance between facilitating development and protecting the environment (s.3.3.4.5).

- Global, European and Government Policies on Climate Change and Renewable Energy:
  - The high proportion of wind energy, accounting for 81% of renewable electricity in Ireland, creates a problem of dependency on one single major energy source, being an intermittent source;
  - Additional WE projects will exacerbate this problem unless accompanied by pumped hydro storage or battery storage at significant cost;
  - The NPF refers to a combination of renewable energy sources, which would be more suitable to assist transition from fossil fuels;
  - There are other more socially acceptable, more beneficial and less environmentally damaging ways to increase the proportion of renewables.
- Problems of large-scale wind power and suggested alternatives:
  - Large-scale WF require significant and problematic upgrading and expansion of Ireland's electricity grid at a predicted cost of €4.5bn, plus €4.0bn maintenance costs, between 2011-2020, of which €176m annually (2016-2020) is attributed to accommodating WF and operating costs rising to €15m per annum for the expanded grid to cater for large-scale WFs (from '*The Costs of Wind Energy in Ireland*' (Paula Byrne, 2017)).
  - Additional costs of 'constraint' fee paid to compensate the electricity supplier to compensate for cost of starting up the plant, which is paid to conventional electricity generating plant when their output is not required due to the additional amount of wind-generated energy, which gets priority dispatch to the grid.

- Additional costs of 'curtailment' fee paid to wind energy producers for electricity not produced during times when weather conditions allow electricity to be generated in excess of requirements.
- Disappointment that the applicant has dismissed solar energy.

- Community Energy Systems
  - The applicant fails to mention the importance and greater acceptability of community owned and operated wind farms (50% of wind energy in Denmark is generated in this way);
  - The Tipperary Energy Agency has identified a €500m sustainable energy opportunity for County Tipperary;
  - SEAI is activity promoting this concept and funds a network of over 2000 sustainable energy communities throughout Ireland;
  - 99% of the Citizen's Assembly (CA) recommended that the State should legislated to enable private citizens to sell electricity to the grid at least at the equivalent of the wholesale price, similar to the majority of EU states;
  - 100% if the CA recommended the state should act to ensure the greatest level of community ownership in all future renewable energy projects;
  - The '*Report on Addressing Climate Change in Ireland*', due to be published in March 2019, will likely include the CA recommendations to become government policy;
- Small-scale photovoltaic solar and energy storage:
  - Is becoming competitive compared to wind energy due to increasing efficiency of solar collectors, reducing levelized cost of electricity (LCOE) from solar PV;
  - Likely to significantly cheaper than energy within the next decade;
  - Minister for CENR stated in 2015 that Ireland's renewable energy policy will move towards a diverse and complementary mix of renewable sources away from onshore wind energy;
  - The CEO of Tipperary Energy Agency, Paul Kenny, gave evidence to the Joint Oireachtas Committee on Communications, Climate Action and

Environment on 5/03/19 that small-scale solar PV could produce a significant amount of the country's electricity;

- A trend worldwide of increasing numbers of households and businesses with solar PV and battery storage – e.g. of increase from 2.5MWh in 2014 to 185MWh in 2018 in USA;
- Potential solution to problem of intermittent renewable energy is to link the many residential batteries together so that the energy can be linked and dispatched to deliver grid support services;
- The Board should therefore consider the possibility that further large-scale wind farms will not be needed and could become uneconomic to construct and operate;
- The government has not yet produced a rational country-wide specific policy for onshore wind within the context of renewable energy and in the absence of national policy or a new set of guidelines (on siting of wind turbines and set-back distances from inhabited houses), a decision to grant permission would be premature.

- Legal context
  - Issue of pre-application SID consultations with the Board; Unfair advantage given to the applicant; Removes any responsibility from the County Council other than being an observer;
  - Uncertainty about alternative location options for 110kV substation and battery storage while the route of the electrical connection to the grid has not yet been determined;
  - Whilst the two options for the substation, battery storage and grid connection have been examined in the EIAR, the uncertainty arising the alternative locations and routes may be in breach of the decision of Peart J., in O'Grianna v An Bord Pleanála (IEHC 632, 12 December 2014), relating to project splitting;

- Battery energy storage
  - Uncertainty of the design, size and location of the BES system, with alternative locations and no details of the BES system design as no design

has been selected which will follow procurement and it follows from O'Grianna that permission should be refused;

- Fire risk - fires involving large lithium-ion batteries are rare but frequent enough to be considered a statistically significant risk by fire-fighting services;
- Fire which took place at Engie Electrabel BES Unit related to 20MWh batteries manufactured by GE and ALFEN. The details of the proposed BES units are not provided;
- The AIG Energy Industry Group and others have recognised the fire risks of these BES systems, including risk of thermal runaway with the potential to lead to fire and / or explosion which can spread between cells, and that they can often be very intense and difficult to control, with toxic fumes and hazardous materials posing difficulty for firefighters, and may repeatedly catch fire;
- FM Global Property Loss Prevention Data Sheet on Electrical Energy Storage Systems concluded that the ability of active fire protection to stop or prevent Li-ion battery thermal runaway reactions has not been shown and it recommends that providers develop an emergency response plan to address potential fire hazard and an emergency pre-incident plan with the local fire service; EES system fires will be able to ignite fire in adjacent encloses if not separated by the recommended distance or alternative options (fire protection may not be practical in exterior installations but it is the best method of cooling a fire involving these installations;
- Most electrolytes in Lithium-ion batteries are toxic and highly flammable, but as it is commercially sensitive the formulation is not known to fire-fighters, and the emissions of toxic gases can be a larger threat that the heat although the knowledge of such emissions is limited and therefore the BES system must be regarded as a hazardous installation with appropriate precautions and risks assessed by the appropriate authority before consent can be given.

- Environmental and Social Implications of proposed WF
  - Landscape and Visual Impact - The appellant's assessment of visual impact reached different conclusions to that of the applicant and consider that the WT would be a dominant element in the flat surrounding landscape with a dramatic effect on its visual quality, being out of proportion to any existing natural or developed feature in the area and would be visible for many kilometres and would degrade the landscape, exacerbated by blade movement and shadow flicker, moon flicker and red aviation lights; impact on a vulnerable scenic rural landscape against the elevated skyline; impact on protected views within the County and in County Roscommon; impact on specific landscape character and on a landscape that does not have the capacity for introduction of tall industrial structures.
  - Shadow flicker – EIAR concluded that 83 inhabited houses would experience more than 30 minutes per day or more than 30 hours per year of shadow flicker but that 151 inhabited houses would experience some effects; concern about serious nuisance and cannot be effectively addressed by tree planting or by existing trees; impact of Wind Turbine Syndrome in areas where WTs are visible from occupied dwellings has been identified and studied by doctors in the USA, Britain and Australia.
  - Noise impact – WHO night noise guidelines are 40dB compared to 43dB at night in the WEDG 2006, with 3dB representing a doubling of noise pressure; infrasound is ignored by developers and planning authorities despite evidence that the inner ear detect infrasound at much lower intensities than audible sounds, carries over longer distance (10km) and has been linked to effects on short-term memory, concentration, maths, reading, multi-tasking and balance; disturbances caused by infrasound has been researched by Dr Alun Evans of QUB and Oro Marianna Alve-Pereira; lack of studies carried out on sound levels near WTs; stress induced by noise exposure result in depression, anxiety and headaches; constant audible noise of blades in motion, with swish and thump sound in addition to deeply troubling inaudible sound penetrating buildings impacting through stress, sleep deprivation, headaches, high blood pressure, anxiety, tinnitus and depression; noise impact would be worse during wet weather; there is a

need for a minimum acoustic safety distance to be defined; French Académie Nationale de Médicine in Paris recommended that any construction of wind turbines of this size and smaller within 1.5km of homes should be suspended immediately pending further research; qualitative data from those living near turbines elsewhere indicates that noise from WTs is a serious problem; also construction and construction traffic noise;

- Impact on farm livestock and domestic animals – impact on shed-housed animals in proximity to the WTs during winter from noise and reverberations, but no noise monitoring of these sheds has been carried out by the applicant despite being requested to; impact on thoroughbred horses which may be spooked and it is widely accepted that WTs should not be erected anywhere near stud farm training establishments; impact on animals (40no. equines) at the ISPCA's facility at Derryglogher c.650m from nearest WT;
- Loss of residential amenity – impact of loss of visual, recreational and heritage amenity value (conservation and amenity areas and tourist development zones) to the general area and to families, neighbours and residents of the surrounding area; amenity offered by unique soundscape quality derived from living near expansive area of flat bogland with absence of noise (when machinery not operating) except for birds and wind, as sound travels unimpeded across the landscape;
- Adverse effects on human health and well-being – Health impact is an area of ongoing debate relating to consequential shadow flicker and low frequency noise; many claims of adverse impact are anecdotal but sleep disturbance is one of the issues most frequently reported and these claims are supported by detailed studies; ample evidence that adequate sleep is essential for health and that disturbed sleep can affect immediate and long term health; adverse impact of night-time noise on sleep is recognised by WHO and reflected in WHO publication of night-time noise limits; The Environmental Noise Directive (2002/49/EC) recognises community noise as potentially harmful and requires MSs to map noise exposure of their populations; sleep disturbance by WTs is reported more frequently in quiet rural areas; Swedish peer-reviewed research paper presented, at the 22nd International Congress of Acoustics 2016, by Smith, Michael G., et al on

Physiological effects of wind turbine noise on sleep claimed that nights with low frequency band amplitude modulation impacted on sleep most and that, in particular, amplitude modulation and the presence of beating were important constituents of WT noise contributing to sleep disruption; Prof. Alun Evan of the Centre for Public Health, QUB, concluded the overall benefit from WE is fairly small but he adverse effect on people's health is far from small and that it is essential that separation distance from human habitation is increased, with international consensus emerging for a distance of 2km, but others opting for 3km;

- Adverse impact on wildlife – birds are susceptible to collision and bats are affected by change in air pressure; some species of bird are affected by disturbance, or by direct habitat loss or by habitat fragmentation; the applicant's detailed study and survey of bird species recorded a very wide variety of species including a significant number of 'Red Listed' species (including lapwing, golden plover, woodcock and curlew) and other Annex I Birds Directive species, with flight paths recorded through the proposed WT locations; additional records of bird sightings (whooper swan and ducks) have been submitted to Biodiversity Ireland by members of the NTDWF appellant group, with photographs attached in addition to photographs and videos on attached USB to confirm the richness of bird life in the area; the statistical analysis of probable frequency of collisions is found to be low but not negligible and not zero; but the WF would destroy and disrupt irreplaceable areas rich in biodiversity and containing many protected wildlife species, impacting on bird species population in the long term.

- Alternative uses of worked-out peatlands in and around the application site

- Lack of plan or consideration for the use of the site and surrounding lands other than as a WF; no other uses or plans for rehabilitation during the proposed WF operation period, with BnM leaving behind an industrial landscape; in the absence of a detailed proposal for ecological restoration the Board should refuse permission;

- Alternative complementary uses of site and surrounds – The RPG suggest a mixture of complementary uses and activities for worked-out industrial

peatland, including new wetland based habitats to provide unique tourist product and outdoor amenities, in addition to education and research purposes; the Longford CDP seeks to facilitate and promote the development of the Mid-Shannon Wilderness Park and emphasizes the potential for eco-tourism and the applicant's agent was advised on that the proposed WF is set wholly within the proposed wilderness park by the Council's Planner, Rita Connaughton, on 27/04/17; the EIAR confirms the importance of the planned wilderness park (p.162); a very similar proposal is being promoted by the Heritage Council and is supported by the Golden Eagle Trust and therefore the implementation of the planned wilderness park is considered to be a key requirement;

- Creation of employment and a just transition – there is a need to create replacement employment for the BnM workers who will lose their jobs through accelerated closure of its peat extraction and processing operations; SIPTU has requested prioritisation of the '*Just Transition*' framework which is focussed on alleviating the hardship of workers and communities affected; re-wetting is one of the most important alternative uses of worked-out peatland to become carbon sinks to trap GHG.

- Consequences on Climate Change mitigation through carbon capture and storage –

  - Peatlands are the most important long-term CO_2 store in the terrestrial biosphere, sequestering CO_2 for thousands of years, accumulating CO_2 at a rate of 0.7t/ha per annum if undisturbed; they necessitate a persistently high water-table to function and will release CO_2 if drained; 47% of Ireland's original peatland area has been severely diminished through domestic and industrial peat extraction; re-wetting and restoration is one of the most cost-effective ways of avoiding anthropogenic GHG emission; there is a complex relationship between peatlands and the air, with peatlands accumulating CO2 in the long-term but also emitting CO2 and considerable amounts of methane as a by-product of aerobic decomposition;

  - Climate change and peatland biodiversity loss – the Millennium Ecosystem Assessment 2005 predicted by end of 21st C that climate change would be

the major cause of biodiversity loss; this is occurring at an accelerated rate; predicted changes in temperature and rainfall patterns, coupled with centuries of habitat loss are likely to have major impact on peatland ecosystems; to stabilize warming GHG emissions will have to be reduced to zero;

- Climate change and peatland species – the MONARCH programme 2001 is a long-term programme to assess the impact of predicted climate change on wildlife in Ireland and Britain; favourable for some species and unfavourable for others; most peatland species are extreme habitat specialists and may be less able to adapt to rapid change than predicted and research by the National Botanic Gardens of Ireland found 171 of (850 native plant species) Ireland's flora are particularly vulnerable to climate change; the current management of Ireland's peatland resources is not sustainable and is having major negative impacts on climate change and biodiversity and strict management; and rewetting is required to achieve the significant CO_2 sequestration benefits identified by Wilson, D et al (2013) in '*Rewetting industrial cutaway peatland in western Ireland: a prime location for climate change mitigation?*'; it is understood that the forthcoming report of the Oireachtas Joint Committee on Climate Action, due for publication by end of March 2019, will recommend re-wetting for some of the worked out and cut-over peatlands (state urged to re-wet 270,000ha of peatland.

- Public consultation by the applicant
  - National Economic and Social Council (NESC) – published policy document on building community engagement and social support on potentially contentious WE projects in July 2014; following from the recommendations it is clear that local residents must be consulted and engaged in the planning process before any application is made; local trust is lacking due to the 'Element Power' proposals to use the Irish midlands for renewable energy to export to Britain for the UK to meet its binding renewable energy targets; in addition to the public consultation process carried out by the applicant, A.6 of the Aarhus Convention guarantees the right of the public to participate in environmental decision making, including A.6(4) providing '*for early public participation, when all options are open*'; the Aarhus public

participation provisions have been included in the revised EIA Directive 2003/35/EC inserting A.10a into the EIA Directive; the applicant did not engage in an appropriate level of public consultation;

- Appropriate grounds for refusal of permission for WFs in unsuitable locations
  - PL04.204928 for 23no. WTs at Barnadivane (and other townlands), Teerelton, Co. Cork, was refused by the Board on grounds of it being excessively dominant and visually obtrusive in the landscape and seriously injuring the amenities of the area and property in the vicinity, notwithstanding site location within designated Strategic Search Area;
  - PL-4.126913 for 3no. WTs at Drimoleague, Co. Cork was refused on grounds of serious injury to amenities and depreciation of value of property in the vicinity due to proximity to residential dwellings;
  - PL13.20714 [sic] 3no. WTs at Ashford, Co. Limerick was recommended refusal by the Board's Inspector on grounds of serious injury to amenities and depreciation of value of property in the vicinity due to proximity to residential dwellings;
  - PL03.206520 6no. WTs at Kilrush, Co. Clare was refused permission on grounds of visual intrusion, serious injury to amenities and depreciation of the value of property in the vicinity due to close proximity;
  - PL23.129603 6no.WTs at Clogheen, Co. Tipperary was refused permission on grounds of serious injury to the scenic and natural amenities and distinctive character of this remote area designated as a 'Primary Amenity Area' under the CDP and would contravene council policy;
  - PL26.216422 17no. WTs at Kilbraney, Co. Wexford was refused for five reasons (reasons no stated).

6.1.3. **Elspeth Hall of The Lock House, Coolnahinch** – The main points of the observation, which is an objection against granting of permission for the proposed development, may be summarised as follows:

- Lock House is at Location F, i.d. H428 (E 210,787; N 264,607) as outlined in noise monitoring section of the EIAR, 1.1km from WTs 22-24;

- Lock House is a protected structure to which the applicant's family has historic ties, and which has been completely refurbished by the appellant to retire to in 2009;
- Impact on residential amenity (peace and tranquillity) of Lock House;
- Noise
  - Consequential impact on health as recognised by the WHO;
  - the explanation of background noise monitoring by the applicant (c/o Damien Kelly Acoustic Consultants) at the Community Forum meeting of 02/03/17 was too technical to comprehend;
  - concerned at the exclusion of noise monitoring results from location F (appellant's property) as non-representative (p.657 of the EIAR refers to impact of steady water flow noise from nearby canal lock-gate); the results of location F were not provided to the appellant; a representative came to the appellant's home on 03/03/17 with a copy of the EIS noise section for Cloncreen WF which was not what the appellant requested; the appellant received a copy on 22/06/17;
  - confusion over BnM's response to emailed questions in June 2017, that significant ambient noise will be evident at lower than gale force wind speeds;
  - referring to the Preferred Draft Approach to noise assessment under the draft Revised WEDG, which references WHO standards, it is requested that a limit of 43d(B)a [sic] (can be assumed to refer to 43dB(A)) be a condition of planning;
  - WHO Environmental Noise Guidelines for the European Region 2018 link environmental noise with health issues and its guiding principles including the reduction to noise exposure, and it includes specific recommendations formulation for wind turbine noise which are conditional recommendations only due to lack of data;
  - The EIAR said the conditional recommended average noise exposure level (45dB L_{den}) should not currently be applied as target noise criteria for a proposed WT development;

- Permission should be refused on grounds that noise levels at our home may exceed the guideline limit of 43dBa [sic] and the sound of running water may be drowned out by the sound of WTs.

- Vibration
  - concern about construction vibration impact on Lock House and on the canal structure;
  - no guarantee provided by BnM;
  - a system of monitoring should be put in place to check vibrations are not damaging these structures; Appendices – the appellant has appended copies of correspondence with BnM, including their response to questions raised by the party concerning noise and vibration;

- Royal Canal
  - visual intrusion; no construction traffic should be permitted to use the canal towpaths in the interest of safety (see tertiary road in appendix 9.1 of application) and construction traffic should be limited Monday to Friday 8am to 6pm; 2km separation distance from the canal should be provided as a unique biodiversity and tourist attraction, as has been done for the River Shannon;

- Community engagement
  - most home visits consisted of mail drop; forum meetings were unproductive, frustrating and too technical and considered time wasting by some; did not address many issues (height and setback, visual impact, fencing drainage, devaluation of property, community gain, substation, noise and shadow flicker, tourism and amenities);

- Visual impact
  - prominently visible for miles in all directions as shown in the applicants Route Analysis Screening, including from the Corlea Centre and Royal Canal (view shown is not as open a view available to the north, but appendix 9.1 shows the few screened view areas on the Royal Canal); permission should be refused; inequitable approach restricting people

living in the area by conditions addressing small issues (e.g. no uPVC windows) but permitting giant WTs.

- Marsh fritillary
  - the only Irish butterfly under Annex II of the Habitats Directive and on the RED list of Irish butterflies; large tracts of suitable habitat existing in close proximity to the proposed development, not just the fragments found in the applicant's habitat survey; applicant's survey based only on larval webs and excluded presence of adults; appellant reported her sighting of a MF in her garden on 03/06/18 to Biodiversity Ireland (included in Butterfly Atlas 2021 (record attached); habitat fragmentation is recognised by Joint Nature Conservation Committed (UK Statutory advisor) as a problem for this species; numbers of this species are too low in Ireland to allow any development that would upset their habitat.

6.1.4. **Andrea and James McCausland** of Cloontamore, Killashee – The main points of the observation may be summarised as follows:

[Impact on residential amenity]

- Visual impact of WTs surrounding appellants' home (N39XH60) on three sides, and on other people's homes in Cloontamore; Appendix 1 & 2 show Sliabh Bawn WF visible from the front of the house and the 100m high wind mast from the rear in the location of proposed WT18; 5no. WT would be visible to the rear rooms in close proximity; would encapsulate homes;
- Unacceptable shadow flicker and noise risk due to appellants' home being surrounded on three sides; '*applicant has not shown and study to this particular risk or proposed measures to mitigate this risk.*'
- Impact on landscape - adverse impact on the character of the surrounding landscape; sensitive site within a flat open landscape can only accommodate a limited level of development to integrate with the landscape; no backdrop landscape; industrialising of the landscape;
- Scale and height – massive industrial sized WTs are out of proportion with existing natural features and development in the area; in addition to rotating blades; would be tallest permitted in Ireland and set precedent for similar;

- Light pollution - impact of high intensity lights illuminating WTs at night on character of area;
- No very special need for proposed development – there are 2no. solar farms with planning approval and a planning conversion to 100MW biomass for ESB Lough Ree Power; EirGrid's Transmission Development Plan 2017-2027 (p.72; attached as appendix 3 to appeal) indicates that there is more than enough electricity to suffice requirements in the midlands;
- Impact on Cloontagh NS – not acceptable to surround it with WTs;
- Impact on amenity value – visual, recreational and heritage, on surrounding towns and villages; scenic routes; sensitive landscapes; conservation areas and tourist development zones;
- Traffic safety issue – distraction to drivers (WTs 9, 10 and 17 are within 650m of main roads);
- Not compliant with Longford CDP
  - has not met the criteria restrictions on WF on cutaway bogs apply under policy WD 2 (p.211); S.5.3.2 Flooding (p.201) - the site is a natural floodplain which would be obstructed by turbine foundations and roadway;
  - P.212 para.D – Cloontagh area is inappropriate and more visible than the secondary proposed location for substation and BESS; P.212 para.G – does not address issue of interference with navigation, tv and communication signals; P.212 para.K – WF is within 150m of several rivers; on the basis of the AA Screening Report conclusion permission should be refused in order to comply with environmental protection legislation; p.212 para.L – no information forthcoming on future extension proposals but at the community engagement meeting they were told it would be phase 1 of 3;
  - P.222-223 Heritage – permanent damage to heritage through height and scale; EIAR p.385 highlights indirect, long-term negative effect on the cultural heritage environment at Corlea Trackway Visitor Centre (LVIA AH3), the Royal Canal (LVIA AH1-2, LC3), the RPS and NIAH of the town of Killashee (LVIA CP4), and (p.837) that it will have a long-term negative

(indirect-visual) effect on the surrounding archaeological, architectural and cultural heritage landscape; cumulative effect with Sliabh Bawn WF and Lanesborough power station will be likely long-term negative significant indirect effect on cultural environment;

- P.228 LCA 1 concerning landscape protection and mitigation has not been satisfied and proposals with detrimental impacts will not normally be permitted; LCA 2 concerning designation and protection of landscape character areas would be breached as the proposed development would not enhance the county's landscape;
- P.231 ENV 6 – no studies conducted on presence of private wells and preventative measures required;
- P.236, 237 ARC 1, ARC 2 & ARC 3 to protect the archaeological sites, the integrity archaeological sites and promote appropriate management, and P.222-223 Heritage – A high potential for presence of archaeological features to be uncovered in the course of future development works was identified by Jane Whitaker in her report conducted on behalf of BnM;
- P.240-241, 6.2.2.1 NHAs protection, p.241 6.2.2.2 Special Areas of Conservation – the AA Screening report conclusions that significant effects on European sites cannot be ruled out;
- P.243 NHB 9 to enhance and sustain landscapes – long term negative significant indirect visual effect noted on landscape on p.837 of EIAR;
- P.246 ILW 1 to protect Royal Canal, etc, ILW 9 to protect lakes, canals, woodlands, etc., landscape setting and amenity. EIAR p.835 predicts an indirect long-term negative effect including on the Royal Canal (LVIA AH1-2, LC3);
- P.248 ARCH 2 landscape and townscape heritage – in breach due to scale and height.

- Noise – No studies have been carried out of impact of effect of noise on residents whose homes are surrounded on multiple sides. Permission should be withheld until applicant can show appellants' family would not be adversely affected by noise; considerable noise generated for 1.5km; infrasound carries

over further distances (10km) with potential to impact on children attending Cloontagh NS near WT17; impact on peace and quiet of appellants' home;

- Impact on people with Autism – sensory processing difficulties indicated by either hyper or hypo-sensitivity; current rate of diagnosed autism in Ireland is 1 in 100 and is increasing each year; people with autism spectrum or Asperger's or ADHD can exhibit pain and panic related to audible sound and infrasound; spinning blades produce change in light, noise frequency and vibrations which can overstimulate the vestibular sensory system linked to the inner ear; **WT17, located close to Cloontagh NS**, would prevent children with autism from attending school and should be refused permission;
- Potential **sterilisation of lands** from development;
- Decommission proposals not specified and should be addressed through a bond required by condition;
- Fire risk – subject bogs have been affected by largescale fires and the fire risk (and risk to surrounding population) would be increased through the proposed development, but no fire suppression or evacuation measures provided for;
- Impact on birds – collision, mortality, habitat loss, disturbance / displacement, barrier effect and cumulative impacts; whooper swan flight paths;
- Impact on habitats – permanent disruption and destruction of habitat of whooper swan, curlew, bat;
- Mid-Shannon Wilderness Park must be implemented to provide safe and protected habitat for whooper swam and curlew but also providing extremely positive environmental, tourist and economic boost and to sustain BnM jobs; BnM Powergen Ltd have indicated that they have planned to introduce a wilderness park to co-exist with the proposed WF, but this cannot work in reality with whooper swan flight path through the WF site;
- Noise Impact – WHO night time noise guidelines for 40dB compared to 43dB under WEDG; impact of noise on sleep, with consequential sleep deprivation, anxiety headaches, high blood pressure, tinnitus and depression; nature of the noise generated with swish and thump; inaudible low-frequency noise can penetrate buildings

- Impact of construction traffic on rural roads which have not been subject of completed survey; risk of traffic accidents in an area where children walk to school with no footpaths along the road;
- Noise impact - French Académie Nationale de Médicine recommends suspension of WTs within 1.5km of homes pending further research into ill-effects of noise on human health; calls for a minimum acoustic safety distance;
- Noise impact – Qualitative data from those living under the shadow of WTs indicates noise is a serious problem;
- Noise impact – Research of disturbance issues from infrasound by Dr Alun Evans, QUB, and more recently by Pro Marianna Alves-Pereira Ph.D. (*Acoustics and Biological Structures*); in view of the findings, permission should be rejected;
- Noise impact – consequential sleep disturbance impact on health; the Board refused to carry out noise monitoring at the appellants' home;
- Impact on ISPCA centre caring for stressed animals, located beside the site;
- Noise and vibration impact – impact of construction noise, including from pile driving or blasting; monitoring of vibration impact required by condition to protect appellants' home;
- Impact of shadow flicker – residential amenity impact and potential to trigger epileptic fits;
- Impact on historical and archaeological heritage – impact on ancient and historic landscape and impeding the potential to development and market these sites as part of Ireland's Ancient East; presence of one of Europe's oldest roads at Corlea (impact on WTs 18-21), forming part of an extensive network; LCC CDP objective to identify and protect against any possible loss of undocumented heritage would be at risk; EIAR p.835 indicates there will be an indirect, long term negative effect on cultural heritage environment; impact on potential tourism potential; contrary to the CDP which prohibits a WT within 100m of an ancient monument; Cultural Heritage Assessment carried out by Jane Whitaker on behalf of BnM (appended to observation) found there to be

a high potential for archaeological features to be uncovered during the course of development; permission should be refused

- Battery Energy Storage System – unacceptable catastrophic risk to surrounding residents, school, agriculture, etc;
- Devaluation of property – forensic studies in US and UK, etc.; Danish government formally recognise the issue and have set up a compensation scheme to deal with property devaluation caused by WFs; property rights protected under A.40.3.2 of the Constitution of Ireland would be violated by permitting the proposed development; loss to Longford County Council of property tax value;
- Accident and damage risk – flying debris;
- Construction traffic – construction traffic; damage from wide, heavy loads, especially on unsuitable minor roads; how will traffic be managed during construction; road widening / straightening to accommodate construction traffic will change the character of major and minor roads, with damage to trees and hedges;
- Site plan boundary – should not be permitted to incorporate public roads (N63, R392, R398) into the site;
- Visual impact – impact on key tourist routes views including on both sides of the Shannon with existing WF and proposed WF; scale and height of WTs visible across three counties and on the Shannon as recognised in the EIAR p.836; impact on tourism (based on Bord Fáilte's tourist preference priority list);
- Impact on tourism – consequent of visual impact;
- Flooding – replacement of natural sponge with concrete foundations for 24 WTs and 26km of track, leading to faster and higher density of water feeding into the Shannon; flooding of the Shannon is a major issue, including for Athlone;
- EIAR – mitigation and habitat management measures not sufficiently demonstrated, and deficiencies of EIS [sic] regarding data management; need

for further and more extensive survey work including regarding Red Listed birds;

- NIS - risk of changes to downstream habitat features of European sites not properly considered by the applicant; does not consider full magnitude and pathways for hydrological effects arising potentially from forestry clearance and replanting and potential spread of alien plant species;
- Health – BnM Powergen Ltd website states there is no adverse effects on general health of residents but WHO has released information on the dangers of WF on health of residents in particular from noise and they propose new sound dBs;
- EU Charter of Fundamental Rights – breached by surrounding appellants' family by 185m WTs on three sides; A.7 right to respect for private family life, home and communication; A.37 right to high level of environmental protection and improvement integrated into policies of the Union in accordance with sustainable development; A.41 right to impartial, fair handling of every person's affairs by institutions, bodies, offices and agencies of the Union within a reasonable time;
- Irish Constitution – breached by surrounding the appellants' family by 185m WT on three sides; BnM and the Board are semi-state bodies and there is concern about impartiality – the Board should not be adjudicating this case; right to privacy impacted upon due to scale and size of proposed development; A.40(3) guarantees to respect, defend and vindicated the personal rights of the citizen; A.41 guarantees to protect the family in its constitution and authority;
- Alternative proposals -Mid-Shannon Wilderness Park already invested in by LCC; to incorporate an extensive greenway link between Dublin and Longford via the Royal Canal as a tourism economic venture, with reintroduction of wildlife and jobs creation in lieu of lost BnM jobs; 6-8 jobs arising from the proposed WF will not be local in nature but through remote operational control and maintenance by third parties; MSWP abolished by BnM; in addition to MSWP, renewable energy such as solar power could be incorporated without negative impact on tourism, property prices, wildlife and flooding; lack of

engagement with the community to make this work; solar can produce and work more favourably for bogs than wind and use up less space (1500 acres would have capacity of 200MW inclusive of all ancillary works; based on e.g. of BnM 70MW (AC) solar farm in Kildare of 350 acres (324 gross))

- Previous planning refusals – Castletownmoor WF, on grounds of tourism, cultural aspect and protected views, size and spatial area unsuited to the rural landscape with relatively dense population, impact on amenities of property and on landscape character contrary to overall objectives; Emlagh WF, on grounds of impact on substantial population, landscape and cultural heritage; Monmore South WF, on grounds of scale and height and proximity to existing houses, would seriously injuring the amenities and depreciate the value of houses in the vicinity by visual intrusion and noise; Ballylongford WF, on grounds of uncertainty of impact on habitats protected under EU environmental law;

6.1.5. **Niall Dennigan, Magheraveen, Lanesborough** - The main points of the observation may be summarised as follows:

- Public consultation – no part of the proposed development was discussed with a single community member through the entire process of public meetings;
- Has serious concerns as a resident about nuisance and health impacts associated with WTs, particularly of this magnitude;
- Magheraveen townland has been omitted but will be directly impacted during construction and operational phases being on proposed haulage route L1163;
- Noise generated for distance >1.5km, with infrasound for distance >10km;
- Reports of families living 1.6km from WF who have had to leave their homes due to noise and illness (REF. Irish Mirror 9/10/15);
- Observer's home would be 1.3km from closest WT;
- Internationally recognised that there is a lack of studies on sound near industrial WTs and a need for minimum acoustic safety distance to be defined;

- Refers to Marianna Aves-Pereira, PH.D. '*Acoustics and Biological Structures*' (http://www.intechopen.com/onine-first/acoustics-and-biological-structures) – Irish DoEHLG guidelines at 43dB are 3dB above WHO night-time noise guidelines, which represents a doubling of noise pressure, and she submits that a minimum setback of 10 times the height of top dead-centre of blade time is not sufficient and that WT developers and authorities talk about audible sound and ignore infrasound despite good scientific evidence from research that the inner ear detects infrasound and at much lower intensities than regular sound;
- The WHO (Environmental Noise Guidelines 2018) recognise noise from WTs as a nuisance;
- Visual impact - 185m high WTs are totally out of proportion to any existing feature of development in the area and will be visible for miles in every direction;
- Impact of construction works 24/7 including noise and air pollution, traffic and plant passing close to busy junctions, schools and housing, with disruption and danger from accident risk;
- In pre-application meeting with ABP, BnM stated none of the roads mentioned would be used for haulage (REF:14.PC0233 Record 3) directly contradicting p.16 of the EIAR with the application referring to proposed temporary modifications to public roads (N6, N61, N63, R392, R398, L11554, L1136) to facilitate delivery of abnormal loads, construction access and haulage routes;
- Objects to any road closures or interference to accommodate construction in an area where the roads are not fit to deal with heavy duty equipment and are prone to subsidence;
- Risk to aircraft – air ambulance etc;
- Fire risk from flaming blade throw onto bog or forest; blade throw risk to houses and busy roads in the vicinity;
- Habitats Directive – legal requirement to protect bogs and wildlife; most bogland resource is in southwest of the county; impact on protected animals including whooper swan, curlew;

- Impact on agriculture – noise impact on cattle; BnM refuse to monitor noise impact on cattle sheds as part of community engagement;
- Hydrology – serious consequences for hydrology, causing streams to fill and rivers to burst their banks in one of the lowest-lying areas of the country; major concern for farmers; replacement of peat with concrete will result in greater flooding implications; clearing of these same rivers by the OPW in recent years to reduce flooding but to no avail;
- Impact on property value – loss of house value will impact on property tax;
- Impact on residential amenity – in choosing to live here the observer traded the additional cost of travel to work and shops for enjoyment and peace and tranquillity of the countryside and the proposal will cause a significant impairment to this residential amenity;
- Judgements of CJEU – not possible for the Board to grant permission having regard to Case C-258/11 Peter Sweetman and others-v-ABP, C-164/17 Edel Grace and Peter Sweetman-v-ABP, C-323/17 People Over Wind and Peter Sweetman-v-Coillte Teoranta, and C-461/17 Brian Holohan and Others-v-ABP;
- BnM acquired control of the lands under CPO for turbary rights only, not for the developing of WTs (map of relevant lands of observer's grandfather outlining the area of '*right of turbary. Acquired by Bord na Móna*';
- NIS screening conclusion that significant effects on European sites cannot be ruled out based on source pathway receptor routes putting qualifying interests of Lough Ree SPA, Lough Ree SAC, Ballykenny Fisherstown Bog SPA and River Shannon Callows SAC;
- Impact on historic heritage – archaeological artefacts and structures; Longford CDP clearly states WF developments should not be located within 150m of ancient monuments or within 150m of lakes or rivers – direct violation of the CDP;
- BnM refused to discuss solar farm or biomass with the community; BnM's own figures for Timahoe solar farms in Kildare show one bog in this area along can produce 200MWs from solar alone (http://wwwbordnamona.ie/wp-

content/uploads/2017/11/BNM-ESB-Timahoe-Info-Booklet-Ir.pdf); it does not make sense that BnM is not working on establishing a biomass on these boglands given that Lough Ree 100MW Generation Station is to be transitioned to a biomass burning station;

- A solar farm established with the MSWP would sustain jobs and create future employment in the area with indirect positive impacts on Lanesboro jobs in retail and tourism and would show Lanesboro and Longford in a positive light as an area that can positively grow through green energy and environmentally friendly projects and provide the best for its communities;

6.1.6. **John Kiernan** of Kilmacannon, Bornacoola – The main points of the observation may be summarised as follows:

- **Negative effects on tourism from large WTs** – scale (1908ha) and height (185m) of WF being a massive industrialisation of a quiet midlands region will have far reaching negative impact over generations; tourism is a major contributor to the economy and is deeply related to quality of the environment; published research indicates that c.25% of tourists would be negatively impacted on their future plans to holiday in Ireland based on the extensive proliferation of WTs on the landscape; the application takes meagre account of tourist amenities and attractions in the area without really examining the implications; extensive visual impact over flat land; it was acknowledged that the development would negatively affect tourist items – Corlea trackway visitor centre and the Royal Canal (long-term negative); impact on Mosstown Harbour was not considered; observer suggests looped walkway from the Royal Canal is a wishful assumption; impact on scenic village of Keenagh by WTs 21, 22, 23 and 24 with photomontage image erroneously (or otherwise) failing to be accurate in the perspective view that would be visible from chosen viewing point; applicant recognises the Centre Parc development and the launch of the new tourist brand '*Ireland's Hidden Heartlands*' is expected to increase tourist numbers in the county but a sufficient review by photomontage and assessments of the impact of WTs 12km away has not been undertaken; visual and infrasound impact on Killashee village,

Lanesborough, Cloondara and Richmond Harbour (camping and blueway) and other heritage of tourist interest;

- **Impact on health and well-being from infrasound** on people living adjacent to industrial WTs – impact on mammals; study of impact on occupant of house 700m from WT which disputes Baden-Wurttemberg finds cited in the BnM application that infrasound is drowned out by background noise with a 700m setback; experiment by D Lars Ceranna using ultra-sensitive measuring (micro variometer) calculated that infrasound from a 5MW WT was generated up to 20km; acoustics monitoring expert Sven Johamsen states that WTs found interaction between structure borne sound (vibrations) and air borne noise measured at the same time increased the resident's sensitivity to the existing of air borne infrasound, amplifying the discomfort effect on residents; Prof. Alex Salt, internationally recognised expert on science of the inner ear, disproved that noise frequency below 20Hz is non-interpretable to the human ear and that the ear reacts with electrical responses to signals as low as 5Hz although it is not audible, stimulating another pathway of cognition; Prof. Simon Kuhn conducted tests of low frequency sound for 4 weeks at 90dB intensity on sleep and metal capacity, which showed intense activity in human ear interior simulation, activating a region of the brain dealing with conflict and managing stress, with infrasound frequencies perceived subliminally, subconsciously generating street and perhaps fear in a portion of the population; John B. Alexander US Army Colonel explains how the military's testing of use of infrasound as a weapon was abandoned after it found only c.1/3rd of the people exposed reacted physically and regularly; studies looking at the effect of noise frequency on human heart observed that the heart muscle fibres were affect (weakened) by exposure to 16Hz noise frequency for 1 hour; Moller and Pedersen showed that an increase in WT tower height and power generation capacity increased the proportion of low frequency noise emitted; permission should be refused on basis of unsuitability and negative impact on health of residents, livestock and wildlife;
- Impact on insects from largescale WTs – According to DLR (German Aerospace Centre) publication billons of insects are victims of WTs annually and could be a significant factor in insect killing (its model calculated that

5.3bn insects are killed every day by German wind turbines in the warm season; flying insects, before laying eggs, swarm in high, rapid air currents to reach distant breeding grounds, with the impact of WTs of an order of magnitude that would be relevant to the stability of the entire population; also insect WT collisions result in decline in WT energy performance by up to 50%; context of reported decline in world insect populations;

- Critique of BnM application – scale, suitability and alternatives; on the basis of the summary points, ABP should seek objectivity from the applicant and make a mandatory request for more complete information.

6.1.7. **Board of Management Cloontagh National School** Cloontaghmore, Killashee - The main points of the observation may be summarised as follows;

- Direct negative impact on school and environs;
- The R398, a narrow country road along which the school is situated, which is proposed for construction traffic access, cannot take the increase in traffic and is unsuitable for large trucks or machinery;
- The school warning lights have been knocked down on more than one occasion by trucks trying to pass one another on the narrow carriageway;
- There is no off-road parking and parents / children have to access the school from the road and the BoM have had to ask the Gardaí to control traffic around the school for safety on occasion of road closures elsewhere which increased traffic on the road;
- There is no footpath either side of the road;
- Increased danger to children walking or cycling to school;
- Concern about the effect of infrasound (referring to link to 'Acoustics and Biological Structures' by Mariana Alves-Pereira PhD) have not been dismissed as unfounded but not refuted with evidence by the developers;
- Concerns about effects on school children will likely affect current and future enrolments and possibly result in closure of the school;
- Cannot seek how the evacuation of the school could be managed as part of an emergency response if there was a fire at the proposed BESS in close

proximity to the school, which has access by only one road, and no evacuation procedures are proposed in the application;

- Massive mechanical intrusion into the natural landscape, out of proportion with any existing natural features or development in the area;
- Impact on the natural environment, stymying the possibility of any other development of an ecological nature in this area.

6.1.8. **Charlie Sorohan** of Cloonfore, Lanesboro – The main points of the observation may be summarised as follows:

- Permission should be refused for failure to comply with the Longford CDP 2015-2021, in relation to WEDG 2006 shadow flicker and noise, and pending the proposed revisions to the WEDG;
- Home is within 600m of proposed WT12, with WTs 10, 11, 13, 14 and 15 within 1-2.5km;
- Fails to comply with proposed revisions to WEDG which apply a more stringent noise limit consistent with WHO standards and a requirement for a more robust noise monitoring regime to ensure compliance; a setback of 4 times turbine height from nearest property; and elimination of shadow flicker;
- Existing WEDG is out of date and unfit for purpose for WTs of 185m, among the highest in the world;
- Threat to health and wellbeing of local population through Wind Turbine Syndrome, with greatest adverse effect on people living close to Sliabh Ban WF, and the range of symptoms from effects of infrasound (refers to Dr Chris Hanning's identification of problems associated with sleeping disorders arising from 125m high WTs within 2km of people's homes;
- The Danish guidelines standard limit of 20dB(A) low-frequency noise inside a dwelling, day or night should apply [no copy of guidelines or website link provided];
- Property value – Professor Steve Gibbons, LSE Spatial Economics Research Centre, found an average fall of 11% in property values within 2km of large wind farms;

- The data used to support the application, particularly in terms of shadow flicker and noise pollution, is difficult if not impossible to verify, and applies an arbitrary frame of reference to justify WT proposed positioning particularly in terms of setback distance;
- 1km setback is required under the Longford CDP;
- Health is one of the fundamental rights of every human being (WHO, 1948);
- The Department of Health is aware of the effects of WTs (referring to Deputy Helen McEntee's response to Parliamentary Questions in 2014) and the Board should use the precautionary principle in assessing the application;
- Impact on residential amenities;
- Sliabh Ban WF will be visible from the proposed development.

6.1.9. **John Duffy** of Magheraveen, Lanesboro – The main points of the observation may be summarised as follows:

- The breakdown in the forum meetings should be investigated by the Board prior to making a decision;
- BnM have admitted they have never undertaken a feasibility study for any other type of renewable energy at this site;
- Potential for destruction of sites of great archaeological interest;
- Potential for destruction of local ecology through importation of concrete and road materials (40 loads of concrete per mast);
- Direct contravention of planning intentions for the area as a preserved area of natural beauty (with job creation potential) as a wildlife / nature centre / natural amenity;
- This area of bog was originally taken by BnM on the understanding it would be returned to the local farmers when it was cut away;
- Impact on residential and general amenity (chose to live in this area) including long term impact on aesthetics (visual intrusion) for which this area is not suited;

- Ethical issue of developer trying to buy their way to getting approval through funding local clubs and organisations;
- Shadow / light flicker and noise;

6.1.10. **Stephen and Fiona Coffey** of Derryadd, Lanesboro – The main points of the observation may be summarised as follows:

- Impact on property value as demonstrated by all studies;
- Chose to build in this area, on family land, for peaceful and tranquil area full of natural wildlife and heritage and accepting the additional cost of travel to work, school, college, shops, etc;
- Long-term adverse impact on residential amenities.

6.1.11. **Peter Sweetman** of Dublin 6 – The main points of the observation may be summarised as follows:

- Not possible for the Board to issue an EIA or an AA of the proposed development which would be in compliance with the EIA Directive and the Habitats Directive having proper regard to the following judgements of the CJEU:
  - C-258/11 Peter Sweetman and Other-v-An Bord Pleanála;
  - C-164/17 Edel Grace and Peter Sweetman-v-An Bord Pleanála
  - C-323/17 People Over Wind and Peter Sweetman-v-An Bord Pleanála
  - C-461/17 Brian Holohan and Others-v-An Bord Pleanála;
- The Policy of the Board to credit the developer with the fees paid by those who are being consulted to the development is not in accordance with the findings of the CJEU;

6.1.12. **Fine Gael Cllr John Browne** of College Park, Co. Longford – The main points of the observation may be summarised as follows:

- Visual impact – blight on the countryside and consequential adverse effect on tourism;

- Detrimental impact on residential amenity – noise and shadow flicker impact on c.120 home;
- '*Wind chargers*' should be located at sea.

6.1.13. **Irish Wildlife Trust** of Dublin 11 – The main points of the observation may be summarised as follows:

- At odds with the MSWP planned by local communities and LCC since at least 2013, which envisages a new wilderness between Lough Ree and Longford town as a tourist and amenity resource, vital for revitalising a neglected region with few employment opportunities;
- Does not object to WTs per se and is keen to de-carbonise our economy, but this is not an excuse to steamroll over the local community's plans and the biodiversity potential for worked-out boglands;
- The MSWP would create what could be the most important wildlife restoration project in Europe;
- Less than 1% of raised bog remain intact in the Midlands, but essentially no raised bog remains as a functioning ecosystem due to changes in hydrology and extinction of key species and the Shannon region has suffered widespread collapse through the disappearance of bogs, the pollution and damming of the Shannon, the intensification of farmland along the riparian zone and the dredging of key tributaries such as the Inny and Suck, with consequential plummet in wildlife species once characteristic of the region (curlew, corncrake, lapwing, dunlin, salmon, eel and redshank) all on the endangered species list and there is an urgent need for landscape-scale restoration of ecosystems as acknowledged by the UN Decade of Ecosystem Restoration 2020-2030;
- Rehabilitation of cut over bogs provides the opportunity to help address climate change, reverse biodiversity losses and enhance degraded water quality;
- Reintroduction of wild nature brings enormous potential benefits for local communities in the form of sustainable tourism, etc, but to be realised the

landscape must establish a unique signature as proposed by the MSWP, which will be negated by the imposition of WTs;

- The reintroduction of long-vanished charismatic, large, identifiable and rare species – cranes, bittern, white-tailed eagle and osprey – to give MSWP project uniqueness such as to attract interest, are completely incompatible with WTs at these species have large wingspan and typically migrate over long distances and are particularly vulnerable to collisions with WT blades;
- Large raptors (eagles) are among the most vulnerable birds to collision risk and no cranes could be reintroduced in a landscape dotted by turbines;
- The EIAR lists 9no. red-listed wintering bird species, 6no. Annex I Birds Directive species and 7no. red listed breeding species potentially impacted, including some of Ireland's most threatened breeding birds – curlew, golden plover – and whooper swan, an internationally important proportion of the world's population wintering in Ireland, which are regularly recorded from the site according to the EIAR; this shows the potential value of the MSWP;
- Climate change – worked out bogs should play a central role in Ireland's climate change adaptation plans, as an opportunity to lock up carbon permanently and it is likely that this approach would be just as effective as removing GHG as WTs in terms of their savings of fossil fuels;
- Flooding – worked out bogs present an opportunity to help prevent flooding downstream;
- BnM is a public company and it behoves them to act in the public good.

6.1.14. **John and Mary O'Brien** of Millmount, Mullingar, with a dwelling and farm at Cloonfore, Lanesborough c/o Bernard Casey Consulting Engineer – The main points of the observation may be summarised as follows:

- Will affect their house within c.500m of the site;
- Noise – effect of substantial and constant noise on cattle in adjoining fields;
- Shadow flicker – huge effect on cattle's temperament and docility; BnM have not adequately fenced the boundary which they have committed to do;

- Traffic – these bog roads were not designed for heavy loads required for the construction traffic; the width and length of transporting WTs raises many health and safety issues;
- Substation and compound – potential fire hazard; enormous health and safety questions arising from construction compound;
- Property value – value of dwelling and farm will be adversely affected by proposed largescale development;
- No justification for largescale industrial type development in rural area;
- Will have massive social and economic factors for decades;
- Contrary to the Longford CDP in many aspects.

6.1.15. **Steven and Marie Peters** of Cloonfore, Lanesborough c/o Bernard Casey Consulting Engineer – The main points of the observation may be summarised as follows:

- Will affect dwellinghouse c.600m from the site;
- Noise – effect of substantial and constant noise;
- Shadow flicker – effect of WTs on back kitchen in the morning;
- Traffic – these bog roads were not designed for heavy loads required for the construction traffic; the width and length of transporting WTs raises many health and safety issues;
- Substation and compound – potential fire hazard; fire would require nearby houses and businesses to be evacuated; enormous health and safety questions arising from construction compound;
- Property value – value of dwelling and business (a property management and auctioneering company employing three people) will be adversely affected by proposed largescale development; would not have built in this area in 2008 on return from England if they had realised a WF would be developed in future;
- No justification for largescale industrial type development in rural area;
- Will have massive social and economic factors for decades;

- Contrary to the Longford CDP in many aspects.

6.1.16. **Michael and Aoife Farrell** of Cloonfore, Lanesborough c/o Bernard Casey Consulting Engineer – The main points of the observation may be summarised as follows:

- Will affect dwellinghouse c.500m from the site;
- Noise – effect of substantial and constant noise; also impacting on cattle housed in shed adjacent house;
- Shadow flicker – effect of WTs on rear of dwelling; huge effect on cattle's temperament and docility which will be able to walk within 100m of WTs; BnM have not adequately fenced the boundary which they have committed to do;
- Traffic – these bog roads were not designed for heavy loads required for the construction traffic; the width and length of transporting WTs raises many health and safety issues;
- Substation and compound – potential fire hazard; enormous health and safety questions arising from construction compound;
- Property value – value of dwelling, which they have currently applied for permission to extend, will be adversely affected by proposed largescale development [note, the observation referred to an enclosed property valuation which is not attached to the submission];
- Will have huge effect on dwelling, farm and livestock;
- No justification for largescale industrial type development in rural area;
- Will have massive social and economic factors for decades;
- Contrary to the Longford CDP in many aspects.

6.1.17. **Margaret Peg Farrell** of Cloonfore, Lanesborough c/o Bernard Casey Consulting Engineer – The main points of the observation may be summarised as follows:

- Will affect dwellinghouse c.500m from the site;
- Observer's husband owned 60 acres of the site which was taken over by BnM in a CPO type deal 60 years ago solely for peat production;

- As BnM have not adequately fenced the boundary or cleaned the stream, which they committed to do, how can they be trusted to adequately carry out a development of this magnitude;
- Noise – effect of substantial and constant noise;
- Shadow flicker – effect of WTs on rear of dwelling;
- Traffic – these bog roads were not designed for heavy loads required for the construction traffic; the width and length of transporting WTs raises many health and safety issues;
- Substation and compound – potential fire hazard; enormous health and safety questions arising from construction compound;
- Property value – value of dwelling will be adversely affected by proposed largescale development;
- Will have huge effect on dwelling and way of life;
- No justification for largescale industrial type development in rural area;
- Will have massive social and economic factors for decades;
- Contrary to the Longford CDP in many aspects.

6.1.18. **Marie Farrell** of Cloonfore, Lanesborough c/o Bernard Casey Consulting Engineer – The main points of the observation may be summarised as follows:

- Will affect dwellinghouse c.600m from the site;
- Noise – significant noise disturbance effect of substantial and constant noise; also impacting on cattle housed in shed adjacent house;
- Shadow flicker – effect of WTs on back kitchen of dwelling in the morning;
- Traffic – these bog roads were not designed for heavy loads required for the construction traffic; the width and length of transporting WTs raises many health and safety issues;
- Substation and compound – potential fire hazard; enormous health and safety questions arising from construction compound;

- Property value – value of dwelling built c.2006 will be adversely affected by proposed largescale development [note, the observation referred to an enclosed property valuation which is not attached to the submission]; would not have built here if she had realised a WF would be developed;
- Will have huge effect on dwelling, farm and livestock;
- No justification for largescale industrial type development in rural area;
- Will have massive social and economic factors for decades;
- Contrary to the Longford CDP in many aspects.

6.1.19. **Irish Peatland Council**

The main points of the observation may be summarised as follows:

- Ireland has an obligation to protect Annex I habitats under the Habitats Directive of which raised bog is a priority, and the IPCC have identified a number of raised bog remnants of concern within and on the boundary;
- IPCC would like to see management plans in place that specifically deal with the restoration and protection of these ecologically sensitive areas (map 1 of the submission refers);
- It is important that ecologically sensitive habitats within the complex are included within the predictive habitat maps to secure their protection;
- It is not clear what rehabilitation / restoration of the cutover areas will take place alongside the turbine installation;
- IPCC would like to see cutover areas restored to wetland habitat as soon as possible so the complex is climate change proofed as recommended by recent report, *VAPOR*, published by the EPA; re-stabilisation of the peat soils by allowing the complex to re-vegetate naturally will not be enough to secure the carbon resources in future with predicted climate change;
- Letter from IPCC to Tobin Consulting Engineers (16/05/17; 2nd letter) in pre-planning consultations which, in addition to the points detailed above, raised the following issues: impact on Lough Bawn pNHA, the conservation management of which should be a priority in delivery of a rehabilitation plan;

opportunity to boost Ireland's conservation status as per National Peatlands Strategy; need to assess / examine remnant bogs on site for potential damage from construction / drainage, etc., and offsite examine Cloontamore Bog, Lehery Bog, remnant bogs within vicinity of WTs 20 and 11, Ballynakill South wetland area and Corlea Bog (inter alia peat stability and hydrology impacts, management plans, habitat surveys); potential impacts on archaeology for which Ireland has international obligations under the A.1 of European Convention on the Protection of the Archaeological Heritage (ratified in 1997) to protect and questions whether there will be scientific supervision from an independent body, with WTs 9, 14 and 22 of particular concern; no development before full archaeological survey undertaken and mitigated, including possibly through re-wetting; WFD obligations; rehabilitation of Derryadd Bog Complex; impact on bats; impact on birds with particular regard to the sensitive SW portion of the site; MSWP and amenity proposals.

6.1.20. **Bird Watch Ireland**

Note, these observations were received 05/06/19 on foot of an invitation by the Board under S.37F(1)(c) of the Planning and Development Act 2000, as amended, further to correspondence from Attracta Uí Bhroin, Environmental Law Officer of the Irish Environmental Network of 18/05/19 concerning the processing of an earlier observation by the body ruled invalid. The said letter is on file but does not constitute an observation on the application at hand, but rather an administration issue that the Board may now consider to have been resolved.

The main issues raised in the observations may be summarised as follows:

Legal & procedural

- The letter of application from Tobin Consulting Engineers on behalf of BnM states the application is '*submitted under section 37A of the Planning and Development Act (as amended)*'. The application has not been validly submitted to the Board under section 37E as required by the Oireachtas for SID applications.

- There is no application properly before the Board and the Board does not have jurisdiction to consider it properly.

Overall issues of concern

- Concern about negative impacts the proposed development may have on a number of Annex I and Red or Amber listed Birds of Conservation Concern in Ireland.
- Concern about the significant gaps in the ornithological survey coverage and methodology.
- The surveys completed to date do not meet the requirements of the relevant guidelines in relation to: Whooper Swan (Annex 1, wintering), Greenland White-Fronted Goose (Annex I, wintering, Amber listed), Merlin (Annex I, breeding, Amber listed), Peregrine (Annex I, Breeding), Barn Owl (Red listed, breeding), and Curlew (Red listed, breeding).
- Gaps in surveying effort and methodology, the NIS is not based on complete, precise and definitive findings and conclusions and as such BirdWatch Ireland concludes that reasonable scientific doubt remains as to the absence of such effects which by themselves or in combination with other plans or projects may negatively impact upon the conservation objects of the Lough Ree SPA (site code: 004064) and the Ballykenny-Fisherstown Bog SPA (site code: 004101).
- Should approval be given, BirdWatch Ireland requests that conservation management works are carried out on Lough Bannow Bog pNHA (site code: 000449) and Lough Bawn Bog pNHA (site code: 001819) to improve the conservation status of the peatland habitats on the site, potentially ameliorating some of the potential negative impacts to breeding Curlew and breeding Merlin.
- Recommends that permission be refused for turbines 1-9 on the Derryaroge section of the site on the basis of the high number of Annex I and Red or Amber listed BoCCI which are likely to be negatively affected by the construction and operation of those turbines and associated works, taking into

consideration the importance of the adjacent River Shannon as a corridor for birds.

Legal context –

- Significant gaps in ornithological survey coverage and methodology make it impossible to conclude the proposed development would not have significant negative impacts on breeding and wintering populations, including species associated with Natura 2000 sites.
- In view of A.6(3) of Habitats Directive, the significant gaps mean the conclusions of the NIA are not based on '*complete, precise and definitive findings and conclusions*' as required by the Directive.
- As per ECJ Waddenzee Case c-127/02, '61*...under Article 6(3) of the Habitats Directive, an appropriate assessment of the implications for the site concerned of the plan or project implies that, prior to its approval, all aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field. The competent national authorities...concerned in the light of the site's conservation objectives, are to authorise such an activity only if they have made certain that it will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects.*'
- 2013/802 JR Kelly v ABP & Ors, summarises the need to address knowledge gaps – '*40...(i) Must identify, in light of the best scientific knowledge in the field, all aspects of the development project which can, b itself or in combination with other plans or projects, affect the European site in the light of its conservation objectives. This clearly requires both examination and analysis. (ii) Must contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps. The requirements for precise and definitive findings and conclusions appear to require analysis, evaluation and decisions. Further, the reference to findings and conclusions in a scientific context requires both findings following analysis and conclusions following an evaluation each in the light of the best scientific knowledge in the field. (iii) May only include a determination that the proposed development will*

not adversely affect the integrity of any relevant European site where upon the basis of complete, precise and definitive findings and conclusions made the Board decides that no reasonable scientific south remains as to the absence of the identified potential effects.'

- Therefore, there is reasonable scientific doubt as to the absence of such effects which by themselves or in combination with other plans or projects may negatively impact upon the conservation objectives of Lough Ree SPA and Ballykenny-Fisherstown Bog SPA.

Issues with Ornithological Surveys

- Multiplicity of environmental consultants carried out the ornithological assessments (winter surveys – MW&P 2014/15, 2015/16 and 2016/17; TCE 2017/18; summer surveys – MW&P 2015, TCE 2016, MKO 2017).
- Changes in surveying effort and methodology complicate the analysis of breeding and wintering birds.
- The May 2016 review (by Jackie Hunt and Derek McLoughlin of Aniar Ecology) of MW&P's approach identified significant gaps in survey coverage and methodology used with reference to the *SNH Guidelines* (2014), regarded as best practice in relation to onshore WF ornithological assessments, and made several recommendations on how same could be addressed. The Aniar review report [appendix 6.2 of the EIAR] found:
    - (S.3.2 Survey Coverage (spatial)) – surveys (VP and transects) solely limited to the application site; visits offsite, e.g. to Lough Ree lakeshore and River Shannon adjacent the site, were infrequent and with no reference to systematic survey methodology; spatial coverage of winter bird surveys was inadequate;
    - Serious issues with ornithological survey work already completed were identified as follow: failure to establish local (s.3.2.1) and regional (3.2.2) connectivity for species such as Whooper Swan; issues with the VP survey (3.3.1) including timing (3.3.1.1), coverage of 180-degree arc (3.3.1.2), the absence of viewshed analysis 3.3.1.3), gaps

in VPs and site coverage (3.3.1.4) and whether or not coordinated counts were conducted (3.3.1.5);

- S.3.3.1.6 considered the collision risk analysis to be deeply flawed due to the reported flight height bands did not follow the SNH guidelines and raises data compatibility issues across VP survey data, which raises questions with the reliability of the collision risk assessment;

- BirdWatch Ireland have reviewed all ornithological survey reports submitted with the application. In the case of Winter Ornithological Assessment 2014/15 to 2017/18, additional surveying was undertaken and additional steps such as viewshed analysis and additional VP coverage and hinterland assessment were completed, but it is not clear that all the surveying issues identified by Aniar were subsequently addressed.

  - There are still significant gaps between completed surveys and SNH guidelines (2014), including, e.g. the Natura 2000 and species-specific requirements such as connectivity assessments, dawn and dusk assessments and migratory assessments do not appear to have been completed to the standards outlined in the guidance;
  - It is not clear how the additional surveying completed addresses the specific requirements of the SNHG (2014);
  - It appears that, where significant observations were made of breeding behaviour on or offsite, additional breeding bird survey work was not completed in accordance with the standards laid down by SNHG (2014) or by species-specific Irish guidelines.
  - BirdWatch Ireland cannot determine, based on the evidence provided, that the Winter Bird Surveys for 2017/18 was in fact tailored to the ecology of the target species in order to address the specific requirements of the SNHG (2014).
  - BirdWatch Ireland believe the surveys completed to not meet the SNHG (2014) in relation to: Whooper Swan, Greenland White-Fronted Goose, Merlin, Peregrine and Curlew.

- Whooper Swan – Annex I qualifying interest of Lough Ree SPA, c.2.5km to the west, for which it is the conservation objective to maintain or restore the favourable conservation condition of the bird species and their wetland habitat.
    - Recorded in BirdAtlas 2007-2011 within 10km squares N06, N07 and N16, and adjoining squares N05 and N17.
    - Flocks has been recorded at a number of important wintering sites within the region of the proposed development – River Shannon (Termonbarry-Lanesborough) site code 0E350; Lough Gowna site code) F002; Lough Ree site code 0F002; Lough Forbes site code 0F006; Turreen Turlough site code 0F301; Fortwillian Turlough site code 0F302; Cordara Turlough site code 0F303; and Aghavadden green fields site code 0FS99.
    - Total 149 separate flights recorded at the site, the majority associated with commuting.
    - Also observed roosting and feeding, with significant instances offsite at Derrycashel Bog and onsite at Derryaroge Bog.
    - Largest flock of birds, 148no.,observed offsite in fields to east of Derryadd, but with flocks as large as 72-100no. recorded feeding onsite on the flooded bog at Derryaroge Bog where 9no. turbines are proposed.
    - Toibin 2017/18 Winter Survey noted a flock of .100 individual 'constitutes a significant flock'. The ecological assessments noted that the number observed within the footprint of the development were below the 150-bird threshold for a flock of national importance (i.e. 1% of the populations), but this does not mean that the wintering population associated with the site ad adjoining roosting and feeding sites is not of national importance. A flock may be significant when considered in combination with other nearby flocks.

- The largest recorded flock was just 2no. short of 'national importance' and, in the absence of repeated coordinated surveys across multiple sites it is hard to rule this out.
- A detailed connectivity analysis would have helped to characterised the observed flocks and their association with the Natura 2000 sites. The Lough Ree SPA site synopsis refers to the site as one of the most important Midland sites for wintering waterfowl with nationally important populations of Whooper Swan, citing a population of 139no.
- The overall populations could therefore be considered of national significance and BirdWatch Ireland can confirm that the flocks of Whooper Swan of c.100 birds observed onsite is greater than the average number of birds (41) identified in 8no. of the other importance wintering sites survey in Co. Longford.
- Flocks of 100-148no. birds can be seen to be important even in comparison to the most important wintering sites in County Longford. According to I-WeBS (1994/95 – 2016/17), Lough Ree had highest average flocks with 114no. birds (range 0-280), Lough Forbes 61no. (0-120) and Lough Gowna 52no. birds (0-108).
- The Winter Surveys of 2017/18 found the species regularly encountered, with the majority commuting along the Shannon, with feeding and roosting on Derrycashel Bog (offsite) and Derryaroge Bog (onsite) primarily associated with winter flooding. BirdWatch Ireland notes that winter flooding of the site is not uncommon and it will continue to create suitable habitat on site going forward, and the species would probably continue to commute over and feed and roost on site in the do-nothing scenario.
- With the development, flooding may continue to attract birds to the site, creating risk of collision and disturbance.
- Whooper Swan are known to have a high risk of collision with wind turbines in comparison to other species and are sensitive to disturbance to occupied habitat.

- Given the usage and occurrence of Whooper Swan flying through the site, BirdWatch Ireland considers the proposed development to pose a significant risk of collision, especially so for WTs 1-9, as is highlighted by Toibin consultants flight line analysis for winter 2017/18.
- Permission should therefore be refused for WTs 1-9.

- Significant Gaps in Whooper Swan Winter Surveys [same issues as summarised above]
  - Not possible to conclude no significant impacts on Whooper Swan based on gaps and approval cannot be given until SNH (2014) guidance has been met and gaps addressed.
  - In addition to significant gaps in species coverage, including failure to carry out migration and night surveys
  - Dedicated feeding distribution surveys for Whooper Swan should therefore be carried out on a fortnightly basis where species are likely to wintering and weekly surveys where birds likely to be present during migration having regard SHNG (2014) guidance on requirement for feeding distribution surveys within core foraging range of SPA
  - An SPA connectivity analysis for Whooper Swan should be complete of sites within 5km of the site, having regard to SNH SPA Connectivity Guidance 2016.
  - Given the significant level of flight activity observed in Winter Bird Surveys, roost surveys should have been carried out for sites beyond 1km as per SNH, having regard to SNH SPA Connectivity Guidance 2016.
  - Collision risk – nocturnal flights should be taken into account when calculating collision risk (s.3.8), with dawn and dusk surveys, as SNH (2014) indicate wintering birds can feed at night.

- Greenland White-fronted Goose
  - Annex I, Qualifying Interest of Ballykenny-Fisherstown Bog SPA, and Amber listed BoCCI, but not recorded on that SPA since 1990/91

- Reduction of species from 35,600 to 20,797 between 1999 and 2014 thought to result from perilously poor productivity in its Greenland breeding grounds
- Evidence it is abandoning traditional peatland sites in favour of agricultural fields
- There is a roost on Inchcleraun island, c.8.5km to the southwest, and it is referred to within the Lough Ree SPA site synopsis but is not a qualifying interest, but the SPA is designated for wintering wetland and waterbirds and is within 2.5km of the site
- The site is between the said roost and the Ballykenny-Fisherstown Bog SPA, and is within the zone of influence of that SPA
- Given the low number of this species recorded within the I-WeBS sites for the County, the recording of 3 birds feeding on site in Derryadd Bog is noteworthy.
- Considering potential direct and indirect impacts of the development in-combination with the already stated concerns for Whooper Swan, permission should be refused to WTs 1-9.

- Significant Gaps in Greenland White-fronted Goose Winter Surveys [same issues as summarised above]
  - Significant impacts cannot be ruled out due to gaps in information.
  - The Aniar review highlighted the gaps in survey works as – use of site (commuting, roosting) by migratory birds and specifically GWFG; GWFG assessments during hours of darkness spring and autumn migration assessment. It is not clear these gaps and need for connectivity assessment were completed.
  - Approval cannot be given until SNH (2014) guidance has been met and gaps addressed.
  - In particular, BWI can see no evidence that weekly surveys were complete during migration period for GWFG.

- SPA connectivity analysis for GWFG required for sites within 8km as recommended by SNH (2014) guidance
- Winter Ornithological Assessments roost surveys should have been carried out for sites beyond 1km of proposed WF site, including along shores of Lough Ree.
- Dawn and dusk surveys for GWFG should be completed having regard to SNH (2014) guidance on nocturnal feeding of wintering birds.

- Raptors
  - Buzzard, kestrel, sparrow hawk, merlin and peregrine falcon detected in breeding bird surveys; three Annex I raptor species recorded within the proposed development area and surroundings – Hen Harrier, Merlin and White-tailed Eagle.
  - Merlin – notoriously difficult to detect. Once identified onsite, a full breeding survey should have been completed as per SNH (2014) guidance, which requires 2 years of surveys within 2km radius of breeding and roosts sites (minimum 36 hours per VP per season between sunrise and sunset), before approval can be given.
  - Suitable foraging and nesting habitat exist on site and in the surrounding area (active raised bog and forestry) but is fragmented and may entail large search areas for foraging. Cannot be inferred that the habitat is not important given its central location within a mosaic of suitable habitat. Isolated populations within the midlands may be significant.
  - Peregrine falcon – the absence of breeding Peregrine cannot be inferred and require a full breeding survey before approval can be completed.
  - Barn Owl – Red listed BoCCI, 50% declines in 25 years. Species of European Conservation Concern (SEC3). Dedicated survey required to detect this species before approval can be given.

- Curlew – Red listed BoCCI; 96% decline in breeding populations, with risk of extinction within 5-10 years, therefore every breeding pair is significant and should be protected.
    - Lough Ree breeding Curlew populations is one of most important in country, one of 7 prioritised by NPWS in the Curlew Conservation Programme
    - NPWS pre-planning highlight breeding populations on Inchenagh and Clawinch islands of Lough Ree, as well as breeding behaviour noted at Lough Bawn to southeast of site. Curlews were recorded three time during the 2015 breeding season surveys, with probable breeding at Lough Bannow Bog pNHA fringing the site (28ha not subjected to extraction) and a displaying pair recorded displaying >500m from WT21. Also 29 flights recorded during the 2016 season.
    - Suitable habitat for Curlew exists (8ha) associated with Lough Bawn pNHA, an internationally important site within the site boundary which is noted as at risk by IPCC from reduced water level and must be protected as a priority, with a rehabilitation plan.
    - Should approval be given, conservation management works be carried out on Lough Bannow Bog pNHA and Lough Bawn pNHA to improve the conservation status of peatland habitat, which may ameliorate any potential negative impacts to breeding Curlew.
    - Dedicated breeding Curlew survey required, including around Lough Bawn Bog pNHA.
- Derryaroge Bog
    - Clear connectivity to River Shannon, reflected in the usage of both sites by numerous species.
    - Flight line data clearly illustrates the significance of the River Shannon as a flight corridor by Lapwing, Wigeon, Mallard, Cormorant, Black-Headed Gull and Lesser Black-Headed Gull.

- Flight line data highlight that Derryaroge Bog supports wintering Kestrel, Mallard, Whooper Swan, Mute Swan and Golden Plover and is significant for Annex I species and BoCCI.
- Hen Harrier, Golden Plover and Lapwing were all recorded associated with lands adjoining the River Shannon to the north.
- Golden Plover and Lapwing have a high collision risk mortality rate (2 and 16 p.a., respectively).
- A White-tailed Eagle was recorded, but this population is likely to increase within the Shannon catchment, and the species is at high collision risk.
- Based on the number of flight lines for Whooper Swan, Mute Swan, which are vulnerable to collision within Derryaroge Bog and the importance of the River Shannon as a corridor for birds, it is recommended that permission be refused for WTs 1-9.

6.2. Planning Authority

The observations of Longford County Council (received 12/04/19), separately comprising those of the elected members and those of the executive branch, may be summarised as follow:

Observations of the Elected Members of Longford County Council –

- The members of Longford County Council unanimously agreed to oppose the proposed windfarm, citing its excessive industrial scale impact on the cut away bogs; in view of the Councillors' support for natural regeneration of the bogs as part of the CDP's proposals for the Mid-Shannon Wilderness Park (MSWP), the proposed development would environmentally damage the bogs forever, would have a detrimental impact on the area and on the tourism potential, the MSWP and the potential for the renatured bog to be designated as a UNESCO designated natural site over time;

- Negative environmental impact
- Negative social and human impact
- Negative traffic impact during construction and inadequacies of local roads to cater for this
- Negative height impact of WTs higher than Lough Ree Power Station stack
- Negative visual and noise impact
- Negative impact on groundwater
- Negative impact on Air Corp emergency services
- Wind farm will become obsolete and turn Longford into a rust belt
- The absence of National Wind Farm guidelines

Observations of the Executive of Longford County Council –

Note: To avoid undue repetition within the Inspector's Report, I have limited the summary of my review of the Executive's written observations to Parts VII Key Issues Overall Considered View, Part VI Comments on EIAR and NIS and Part V Internal Department Reports (in that order), and excluded Part I Introduction and Purpose of The Report, Part II Site Location and Development Description Overview, Part III Policy and Guidance and Part, and Part IV Planning History, the main points of which are contained and/or have informed other sections of my report.

Overall considered view:

- Wind energy development is supported by European and national policy concerning GHG emissions;
- Need for improved spatial dimension for planning of future wind energy development is recognised at national, regional and local policy levels but it yet to be published for national or regional levels;
- The draft Renewable Electricity Policy and Development Framework intended to provide a broad spatial dimension identifying suitable strategic areas for renewable energy generation of scale to inform the revised NSS [NPF], the Regional Planning Guidelines [RSESs] and development plans is still

outstanding, and no regional study has been completed jointly between the local authorities of the Eastern and Midlands Area;

- Longford County Council adopted approach to wind energy development is based on differing potential of the defined landscape character areas to accommodate WTs, subject to normal planning, environmental and landscape sensitivities considerations;
- Wind energy development may be regarded as open for consideration within areas of windfarm potential identified in appendix 5 of the CDP, and as generally acceptable under the WEDG 2006 subject to, inter alia, design and siting considerations including spatial extent and WT height within specific landscape character types; the proposed development falls predominantly within a '*windfarm potential area*';
- The proposal will significantly increase renewable energy production and, subject to implementation of all relevant mitigation measures, the Executive is positively disposed to the construction of the wind farm at this location

Key issues:

- Policy & standards - The CDP objective to prepare a wind energy strategy is deferred pending publishing of finalised revised WEDG, but provides some parameters for consideration of wind energy development; CDP policies ENV 17 and AGR 4 relate to cutaway bogs and renewable energy; the MSWP amenity use is included into the proposed development with 30km roads and trackways which can be used by the public, and with links included to the Royal Canal and indicated parking for site amenity users; proposal is compatible with the amenity use of rehabilitated bogs as outlined in the MSWP;
- Alternatives [EIAR] – use of lands other than those in ownership of BnM not considered as alternative option; use of BnM lands other than the two cutaway bogs not considered in alternative layout;
- Uncertainty – a determination of make and model of WT to be used would have provided more certainty and clarity to all studies and assessments undertaken;

- Robustness of cutaway and cutover bogs comprising majority of the site – national, regional and county level policy recognises these landscapes as potentially robust areas to absorb a variety of appropriate developments;
- Cumulative effect – proposal needs to be considered in view of Slieve Bawn WF (including associated inter-visibility) and the potential for further WF proposals on neighbouring BnM lands;
- Cultural and natural landscape impacts – considerable visual impact will result, including proximity to Lough Ree, the River Shannon and the Royal Canal in addition to long-range views from important historical topographical vantage points such as Granard Motte, the visual impact on which is not clear as having been fully assessed (no photomontage); the Council's Heritage Officer advises in the event of a grant of permission that every effort should be made to minimise the visual impact on the visual amenities (to and from) protected structures and key sites (not limited to Corlea Trackway Visitor Centre) by way of screening or, where necessary, the repositioning / removal of WTs 17, 18, 19 and 21;
- B.E.S.S fire risk – The CFO has significant concerns in relation to the adequacy of fire safety measures of the proposed Battery Energy Storage System;
- Noise impact – suitably scaled mapping is required which identifies noise result data relative to dwelling / building locations to allow full implications of proposed WF to be more thoroughly assessed and to clarify noise data in the EIAR;
- Shadow flicker impact - suitably scaled mapping is required which identifies shadow flicker result data relative to dwelling / building locations to allow full implications of proposed WF to be more thoroughly assessed and to clarify shadow flicker data in the EIAR;
- Noise, vibration and shadow flicker – particular attention should be given to dwellings, schools and building located along the R398 which will have WTs located to the northwest and southeast (i.e. to the front and back);

- Conditions – does not recommend specific conditions with wording, but conditions as topic headings:
  - Requirement for EMP;
  - Noise and vibration monitoring;
  - Plan for controlling shadow flicker monitoring complaints within 10 rotor diameters of a WT;
  - Control of light nuisance from safety/navigation lights on WTs;
  - Limits on hours of operation of construction activities to mitigate noise and vibration;
  - Noise survey and day and night time noise limits;
  - Dust monitoring, limits and controls during construction phase;
  - Surface water and ground water protection;
  - Fire safety;
  - Construction management plan and traffic management plan;
  - Advanced notice of requirement for road closures and speed limit restrictions;
  - Provision of evidence of appropriate liability and indemnity insurance for works to public roads;
  - Details and requirements for reinstatement works to public roads;
  - Archaeological monitoring of ground works;
  - Requirement for a geologist;
  - Requirement for pre-commencement road surveys;
  - Requirement for an ecologist;
  - Proposed Community Gain Scheme, and Near Neighbour Scheme in line with existing such scheme active at other BnM Powergen WFs, – a condition should be attached clearly detailing the structure, particulars and procedures under which funding and grants are to be administered and implemented.

Comments on EIAR and NIS :

The main issues of concern may be summarised as follow:

- Chapter 2 Description of proposed development – Problematic that the make and model of proposed WT is not identified as this is central to the data that feeds into and forms the basis of noise assessments, visual impacts, ecological impacts, etc.
- Chapter 9 Landscape and Visual – The Granard Motte has not been taken into consideration in the visual assessment?
- Chapter 10 Shadow flicker – Mapping shadow flicker results would be beneficial to clarify potential impacts and the subject matter; suggests overlapping mapping on shadow flicker with the mapping provided on the location of dwelling houses in Appendix 10.2;
- Chapter 13 Noise and vibration – Vibration is addressed as a potential construction impact only, not in relation to vibration at operation phase and no mitigation measures have been identified;
- Chapter 15 Cultural heritage – The planning authority refers to the Council's Heritage Officer's report recommendation concerning mitigation measures in the event of a grant of permission with particular regard to WTs 17, 18, 19 and 21, as detailed at bullet point *cultural and natural landscape impacts,* above;

Comment on NIS

- The Board should satisfy itself that adequate information has been given in terms of the various method statements and design details yet to be provided.
- This information is required in order to ensure a full Appropriate Assessment can be carried out by the Board to determine if the proposed development is likely to have a direct, indirect or in-combination impacts on the habitats and/or species for which the Natura 2000 sites identified in the EIAR are designated.

Longford County Council Departmental Reports

Chief Fire Officer (26/02/19) – Note: The report does not express an objection to the proposed development in principle or otherwise.

- The EIAR (s.2.4.5) provides little or no information regarding the proposed BESS or the likely impact it may have on the environment, including consideration of impact on the wider community, in the event of an explosion or fire;
- No detailed design available until post decision via competitive procurement process;
- Prudent to identify potential hazards for BESS installation and provide for mitigation prior to decision;
- Prior to granting permission, in the absence of specific fire safety policy / regulation / standard for BESS installations (in Ireland or in the UK) the applicant should provide a comprehensive Fire Safety Assessment for the proposed BESS, carried out by a suitably qualified technical advisor to address the areas of: (a) consequence and dispersal model for BESS taking account of fire and explosion; (b) hazard analysis for design, operation and maintenance of BESS to include fire and explosion; (c) risk assessment for design, operation and maintenance of BESS to include fire and explosion; (d) details of management of potentially explosive atmospheres to include explosion protection document and hazard area classification; (e) evidence of compliance with ATEX Regulations; (f) ventilation requirements; (g) fire suppression system (special extinguishing agents shall be matched to the appropriate hazard; (h) management of firefighting / extinguishing agent run-off (details of bunding systems, storage tanks capacity) and drainage mechanism;
- Prior to the granting of permission, a Fire Safety Assessment Determinations shall be made regarding the adequacy of the fire safety measures for the proposed BESS, which shall clearly demonstrate that with suitable mitigation infrastructure the proposed works pose little or no threat to the community and environment;

Water Services (undated) – Note: The report does not express an objection to the proposed development in principle or otherwise.

- Applicant to liaise with Irish Water (IW) where proposed works are on/near IW infrastructure;
- A connection agreement with IW must be signed prior to commencement of development and in accordance with the standards and conditions of that agreement where a connection is proposed to IW networks;
- Any connection to IW infrastructure will be subject to the constraints of the IW Capital Investment Programme in the interest of public health and environmental sustainability;

Heritage Officer (15/03/19) – Note: The report does not express an objection to the proposed development in principle or otherwise.

Regarding natural heritage –

- Not within designated Natura 2000 site, but within a number of kilometres of SACs and SPAs relating to protected bird species, including migratory birds;
- Notes the review and assessment of potential impacts on key sites and species in the EIAR and the negative impacts predicted on bird species, in many cases deemed slight and short-term, with collision risk deemed quite low for most species, with the measures to minimise same noted as provision of large spacing and setbacks;
- Should permission be granted, every effort should be made in construction and operation phases to minimise the impacts on bird species, in particular migrating bird species, possibly including adjusting operation times and cut-in speeds during key periods to minimise strikes (referring to collision risk);
- Noting proposed mitigation measures for protected mammals, should permission be granted the presence of protected species should be monitored and appropriate measures taken to support such species;
- The recommendations of Bat Conservation Ireland appendix 6.5 should be adhered to and a licenced bat worker should create a site-specific approach to be taken to individual roosts. The proposal to maintain some vegetation, as well as carcass search to inform adjustment in operation of WTs is agreed with.

Regarding cultural heritage and archaeology –

- The RMP shows a very large number of identified monuments and national monuments (Corlea Trackway) located within the application site and within the vicinity. There are also historic structures, including protected structures in the area;
- Notes positively the EIAR assessment excepting the very limited information provided on the mythological significance of the area, despite the connection that the Corlea Trackway and Ardagh Mountain/Hill (believed site of Brí Leith) has to the legend of Tochmarc Étíne (The Wooing of Etain), like Rathcrogan;
- No individual or site-specific mitigation measures are noted for archaeology, but the recommendations for archaeological assessment and monitoring prior to and during the construction phase is noted and supported;
- Should permission be granted every effort should be made to minimise the visual impact that the WTs and substation have on visual amenity, to and from protected structures and key sites not limited to Corlea Trackway Visitor Centre, undertaken by screening or, where necessary, repositioning / removing WTs which have a negative effect, noting WTs 17, 18, 19 and 21 in particular;

Roads Design (20/03/19) – Note: The report does not express an objection to the proposed development in principle or otherwise and recommends 10no. conditions be attached relating to, as follow:

1. Pre-condition road survey including PSCI rating, IRI, FWD, RUT depth, MPD, SCRIM and video survey prior to commencement of construction, and post-construction survey, the timing to be agree with LCC, and with repair to at least previous condition;
2. Pre-condition culvert / bridge survey on haul routes R392 (Ballymahon to Lanesborough), R398 (junction with R392 to site entrance on R398) and N63 (Lanesborough to Longford) including load bearing capacity and suitability to carry oversized loads; the identification of any pre-works strengthening required to be carried out by and at the cost to the applicant in consultation with LCC;

3. Post construction culvert / bridge survey on completion of all works, with all consequential repair/strengthening works to be carried out by and at the cost to the applicant in consultation with LCC;

4. Liaise with Roscommon regarding haul routes on approach to Lanesborough via Co. Roscommon;

5. Localised pre-works pavement strengthening shall be required at construction material access junctions nos.1, 2 and 3 (figure 14.5b, chapter 14 of EIAR) ahead of construction phase in order to limit potential damage from HGV and oversized loads turning movements, the details to be agreed in advance of construction;

6. If Roads Design preferred means of connection to substation location option B from a Roads Design perspective is an overhead line is not viable the proposed underground route (drawings no.10825-2011) shall be reconfigured to align with the overhead option (i.e. to cross the R392 perpendicularly not to run 300m along the R392) and the following conditions shall apply –

    - Applicant to apply for road opening license;
    - Trench reinstatement to accord with latest version '*Guidelines for Opening, backfilling and Reinstatement of Trenches in Public Roads*' (The Purple Book), except where noted otherwise, but may require special consideration in agreement with LCC in areas of poor ground;
    - 2-year defects liability period to apply from date written notification given that permanent reinstatement has been completed;

7. Construction traffic shall be restricted to N63, R392 and R398 (between its junction with R392 and site Access Junction no.3 (Figure 14.5b, Chapter 14 EIAR) and is not permitted on R398 north of site entrance no.3, L-1163, L-52512, L-5260, L-5269, L-1162 and L1170;

8. The applicant shall provide for the duration of the project: cover temporary employment of dedicated liaison engineer appointed by LCC, or other appropriate agreed arrangement with LCC, at the applicant's cost; dedicated person on applicant's project team to act as point of contact / liaison for LCC;

9. Provide detailed Construction Traffic Management Plan to address at minimum: appointment of traffic management co-ordinator for duration of construction; relevant temporary traffic management plans including signage; programme of deliveries in advance of delivery of WT component and large concrete pours to inform Municipal Area and An Gardai; abnormal loads to be permitted and notified separately to Municipal Area; no parking to be permitted on public roads surrounding the site; no queuing of deliveries on public roads to be permitted; public roads to be kept clean of mud/debris from site during construction, with road sweeper and wheel washes to be provided; noise and dust management plans required;

10. Applicant to engage with LCC regarding permanent dedication to LCC of 10m strip of BnM land either side of R392 for purpose of future road improvement works for c.1km stretch in townlands of Derryadd and Derryveagh (approx. ITM co-ordinates E609069, N761946 to E609893, N761425);

- The Roads Design further notes the extant permission for a solar farm (ref.18/135) on adjacent land, and the absence of a grid connection route for same and advises the applicant to engage with the developers of same to investigate the potential to provide grid connection infrastructure within the WF site to facilitate a grid connection of the solar farm.

6.3. Prescribed Bodies

6.3.1. Inland Fisheries Ireland (received 28/03/19)

- Contrary to p.40 of the EIAR, IFI issued a response to Tobin's scoping request on 17/05/18 which included a map outlining the site boundary, basic preliminary information but no detailed proposals. IFI responded, requesting a further consultation before planning was submitted, but received no further correspondence prior to the submission of the application;

- Proposed development is located in close proximity to and has potential to impact on the following watercourses:
  - Ballinakill River and tributaries bordering the site, a salmonid watercourse and tributary of the Shannon, with good stocks of brown trout and a valuable nursery stream with good trout spawning habitat;

- Curraghroe stream bordering and crossing the site, a salmonid watercourse and tributary of the Shannon, with good stocks of brown trout and coarse fish and supports three year classes of wild brown trout downstream of site;
- Ledwithstown River tributary emanates from the site and also a tributary of Lough Bannow stream;
- Site boundary extends to Royal Canal, a valuable angling amenity, the access to which should not be impinged upon by construction works; IFI queries the rationale for the proposed wayleave to the RC; not in favour of discharge of waters to the RC during construction;

- It is not evident that the EIAR (desktop study or sampling) includes a detailed consideration of the watercourses within the site boundary which will receive drainage from the site; physical assessments including water quality and invertebrate data and an assessment of potential impact on these watercourses is required before a decision is made:

  1. *All watercourse that will receive drainage from the construction sites of the turbines or the access roads must be assessed in terms of aquatic biodiversity with particular emphasis on fish, the food of fish, spawning grounds and fish habitat in general. In this regard changes to river morphology should be avoided;*
  2. *The aquatic habitat and physical nature of any watercourse affected by the development must be fully described in detail. This includes areas of open water, pool riffle glide sequences, density and types of aquatic vegetation, description of riparian zones to depth of at least 10 metres on either bank, etc.*

- Serious concerns about potential impact primarily during construction phase, in particular potential run off to watercourses from construction, excavation and storage of peat excavation and storage activities;
- Site drainage is of concern as there is need for a comprehensive monitoring programme; a SWMP should contain detailed proposals of a monitoring programme for the construction period but none are provided; detailed

structured monitoring programme should be provided to IFI and the local authority for agreement prior to any grant of permission;

- Consideration should be given to establishing bog and other suitable vegetation in places on the site to assist with suitable drainage (in place of substantial de-vegetated area associated with peat harvesting which increases risk of runoff);
- Peat silt can require extended periods to settle, especially when high volumes of water are pumped or drained as during construction;
- The indicative construction timetable shows no cognisance of the closed season applying to Ballynakill stream and other salmonid watercourses, with excavation/upgrade of roads, installation of drainage measures, installation of water protection measures, opening of borrow pits programmed for October-December when discharges of silt area especially damaging when spawning occurs until ova hatch and grow to be mobile; items 3, 4 and 5 of the plan are of particular silt risk;
- Serious concern about potential discharges during construction with impacts including damage to viscera and gills resulting in disease and possibly death of fish, smothering of effs and coating of redds during spawning impacting greatly on population, smothering of invertebrates which are food of fish, fish kills resulting from concentrated or prolonged periods of suspended solid releases;
- Suspended solids and peat siltation risks during constructions, extractions, processing of materials from borrow pits and during filling of borrow pits are considerably higher than for peat extraction;
- There is no demonstration in terms of measurable detail how the applicant will achieve greenfield runoff rates and '*no discharge of suspended solids or any other deleterious matter to watercourses*' (drawing 10325-2024), or details of sizing and efficiency and effectiveness of these ponds to demonstrate they'll be capable of dealing with the volumes and quality of water arising during construction, or details of performance and specification of silt bags;

- Essential that these streams are afforded appropriate protections. During extended periods of dry weather flow (DWF) groundwater can make up 95% of surface water discharge especially to feeder streams; pollution of GW, aquifers and associated turloughs must be prevented;
- Concern about effectiveness of silt fencing, particularly in relation to maintenance and installation;
- Specific details are required of drainage programme proposed for construction and operational drainage scheme, including silt control methods details in terms of water quality and flow rates; no deterioration of waters should be allowed at any time having regard to the WFD aim and discharges must be less than 25mg/l in construction phase and the assimilative capacity must be demonstrated as available to allow this level of discharge;
- Settlement ponds or other effective techniques such as filtration should be used to treat suspended solids with ponds sized for 24-hour retention (1:10 years), with relevant calculations provided;
- Regarding potential for discharge of polluting or deleterious matter to watercourses, the EIAR should also focus on the physical characteristics of watercourses and their ability to assimilate any pollutants discharged from the site, including from foundation works;

Surface Water Management Plan (SWMP) Summary View –

- An independent comprehensive water quality monitoring programme (parameters, locations and frequency to be agreed with IFI and the LA) should be agreed with IFI prior to any grant of permission;
- Monitoring of discharges, ponds and watercourses will be required on routine basis and which should be increased in frequency during any high risk works;
- Method statements for works including identification and assessment of risks to the aquatic environment, appropriate mitigation measures and environmental incident procedures should be supplied to IFI well in advance of construction and must be agreed with IFI prior to commencement of site works, which applies in particular to pumping waters from turbine bases

during construction, to all works within 50m of a watercourse (including seasonal lakes) and road building;

Peat stability and landslide concerns –

- The Peat Stability Report identifies a *medium* level of hazard during construction, reducing to the higher level of *low* hazard (9 in many cases), with likelihood of collapse during construction considered likely to almost certain in the absence of mitigation; landslides pose potential serious impacts on watercourses, water quality and to fish stocks through fish kills through entering of deleterious matter to the watercourse and through bank collapse;
- Insufficient detail provided re operation of the 5 borrow pits in terms of drainage and geo-technical reports to show excavation and filling will be done in manner to provide for stability within the pit; a specific stability assessment for borrow pit operation should be produced;
- Borrow pit drainage details, with calculations demonstrating rate of discharge and likely water quality to be achieved, and specific monitoring details for operational period and 1-year post completion should be provided; drainage of borrow pits during excavation, operation and on completion of refilling is of concern;

Road construction –

- Serious concern for IFI as road constructions create preferential flow paths for SW and ensuring normal flows are maintained during and after construction as changes to water transportation in certain watercourse may put additional pressure on same and interfere with sustained flow particularly during dry weather;
- Specialist expertise should advise on road construction material - avoid use of sedimentary rock, such as shale, in road construction due to poor tensile strength and propensity to release fine sediment through being crushed by heavy vehicles;
- Floating road construction and upgrading of existing roads will add loads to peat soils, where stability analysis has shown unfavourable factors of safety;

- The principles and standards in Shannon Regional Fisheries guidelines '*Protection and Conservation of Fishery Habitat with Particular Regard to Road Construction*' (2009) [not attached to submission as indicated] should be utilised and adhered to;

Culverts

- IFI must be consulted in relation to *all* watercourse crossings and will advise on culvert sizes and types required, subject to a minimum 1200mm pipe size for all natural watercourse, embedded by minimum 300mm for pipe and 500mm for box culverts;
- Specific details of each culvert have not been provided with the application and the generic detail (drawing 10325-2025) does not show detail of embedment depth below existing invert level of water course;
- Instream works, crossings or other works impacting directly on a watercourse should be carried out from 1st May to 30th September to avoid impacts during spawning season and method statement must be agreed with IFI;

Battery Storage

- Fire or explosion poses substantial risk of deleterious matter entering watercourse; an Emergency Response Plan should detail measures to protect the watercourse and groundwater in the event of an incident;

Buffer Zone

- 20m buffer zone free from development from top of bank of watercourse and any riparian vegetation shall be left in place where possible, with the exception of scrub which can be removed;
- IFI guidelines document outlined benefits of riparian zones to river attached [not attached to submission];
- Access to stream and rivers and along banks shall not be interfered with as a result of this development;

Other Pollutants

- Refuelling to be carried out in designated area sufficiently setback from watercourse, with fuel bunding capacity of 110%; mobile refuelling must specify a minimum setback from a watercourse and the mobile fuel bowser must be refuelled in a bunded area;
- Risk of significant impacts or effects from concrete leachate which is toxic to fish, alters pH of water and impacts on ecological balance of a waterbody; any concrete used in proximity to a watercourse shall be precast; designated areas shall be identified for washing of concrete chutes sited in agreement in advance with IFI to minimise risk of water pollution;
- A site-specific Construction Environmental Management Plan with detailed mitigation and control measures should be produced and agreed with the relevant parties and IFI prior to commencement of works on site;
- Must adhere to IFI's '*Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Watercourses*' during construction;
- Must agree method statements for high pollution risk areas of construction likely to give rise to suspended solids and the timing of such works may be restricted to May 1st to September 31st and must agree site drainage during construction period including appropriate settlement measures;

Cabling and grid connection

- Method statement for watercourse crossing must be agreed with IFI and may be subject to closed season;
- Setback overhead line poles 20m from watercourse where possible, or in agreement with IFI otherwise;
- No impacts should occur on watercourses from delivery of abnormal loads and IFI should be consulted in relation to potential impacts on existing bridges, culverts and watercourses with cognisance of closed season in proposed timings;

Biosecurity

- Must include for pre and post works in watercourses;
- Many invasive species will require treatment in situ (e.g. Japanese Knotweed) and not just disposal offsite at an appropriate licensed facility;
- Where possible efforts should be made to re-establish bog vegetation and IFI proposes that in the event of a grant of permission, in-keeping with the WFD, remediation would be carried out on the previously widened/deepened channels (to be done in conjunction with IFI and relevant authorities) to reinstate flow morphology (using 2-storage channels where necessary), discourage deposition, remove silt deposits and reinstate gravels where necessary to provide improved conditions for fish stock;
- In view of WFD objective it is imperative that the development not impact negatively on water quality of those waters with moderate or poor rating; Q-values should be determined and continued on a quarterly basis on the sites sampled with immediate effect to determine baseline dataset and account for seasonality of invertebrate sampling;
- To ensure comprehensive baseline data in relation to fish stocks, water quality and flow data and invertebrate samples must be compiled in advance of work commencing and water quality must be monitored under a comprehensive monitoring programme;

Conclusion -

- The issues raised above must be addressed and supplementary information provided (including more detailed site surveys, calculations and figures related to drainage volumes and water quality, and details of quarry peat storage volumes and drainage) to enable IFI to make a full assessment of impacts and adequacy of site drainage and peat storage proposals prior to a grant of permission.

6.3.2. **Failte Ireland**

- Failte Ireland has assessed the potential significance, if any, of the proposal on the tourism amenity of the local and wider areas and in view of the policies and objectives of LCC as well as tourism policy documents;

Tourism and Recreational Profile of Receiving environment -

- River Shannon, a major tourism attraction and amenity; the river, its lakes and tributaries will be avenues for visitors getting 'off the beaten track' in Ireland's Hidden Heartlands;
- Royal Canal and towpath blueway, contributing to 'slow tourism' through boating, cycling and walking;
- Corlea Trackway Visitor Centre, highlighting the importance of the archaeological site for understanding prehistoric and iron age society and culture is an important attraction in Ireland's Hidden Heartlands;
- Centre Parcs at Ballymahon is due to open summer 2019;
- The annual visitor attitudes survey confirms that beautiful scenery (92%) and natural, unspoilt environment (87%) were key factors in holiday makers deciding to holiday in Ireland;

Ireland's Hidden Heartland -

- Regional brand is designed to boost tourism growth and drive visitor growth in the Midlands;
- Destination brand rooted in the Midland's rich natural assets, including its many lakes and the expansive regenerating boglands accessed through a lattice of off-road walkways and blueways, with the aim to leverage a growing tourism trend for soft activities (outdoor activities combined with a nature or cultural element) and encouraging visitors to explore the region through a range of activities including walking, food, cycling, fishing and boating routes; and the River Shannon is the central focus of the brand being subject of the Shannon Tourism Masterplan currently under development by FI in partnership with Waterways Ireland and local authorities;

Tourism and Wind Energy Development -

- FI recognises the importance of developing the State's renewable energy sector and supports the adoption of Wind Energy Strategies identifying potential sites for WE infrastructure to ensure it is plan-led and located to avoid/minimise disproportionate negative impacts on other land-uses and receiving environments;
- LCC does not have a Renewable Energy Strategy notwithstanding the council's intention to prepare one (policy RE1), but areas where wind farms will be encouraged, based on SEI's Wind Atlas, are detailed in appendix 5 of the LCDP; Five of the proposed WTs could be considered outside the defined area;
- Notes BnM's strategy to decarbonise, moving away from peat and into renewables, resource recovery and new sustainable business, with the '*Strategic Framework for The Future Use of Peatlands*' establishing a framework for the company's on-going assessment of BnM's c.80,000ha landbank principally located in the midland counties
- FI supports the WE industry subject to proper planning and environmental requirements being met, but its position is also informed by research it commissioned on visitor attitudes (2007, 2012 and 2018); the 2012 study found more exposure of visitors to WFs and a sharp rise in both negative and 'no impact' opinions compared with 2007, strongest negative attitude was from those on country side breaks, not-active breaks and the over 65s, and a preference for smaller groups of large WTs rather than larger groups of small WTs, with participants most averse to WFs in coastal areas followed by fertile farmland; 2018 study found the majority of visible development does not appear to have any adverse effects on the impression of the quality of the landscape;
- FI is supportive of LCC policy and objective which identifies the site as within as a preferred location for WF potential;

Construction impacts (key impact) -

- Considered in the EIAR; FI defers to the Board's judgement;

Changing profile of energy generation in the county (key impact) -

- FI supports the WE industry subject to proper planning and environmental requirements being met;

Impacts arising from operational stage (key impact) -

- Visual impacts and operations may affect tourism;
- Site contained within LCU-6 Peatlands under the county Landscape Character Assessment, identified as a low sensitivity landscape but the Royal Canal passing though LCU-6 is assigned a high sensitivity designation; areas of High Amenity Value nearby, identified as high sensitivity landscapes, play a regionally important role as tourism and amenity features, a role which will only increase in significance as FI's newest brand proposition, *'Ireland's Hidden Heartlands'*, the Shannon Tourism Masterplan initiative and the implementation of existing and emerging Blueways and Greenway strategies;
- In S.9.4.2.2.2 considers the impact on the visual amenities of viewpoints Ah1 and AH2; it is important to consider the significance of the visual impacts and change in the landscape character on the canal on its potential amenity value in view of the likely future use of the area relating to amenity and recreation having regard to the emerging Blueway and Greenway strategies;
- Regarding viewpoint AH3, agrees with the classification of it as of high sensitivity; WT21 in particular has the potential to affect the setting of the visitor attraction and impinge on the visitor's ability to imagine the landscape of 2000 years ago;
- S.9.4.3.6 of the EIAR does not include the River Shannon as a key tourism, amenity and heritage feature within the central study area; the study has not selected any photomontages north of Lanesborough from the River Shannon within 2km of the site; the River Shannon, its lakes and tributaries are of key importance as they key avenues of visitors getting 'off the beaten track' in Ireland's Hidden Heartlands;
- 26no. designated scenic views relevant to the assessment set out in the EIAR within 30km radius from four different development plans – the nearest is 5km, but the majority (15no.) are greater than 10km;

- As the profile of recreational activities in the area is landscaped based (walking, cycling, boating and outdoor pursuits), the protection and management of landscape character is as much about protecting an economic and cultural asset as about the physical context of those landscape features;

Amenity Plan -

- Welcomes the Amenity Plan which acknowledges existing and emerging amenity and tourism infrastructure and the proposed 30km of WF roads network presents an opportunity to create a series of walking and cycling loops linking to settlements along public road and to the broader Blueway and Greenway network in Longford, in particular the three distinct walking / cycling loops on proposed WF roads which would add to Ireland's Hidden Heartlands 'active in nature' approach;
- Consideration should be given to softening the proposed 6m wide surface access roadways by rewilding 1-1.5m either side post installation as the wide roads are significant interventions at odd with the intimate nature of connection with the landscape at the core of Ireland's Hidden Heath proposition;
- Corlea / Royal Canal / Keenagh Loop is adjacent Corlea Trackway visitor centre with its adjacent dedicated car park and the necessity of an additional expanse of hardstanding car parking in close proximity is questioned; any additional such facilities should be of a permeable surface;
- Provision of lighting should be carefully considered as the area has little or no light pollution at present and may have potential as an open-air Dark Skies Observatory.

6.3.3. HSE

- EIAR – satisfied that the NTS meets the HSE's review criteria;
- Public and statutory consultation – satisfied that consultation for the project was adequate and meets the HSE's criteria;

- EIAR Population and human health – agrees with the comments on p.177 Chapter 5 EIAR) around the lack of baseline data available in Ireland for a full Health Impact Assessment as per the Public Health Ireland 2009 Guidance;
- Agrees with CH.5 p.178 EIAR conclusions that Health Assessment should be incorporated into the Environmental Assessment:
- The published "*preferred draft approach*" (PDA) of the WEDG revisions to noise recognises that change in a noise environment is a significant issue for health and not just absolute exposure, and the HSE refers to the detail of the PDA on noise in the announcement from Ministers Coveney and Naughton from the DHPLG website [13/06/17];
- Concur that dust control methodology from construction sites is well established and can be implemented effectively to protect human health;
- Agrees that technology should ensure there should be no shadow flicker from WF development as per the PDA;
- Welcomes consideration of potential health improvement from the proposed development (s.5.3.3.12), with the development of roads and walkways to increase opportunities for physical exercise in the area welcomed, but suggests that consideration be given to linking these into centres of population with connectivity to existing walking and cycling routes;
- Hydrology – GIS [GSI?] well data is not always accurate and well data should be verified through site surveys or communication with land/property owners; re s.8.4.3.2 there is potential impact from discharge of foul wastewater from temporary construction compound welfare facilities, but it is noted that chemical toilets are proposed and there will be no direct discharges to ground, and that construction phase mitigation measures to protect ground and surface water;
- Satisfied that if all mitigation measures outlined in the EIAR are implemented in full there is adequate protection of ground and surface water during the construction and operation of the proposed wind turbines;

- Chapter 10 Shadow Flicker, re proposals on p.569 to limit shadow flicker, it is the opinion of the EHS that there should be no shadow flicker exposure at residential dwellings, which opinion concurs with the PDA for shadow flicker;
- Chapter 13 Noise and Vibration – EHS considers it is the magnitude in the change in existing noise environment that it is most likely to cause nuisance and complaints and not assessment against absolute noise exposure;
- Chapter 13 Noise and Vibration – ETSU-R-97 criteria permits changes of 10-15dB(A) in areas of low background noise levels; these significant changes in existing noise environment have resulted in complaints post construction in similar developments; the EIAR continually refers to impact assessment (i.e. a predicted change from existing) but does not tabulate the predicted changes in the EIAR as an addition to table 13.23; the HSE is satisfied that the magnitude of predicted increase over existing background level is 10-13dB(A), which should be made clear in the EIAR, although below the absolute criteria;
- Construction management – Noting proposals to agree a CMP with the PA prior to the commencement of development, the HSE has considered areas of the EIAR where content of CMP are identified and are of the opinion that, if implemented in full, then public health will be adequately protected during construction;
- Subject to implementation of all mitigation measures in full, the HSE has not further recommendations regarding the proposals with regard to public and environmental health.

6.3.4. **Transport Infrastructure Ireland**

- No objection in principle to proposed wind farm development subject to clarification and / or resolution of the issues, below, in view of Official Policy regarding access to the national road network, prior to any decision;
- Arrangements for temporary construction access and turbine component delivery (via access junction 1 to the N63, specified), while temporary and acceptable subject to RSA and appropriate mitigation, should be considered by the Board in its assessment;

- Arrangements related to access to the Amenity Carpark from the N63 where a 100kph speed limit applies, and the alternatives available; the policy conflict (or justification of departure from same, and road safety implications) has not been addressed by the applicant; potential for locating the amenity carpark at a location accessed from the local road network at access junctions 7 or 8;
- Arrangements related to at grade cycleway and walkway amenity trail crossings of the N63, national road at a location where the 100kph speed limit applies (bringing vulnerable road users, including families with young children, into direct conflict with high speed traffic – not addressed in the application) and consideration of alternatives such as use of the existing grade-separated crossings within the applicant's landholding (N63 bog rail crossing c.500m to the west of access junction 1);
- Proposed WT haul route M/N6/N61/N63 – M/N6/N61 junction is part of the motorway maintenance and renewals contract network B operated by Colas Roadbridge Joint Venture Ltd; consult with Roscommon CC as roads authority and TII as national road authority re works proposed affecting said junction in terms of operational requirements (delivery timetabling, potential costs and associated requirements) prior to commencement of development;
- TII does not object in principle to proposals entailing works to existing junctions on M/N6, N61 and N63 but works shall comply with standards outlined in TII publications and be subject to RSA as appropriate; it is recommended that the mitigation measures proposed in the EIAR be included as conditions to any grant of permission in the interest of safeguarding the strategic function and safety of the national road network in the area;
- Structures – permit required for transport of vehicles or loads of excess weight (S.I.5/2003) from each LA through which it is to travel; no technical load assessment of structures appears to have been undertaken in support of the proposed application (it may be that abnormal weight loads may not be a feature of turbine delivery);
- TII is of the opinion that an assessment review of all structures concerned on the proposed haul route is required to confirm same can accommodate the proposed loading associated with the delivery of turbine components where

the weight of the delivery vehicle and load exceeds the permissible limits and that it is critical that a full assessment by the applicant/developer is undertakes and the relevant road authorities along the route confirm their acceptance of proposals which are to be referred to TII;

- It is unclear from s.2.8.4 of the EIAR if any cable crossings of the N63, national road, are proposed; licencing may be required for trenching / cabling proposals on the road network and any requests for such proposal agreed and licenced between the road authority and the applicant which affect the national road network should be referred to TII.
- Copy of TII scoping request response (18/04/18) which, in addition to highlighting the issue of TII policy and potential impacts on N63 and junctions with national roads, the issues pertaining to haul routes and to cabling / trenching works (as raised above) advised the applicant to liaise with LA / RDOs re permitted and future national road scheme; assess visual impacts from existing national roads; conditions and modifications imposed on permitted road schemes in the area and potential for cumulative impacts; have regard to TII publications, guidelines and standards (including on air quality, and noise and vibration, TTA requirement (having regard to thresholds and sub-threshold), RSA requirement); Environmental Noise Regulations 2006 (SI 140/2006) and effect on future action plans by competent authority; EIAR should identify methods/techniques proposed for any works traversing /in proximity to national road network; separate approvals may be required for works traverse the national road network and alternatives to use of national roads forcabling should be investigated.

6.3.5. **Department of Culture, Heritage, and the Gaeltacht (NPWS)**

- Consideration should be given to presenting the context to flights (shown in flight line maps appendix 6.1 & 6.5 CRM) over the development site in map form, presenting relevant foraging and roosting areas (including survey numbers and WT locations) within the zone and, more specifically, the site that relates to the predominant flight lines recorded during surveys for Whooper Swan and Golden Plover.

- Indicate on the map, or in linked data, the frequency and timing of use of flight lines by Whooper swan and by Golden Plover.
- Need to clarify whether any mitigation is proposed to support the continued inter-annual use of opportunistic foraging grounds on site and / or potentially similar inter-annual foraging areas within the site.
- Consideration should be given to providing further detail on mitigation of risks associated with the locating of the WT22 and associated foundations and access track close to raised bog, bog woodland and pioneer fen mosaic habitat associated with 001819 Lough Bawn pNHA.
- Regarding *Vertigo geyeri* (whorl snail), it is unclear if samples were taken and subsequently reviewed off site, or if the search for species was solely undertaken in the field?

6.3.6. **Department of Defence**

- The observations supplied to planners by the Department is referred to on pages 46, 577 and 589 of the EIAR; the information on page 45 and 577 should be noted as the exact observations; the observations on page 577 are slightly different;
- In all locations where windfarms are permitted it should be a condition that they meet the following requirements:
    1. Single turbines or turbines delineating corners of a windfarm should be illuminated by high intensity obstacle strobe lights (Red).
    2. Obstruction lighting elsewhere in a windfarm will be of a pattern that will allow the hazard by identified and avoided by aircraft in flight.
    3. Obstruction lights used should be incandescent or of a type visible to Night Vision Equipment. Obstruction lighting fitted to obstacles must emit light at or near Infra-Red (IR) range of the electromagnetic spectrum specifically at or near 850 nanometres of wavelength. Light intensity to be similar value to that emitted in the visible spectrum of light. Obstruction lights used should be incandescent or of a type visible to Night Vision Equipment.

6.3.7. **Department of Communications Climate Action and Environment**

- GSI has no further comments in addition to the observations, originally dated 17th September 2016, sent in response to the planning application.

6.3.8. **Irish Aviation Authority**

- The following conditions should be attached in the event of a decision to grant permission, requiring the development to contact the IAA to:
  1. Agree an aeronautical obstacle warning light scheme for the wind farm development;
  2. Provide as-constructed coordinates in WGS-84 format together with ground and tip height elevations at each wind turbine location;
  3. Notify the IAA of intention to commence crane operations with a minimum 30 days prior to notification of their erection.
- The applicant should identify measures to be taken if the obstacle lights are rendered unserviceable or when plans to withdraw them for a period of time for maintenance works or similar are necessitated and the operator will contact the IAA as a matter of urgency an any affected aerodrome. The applicant / operator will request that a NOTAM be issued concerning the unserviceability of the obstacle lights affected and will provide to the AIS services. Any affected aerodrome the following information: obstacle- ID, type, position, elevation and light colour;
- As-constructed co-ordinates – if required, the as-construction information to be sent to the IAA to include: no. of WTs, WGS-84 co-ordinates of each WT, ground elevation of each WT (Malin Head OD), blade tip elevation of each WT (Malin Head OD), height of WT from ground elevation to blade tip, SO contour maps of site at both 1:50,000 and 1:12,500 showing location of each WT, and note which WTs have obstacle lighting installed.

6.4. **Oral Hearing**

6.4.1. An oral hearing was held from June 12th to 14th 2019. The hearing was recorded, and the recording is available to the Board. The order of proceedings, timings and

main issues addressed are included in Oral Hearing Overview attached as Appendix 1 to this report

7.0 Assessment

The main issues arising in this case may be addressed under the following headings:

7.1 Validity, procedural and legal issues

7.2 Policy context / principle

7.1. Validity, procedural and legal issues

7.1.1. **Unauthorised development** - It was suggested by observers that the existing use of the site for peat extraction is an unauthorised use in view of Justice Meenan upholding the Board's s.5 Declarations that commercial peat extraction is development and is not exempted development (*Bulrush Horticultural Ltd v An Board Pleanála and others*; *Westland Horticultural and others v An Bord Pleanála and others*). In addition, is has been submitted that the excavated areas are structures within the meaning of the Act and, as such are unauthorised structures in accordance with the High Court and Supreme Court decisions in *(Michael Cronin) Readymix v An Board Pleanála.* Mr Toolan argued that the Board cannot therefore consider an application on the lands and should dismiss it under s.138 of the Planning and Development Act 2000. The applicant (c/o Rory Mulcahy) responded that the judgements of Justice Meenan are not relevant as they relate to S.5 Declarations.

7.1.2. The Planning Authority confirmed to the hearing that it was not aware of any planning permission on this site for the extraction of peat, but also that there was no record of unauthorised development on this site. Regarding S.138 of the Act, there is no provision for the Board to dismiss an application for strategic infrastructure development. The said section relates only to the discretion of the Board to dismiss an appeal or a referral.

7.1.3. **Land ownership** – Michael Farrell claims that his family lands (65ha) were compulsorily purchased for the purpose of peat extraction, with the understanding that the said lands would be returned to the original owners on cessation of the extraction operations. Observers therefore have questioned whether the applicant

has sufficient interest in the lands to make an application for development. Mr Mulcahy asserted that Bord na Mona is the owner of the entirety of the site, including the public roads. It is not within the scope of the Board to determine this legal issue.

7.1.4. In a similar vein, Mr Toolan noted that proposed grid connection option B traverses land outside the ownership or occupation of the developer, which is confirmed in Drawing no.10325-2011. The underground grid connection option is indicated as running along the R392, outside the redline application boundary, if only marginally. This is also the case for a very small section of the overhead alternative option. It would not be unreasonable for the Board to consider this a non material minor drafting error. No such issue arises for grid connection option A.

7.1.5. No to Derryadd Windfarm Community Group (NDWCG) and others also submitted that the failure of the applicant to propose and select one of the proposed grid connection options is contrary to the Directive and to the Regulations, 2001 (schedule 6 thereof), including in view of the judgement of Justice Peart on *O'Grianna v An Bord Pleanála* (IHEC 632), I am satisfied that the applicant demonstrated that this is not the case. Both proposed grid connection options have been subject of assessment and analysis within the submitted EIAR and NIS sufficient for the Board to carry out its environmental assessments and other assessments and decide to grant permission, allowing one of either of the two proposed options be implemented by the applicant, or to require the applicant to implement a specific option in view of the Board's conclusions in its environmental and other assessments. Furthermore, I consider the level of detail provided in respect of the proposed development, including the proposed Battery Energy Storage System (BESS) and grip connection options to be adequate.

7.1.6. **Omission of townlands** – It has been submitted by Bird Watch Ireland and other parties that the application is invalid by virtue of the failure to include two townlands in the list of townlands referred to in the public notices. I would concur with the applicant that this is not material.

7.1.7. **Reference to incorrect section of Act** – I am satisfied, based on the response of Rory Mulcahy that reference to S.37A of the Act rather than S.37B in the cover letter does not invalidate the application.

7.1.8. **EIA & AA** – Referring to, inter alia, the CJEU judgement (C-416/17) in respect *Holohan and others v An Bord Pleanála*, and C-258/11 *Sweetman and others v An Bord Pleanála,* Peter Sweetman submitted it is not possible to legally grant permission in this case as there is an expert who states that the required information is absent (*lacuna*), that there are conflicting opinions between experts making presentations to the hearing (*reasonable scientific doubt*), that the application is dependent on other matters to be agreed / approved in the future, and therefore permission cannot be legally granted. The Board may consider these issues in its carrying out of EIA and AA.

7.1.9. **Public consultation** – John Duffy, NDWFCG and others raised the issue of inadequate public consultation. The applicant has detailed the extensive public consultation process and consultation with relevant bodies carried out at pre-planning stage. The instant planning process, including oral hearing has included the required statutory public consultations. In its observations on the application the HSE indicated that it considered the public consultation process to have been adequate. I am satisfied that the public consultation carried out by the applicant and by the Board has been adequate.

7.2. Policy context / principle

7.2.1. **Energy & climate policy** - The policy context is addressed in detail under chapter 4 of the EIAR. The Board will be aware of the strong and continually evolving international, European and national policy context supporting the development of renewable energy projects to enable Ireland to transition to a low carbon energy economy and meet its international obligations to address climate change, which I have summarised under Section 5.0, above.

7.2.2. There are binding obligations on the State under the *EU Renewable Energy Directive 2009/28/EC* to achieve 16% of overall gross energy consumption to be from renewable sources by 2020. Under the *National Renewable Energy Action Plan 2010* (NREAP), the Government has set a target of 40% electricity consumption from renewable energy sources (RES-E target) by 2020, with a target of 10% and 12% for consumption from renewable energy sources for transport (RES-T) and

heating and cooling (RES-H&C) by 2020 in order to achieve the overall target of 16%. Neither NREAP, nor the Directive, set targets for the proportion of renewable energy from specific sources, such as wind, biomass, etc.

7.2.3. The Government published the *Climate Action Plan 2019 To Tackle Climate Breakdown* on 17th June 2019, following the *Report of the Joint Committee on Climate Action* in March, comprising a detailed sectoral roadmap designed to deliver the required cumulative reductions in GHG emissions to 2030, covering electricity, buildings, transport, agriculture, enterprise and waste. It reports that Ireland will miss its renewable energy target by c.12.5% and its GHG emissions reduction target by c.5% (to 2020) but that we are on course to miss our 2030 GHG emissions reduction target by >25%. It proposes to increase renewable energy from 30% to 70%, with a proposed increase in onshore wind energy capacity of 8.5GW constituting the greatest portion of a 12GW increase in renewable energy to 2030. The proposed wind farm development can clearly be seen to be consistent with this objective to rapidly increase carbon-free energy.

7.2.4. The *Action Plan* also recognises, under S.6 *Better Management of Peatlands and Soils,* the need to develop and manage Ireland's peatland as a carbon sink (to retain and absorb carbon) as part of overall carbon balance sheet of the state. It aims to do so through providing for additional research to assess sequestration, storage and reduction of emissions of carbon through the management, restoration and rehabilitation of peatlands as outlined in the *National Peatland Strategy 2015-2025* (DAH&G/NPWS, 2015); to develop best practice guidance on wetlands management including extracted peatlands; to create incentives for operators to adopt carbon-positive, post-production site management; and to develop further measures to help rehabilitate such degraded peatlands.

7.2.5. The *Action Plan* includes an *Annex of Actions* setting out 183no. actions through which the plan will be implemented. Action 133 is to *Assess and implement mitigation options on post-production, peat extraction site.* Steps to implementing this action are identified as, inter alia, the assessment of *the optimum post production use across all Bord na Móna peat extraction sites* and the *timely implementation of optimum management practices on extraction sites as they are retired from production,* both of which are to be led by Bord na Móna with a timeline

of Q3 and Q3-ongoing, respectively; in addition to a focused research and development on GHG emissions and removals to be led by the EPA.

7.2.6. The *Action Plan* would therefore, in general, and in its specific actions impose obligations on Bord na Mona and similar commercial bodies (and on competent authorities in its assessments) when considering the future redevelopment on our extracted peatlands. This is a significant change to the *National Mitigation Plan* (2017) which only vaguely refers to the *National Peatland Strategy* and to the issue of peatland and carbon emissions . The *Action Plan* makes explicit that Ireland's current approach to addressing climate will require entire sectors of the economy to undergo radical changes, and the approach to the after use and rehabilitation / restoration of industrial extracted peatlands, such as the application site, needs to be seen in this context and also within the context of the binding and the GHG reduction target of at least 30% applying to Ireland under the EU's *Effort Sharing Regulation (EU) 2018/842* (and increased targets going forward). It is important to note that the *Action Plan* was published after the EIAR was prepared, after the application made and after the oral hearing was held in respect of this case.

7.2.7. The *National Peatland Strategy 2015-2025* sets out principles to guide Government policy and to provide a long-term framework for the responsible management of all peatlands to optimise their social, environmental and economic contribution to the State. The interaction between peatlands and climate change is identified as the main cross-cutting issue under the Strategy and it proposes (principle P19) that the potential contribution of peatlands rehabilitation, restoration and enhancement to climate change mitigation and adaptation be fully explored[4], in addition (principle P21) to giving consideration as to how best those sites can contribute to a low carbon economy through use of sites for renewable energy. It asserts that 21% of

[4] Lead by EPA and DCCAE. The *National Peatland Strategy Progress Report 2017* states *Numerous studies are underway on peatland sites in regards to peatlands' effect on climate change including a Trinity College lead study on carbon sequestration at Clara Bog SAC (Special Area of Conservation).*
It also states *DCHG is engaging with the Climate Change, Energy and Communications Section of the Department of the Taoiseach in exploring the potential of wetlands (particularly restored peatlands) to perform carbon storage and sequestration functions that can assist in achieving Ireland's Greenhouse Gas (GHG) reduction* targets.
Furthermore, five of the eight EPA-funded research papers with abstracts appended to the Report relate, at least in part to the issue of carbon sequestration of peatlands, including with reference to peatland restoration.
https://www.npws.ie/sites/default/files/publications/pdf/PSIG%20Progress%20Report%202017%20English.pdf (accessed 01/09/19)

the state is covered by peat soils which are natural carbon sinks, storing c.1566 million tonnes carbon stock and accounting for c.64% of Ireland's total soil organic carbon stock, as is also noted in the *Action Plan*. Conversely, drained bogs become a source of on-going CO_2 emissions, but restoration and rehabilitation can reverse this process. The *Strategy* includes a number of principles to guide the management of industrial extracted peatlands, indicating (s.5.3.4 *Management of non-designated peatlands to stop carbon loss*) that opportunities to restore degraded non-designated peatlands will be explored within the context of arresting carbon emissions.

7.2.8. The Irish Peatlands Conservation Council and other observers raised concern about the failure of the applicant to provide details of the proposed rehabilitation of the peatlands as part of the application. The applicant confirmed to the hearing that the rehabilitation of the industrial extracted peatlands on site does not form any part of application but is to be agreed with the EPA under condition no.10 of the IPC Licence (no.504; see section 4.0, above) governing the existing peat extraction operations. The proposed finished levels of infrastructure across the site, being proposed (generally) at between 0.5m to 1.0m above finished extracted level will dictate the finished groundwater level that can be accommodated across the site and, indeed the applicant confirmed to the hearing that it is proposed to continue pumping the site during the operational life of the wind farm and would avoid the creation of any open water on this site. This will severely limit the potential for rewetting this undulating site and therefore its potential to arrest ongoing carbon emissions from this c.1900ha site, and effectively prevent its ability to sequester additional carbon as is envisaged for industrial extracted peatland sites under the *Climate Action Plan* and the *National Peatland Strategy*.

7.2.9. The Board may consider the proposed application to be premature pending the agreement of the site rehabilitation plan by the EPA. Condition no.10 of the licence does not specifically require rewetting, but it does require the *permanent rehabilitation* of the cutaway boglands and the rehabilitation plan shall include as minimum, *the criteria which define the successful rehabilitation of the activity or part thereof, which ensures minimum impact to the environment.* Whether the approach suggested by the applicant (to include continued pumping) would constitute a permanent rehabilitation is open to question. It should also be noted that the licence was last amended on 26th September 2012, well in advance of the publishing of the

National Peatland Strategy and the *Climate Action Plan*. The Board may consider it premature, in advance of an agreement of a rehabilitation plan by the EPA, to permit the proposed development, which would effectively dictate that the site would have to be pumped indefinitely and limit the nature of rehabilitation that could be implemented. But regardless of any agreement by the EPA, I would advise the Board that it would not be in accordance with stated Government policy, with the climate change obligations on and commitments of the State, and with the proper planning and sustainable development of the State to permit a development that would indefinitely prevent the rewetting of this extensive extracted peatland, when there is nothing in any of the aforementioned policy documents that suggest that a wind energy development of this scale cannot be accommodated in tandem with the appropriate rewetting of an industrially extracted peatland site, but rather would suggest that the two would be mutually compatible and desirable.

7.2.10. The facilitation and promotion of renewable energy development is supported by the *Regional Planning Guidelines for the Midlands Region 2010-2022* under its Economic Development Strategy (chapter 3) and under the *Longford County Development Plan 2015-2021* (s.5.5.2 *Renewable Energy Sources* and s.5.5.2.1 *Wind Energy*). It is also an objective (RE 7) of the *Development Plan* to implement the recommendations contained in the *National Peatland Strategy* but includes no specific objectives or policies on the potential after-use management of extracted peatlands for carbon sequestration. Whilst the *Development Plan* supports the development of the Mid Shannon Wilderness Park (included as Annex 6) and envisages the peatland site rehabilitated with the creation of semi-natural landscapes and the return to a natural type environment, the plan does not specify what these environments should be and does not require the site be restored to a wetland habitat or that it include rewetting.

7.2.11. **Conclusion** - The proposed development will contribute to Ireland meeting its renewable energy-generation and GHG-reduction targets to 2030 and may be considered acceptable in principle. However, the proposed development excludes from the application the rehabilitation and / or restoration (in some form) of this expansive industrial extracted peatland site. The proposals, which will implement finished ground levels of 0.5m-1m for all infrastructure above finished site levels (post completion of extraction) across this undulating site will severely restrict the

potential for rewetting of the remaining peat body such as would arrest ongoing carbon emissions and reinstate its former function as an active carbon sink. The applicant's approach to the future development of this industrially extracted peatland is piecemeal, non-holistic and ignores the overall complexity of the carbon balance and climate change, which is not adequately addressed by the applicant. This non—integrated approach would undermine Ireland's meeting its climate change obligations and be counterproductive to the radical change in approach required under the Government's *Climate Action Plan 2019*. It would serve to undermine Ireland meeting its GHG-reduction targets to 2030 through the ongoing carbon emissions generated by the extracted peatland over the lifetime of the development and would prevent the potential development of carbon sequestration of these lands, and would set an undesirable precedent for similar development in view of the evolving climate policy context and therefore would be contrary to the proper planning and sustainable development of the State.

7.2.12. **Spatial policy** - The Government's high-level plan directing future growth and development of the state to 2040, *Project Ireland 2040 National Planning Framework*, aims to refocus planning to address Ireland's higher than average carbon intensity per capita through, inter alia, harnessing the country's renewable energy potential including onshore wind energy. It includes a National Policy Objective (no.55) *to promote renewable energy…generation at appropriate locations… to meet national objectives towards achieving a low carbon economy by 2050*. It does not provide spatial guidance for the location of onshore wind energy development but anticipates that this will be available in the forthcoming *Renewable Electricity Policy and Development Framework,* in addition to the development of the *Wind Energy Guidelines*.

7.2.13. The *Wind Energy Development Guidelines* 2006 remain the statutory guidance for wind energy development[5]. It includes key considerations in the design approach to wind energy development in terms of siting, spatial extent and scale, cumulative effect and spacing, layout and height of wind turbines having regard to its location within one of six landscape character types and their particular sensitivities. The site comprises '*flat peatland*' where wind energy development of large spatial extent and

[5] The targeted review of the WEDG, addressing noise, proximity and shadow flicker, is yet to be published, although a preferred draft approach has been published.

with tall turbines is considered generally acceptable under the guidelines (Table 1 p.78).

7.2.14. The *Regional Spatial and Economic Strategy for the Northern and Western Regional Assembly* is yet to be adopted, with the statutory consultation process yet to be commenced for material amendments to the published draft[6]. The *Regional Planning Guidelines for the Midlands Region 2010-2022* therefore continue to have effect. The potential for cutaway industrial peatlands to accommodate large scale wind farms is acknowledged under the Guidelines (s.3.3.4.5, s.3.3.4.6, s.3.4.6, s.5.8, s.5.8.1 and s.5.8.1.1) in addition to potential as a unique tourist (wetlands) product, educational and research, and outdoor amenities, which it indicates should be guided by a holistic management plan and in compliance with clear development plan policies and the *Wind Energy Development Guidelines*. The EIAR notes that the development of wind energy as an after-use for cutaway peatlands is specifically identified in the Bord na Móna's *Strategic Framework for The Future Use of Peatlands*. This strategy for the development of the company's 80,000ha landbank resource may be equivalent to a holistic management plan, although is not a statutory document.

7.2.15. The *Longford County Development Plan 2015-2021* is the operative development plan. It is the policy of the Council (ARG 4 and ENV 17) to investigate suitable areas of underutilised land, such as cutaway bogs for various renewable energy types and (RE 1, under s.5.5.2 Renewable Energy Sources) to prepare a Renewable Energy Strategy for the County. A strategy has not yet been prepared. Under s.5.5.2.1 Wind Energy the planning authority will generally look favourably on the development of wind farms and (policy WD 1) wind farm development will be encouraged to locate within areas of wind farm potential identified in the map contained in Appendix 5 of the Plan, (policy WD 2) with large scale development generally directed to areas of cutaway bogs subject to demonstration of site suitability and the assessment of the proposal in accordance with the provisions of policy WD 4.

7.2.16. Appendix 5 Map *Areas of Windfarm Potential* indicate preferred locations, non-preferred locations for wind energy development, with the majority of the county

[6] https://www.nwra.ie/rses/ (accessed 30/07/19)

falling outside either designation, which the Planning Authority has submitted is based on differing potential of the defined landscape character areas to accommodate wind turbines. The majority of the site and proposed wind turbines fall within *Preferred Locations* for wind energy development, but five of the proposed turbines (nos.20-24) located at the southeast corner of the site are within the undesignated area. The Planning Authority submitted that wind energy development within the designated area may be regarded as '*open for consideration*', however s.5.5.2.1 Wind Energy and Policy WD 1 state that *wind farms will be encouraged* in the said identified areas and it would therefore be more correct to consider these to be areas where wind farms are permitted in principle. Whilst the Planning Authority noted that some (5no.) of the proposed turbines fall outside the identified area, it indicated that it is positively disposed to the construction of the wind farm at this location. The entirety of the site encompasses cutaway bog, including the southeast corner outside the preferred location. In view of policy WD 2 (see above), the principle of largescale industrial wind farm development on this site may be regarded as open for consideration under Council policy.

7.2.17. The defined development envelope zoned for the village (local service town under the *Development Plan*, Section C Supporting Information) of Lanesborough (strategic residential reserve) falls partly within the 2km contour, as does the majority of the development envelope identified under the Plan for village of Keenagh/Kenagh (mix of land use zones) and the entirety of that of Derraghan Crossroads (a rural service settlement). Policy WD4 sets out the considerations of the planning authority in its assessment of wind energy development, which includes that wind turbines should not generally be located within 500m of any dwelling. The said zoned areas well exceed the 500m distance.

7.2.18. **Other policy areas** – NDWCG and other observers objected to the proposed development on the basis of incompatibility with the principle for the development of ecotourism under the *Development Plan*, including the Strategic Tourism Policies TOU 2 (recognising the opportunities of peatlands for recreation and tourism), TOU 3 (to facilitate and promote the Mid-Shannon Wilderness Park and Corlea Archaeological and Biodiversity Project) and TOU 6 (to promote and facilitate sustainable utilisation of natural, historical, cultural, geographic and aesthetic assets for tourism purposes). The Mid Shannon Wilderness Park (MSWP), in addition to

inter alia active outdoor tourism, walking and cycling along inland waterways and the Corlea Archaeological and Biodiversity Centre are identified as the County's flagship attractions (s.4.5 Tourism).

7.2.19. Irish Wildlife Trust and other observers considered the proposals to be, in particular, contrary to the *Development Plan* objectives concerning the MSWP (Annex 6 of the CDP). The *Development Plan* envisages this Park to be developed in partnership with Bord na Móna and to encompass future rehabilitated bogs, creating semi-natural landscapes, returned to a natural type environment and valuable amenity lands, with walking and cycling track linkages through the site to Lough Ree and possibly to a national walking / cycling route to Dublin. However, I note the Plan expressly considers there to be no conflict between the proposed MSWP and the development of the extracted peatlands for other purposes, including for renewable energy (policy TOU 2).

7.2.20. The proposed development makes proposals for use of the site for public recreation through pedestrians and cyclist routes (30km) including through the site and providing connectivity to the Royal Canal way. The Planning Authority is satisfied that these proposals accord with the Mid-Shannon Wilderness Park amenity use and is compatible with the amenity use of rehabilitated bogs as outlined in the MSWP. Failte Ireland also welcomes the Amenity Plan submitted as part of the application, including the provisions made for cycle and walking access and connectivity (although it recommends that the 6m widths of the access tracks road surface be reduced by 1m to 1.5m either side post construction; should the Board decide to grant permission it should consider attaching a condition in this regard). I therefore do not consider the proposed wind farm to be in conflict with the Council's policy on the Mid Shannon Wilderness Park plan.

8.0 Environmental Impact Assessment

8.1. Introduction

8.1.1. The application falls under the 2014 Directive (transitional requirements) having been made subsequent to the date of transposition of same.

8.1.2. I have carried out an examination of the information presented by the applicant, including the EIAR, and the submissions made during the course of the application. A detailed summary of the results of the submissions made by the planning authority, prescribed bodies, appellants and observers are set out in Section 6.0 of this report. A detailed summary, including timing of submissions made at the oral hearing is attached as Appendix 1 to this report, in addition to the recording of the hearing available to the Board. The main issues raised specific to EIA can be summarised as follows:

- Impacts on human health from noise, shadow flicker and vibration;
- Impacts on amenity of residential and other properties from noise, shadow flicker and vibration;
- Impact on national road network from proposed amenity accesses;
- Impact on biodiversity, including on birds, bats, butterfly, fish and snails;
- Impact on the water environment from construction works;
- Impact on tourism;
- Impact on historical and archaeological heritage;
- Cumulative effects with Sliabh Bawn WF;
- Not possible for the Board to issue an EIA of the proposed development which would be in compliance with the EIA Directive having proper regard to the following judgements of the CJEU: C-258/11, C-164/17, C-323/17, C-461/17;
- Inadequate consideration of alternatives including less damaging alternative green energy, re-wetting / restoration of cutover bogland for carbon sequestration;
- Project splitting – Uncertainty arising the inclusion of options;

- Risk of major accident from BESS;
- Inadequate public consultation requirements of A.10a into the EIA Directive (and in view of Aarhus Convention);
- Flooding – boglands as sponge to prevent flooding elsewhere.

8.1.3. These issues are addressed below under the relevant headings, and as appropriate in the reasoned conclusion and recommendation, including conditions, where appropriate.

8.1.4. I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality. In this regard the EIAR tabulates the inputs and qualifications of the study team and contributors under section 1.9 (tables 1.2 and 1.3, refer) in addition to further details under a '*Statement of Authority*' in respect of the chapter assessment pertaining to each factor of the environment. I am satisfied that the information contained in the EIAR and supplementary information provided by the developer, adequately identifies and describes the direct, indirect and cumulative effects of the proposed development on the environment and complies with article 94 of the Planning and Development Regulations 2000, as amended.

8.1.5. **Public consultation** - Section 1.10 of the EIAR details the scoping and consultation process carried out by the applicant. Consultation was in the form of two public events to provide information on the proposed project, held in January and September 2016 at four locations near the proposed site, with extensive public advertising and direct notification of residents of the events in advance. A Community Engagement Forum was also established, comprising members of the local community and chaired by an independent chairperson, to facilitate ongoing discussions with local residents and included specialist speakers to discuss topics identified by residents and which met 11no. times between 01/11/16 and 16/11/17. The developer arranged 2no. organised tours and 6no. individual tours of Mount Lucas Wind Farm, 6no. requested house-to-house visits, addressed c.120 queries received via email post and phone via the Community Liaison Officer who also carried out three rounds of visits to 300 houses within 2km of the site. All such residences where sent by post a copy of map and project brochure, a revised layout and a letter of invitation to the public clinic. A dedicated website was set up for the project (from 07/06/17), a meeting was held with 4no. local development

associations to discuss amenity trails and connectivity, and one meeting was held with representatives of '*No to Derryadd Wind Farm Community Group*' in December 2018. In its observations, the HSE indicated that it considered the consultation to have been adequate and to meet the HSE's criteria. Further to the statutory consultation period for the application, the Board held an oral hearing over three days to further inform its eventual decision on this application.

8.1.6. **Alternatives** – The Directive requires '*a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment'.* The EIAR considered '*do nothing*' scenario and also alternative locations, layouts/design, processes, mitigation measures taking into account the effects on the environment. Many observers, in written and oral observations, considered the applicant not to have adequately considered alternatives including solar energy and re-wetting / restoration of the extracted peatland site. Based on the information submitted on file I am satisfied that the applicant has adequately considered solar energy as an alternative and explained, in view of the potential effects on the environment in addition to other practical and economic reasons, why it elected to pursue a wind energy project instead of a solar energy project. Concerning re-wetting / restoration, I would not consider this to constitute an alternative to the proposed project but rather to be a variation on the '*do nothing*' scenario which has been considered by in the EIAR. I am therefore satisfied that requirements of the Directive have been met by the applicant.

Assessment of the potential significant effects on the factors of the environment

8.2. Population & human health

8.2.1. **Population** - These environmental factors are directly addressed under chapter 5 of the EIAR and indirectly (potential impact on residential buildings) under chapters 13 (noise and vibration), 10 (material assets – shadow flicker) and 14 (traffic and transport). There are 291 residential buildings and 7no. commercial buildings within 2km of the proposed turbine locations (table 5.2 and figure 5.1 refer). Many of the observers, have objected to the proposed development on grounds that there will be an unacceptable level of noise intrusion within this quiet rural environment, with consequential impacts on residential amenity, and on grounds that there will be significant consequential impacts on health (direct and indirect from audible and inaudible sound); and also on grounds of visual impact and shadow flicker impact, in addition to impacts of construction traffic.

8.2.2. There is no potential for significant adverse direct or indirect effects from construction works (on residential amenity and population) as all construction works and structure would be located at a distance from any residential property and, in addition, best practice mitigation measures are proposed, as detailed in the EIAR. There would be no encroachment on properties from the proposed abnormal loads delivery route, but there is potential for indirect impacts from haulage traffic. These indirect impacts would be negative but short-term and temporary and not significant.

8.2.3. In terms of operation, the EIAR indicates that the proposed development has been designed to ensure there will be no undue or adverse effects on the local and wider population and that potential indirect effects on population, from noise, shadow flicker, electromagnetic inference and visual effects are addressed by inclusion of recommended mitigation measures to offset identified affects where necessary and no impact on local population numbers is anticipated. No cumulative impacts on population are expected taken with other existing development in the area.

8.2.4. It is evident from CSO data (2011) that the application site is located within an area of very low to low population density, with the majority of the site at less than 10 people per km^2. The areas of highest residential densities upon which the

application site encroaches are associated with the surrounding villages, including Lanesborough to the west (30.4 per/km^2), Killashee to the east (34.5 per/km2) and Keenagh to the southeast (37.4 per km/^{2}), with the balance of the areas ranging from between 11 to 16 per km^2. The densest populations areas are associated with the centres of the surrounding rural villages and towns, all of which are at a distance of greater that 2km from the nearest proposed turbine. Having regard to the zonings under the *Development Plan*, Appendix Section C *Supplementary Information*, to the minimum 500m separation distance from residential dwellings required under the *Development Plan* (policy WD 4 and under the WEDG (2006)) and to actual separation distance provided for from the said zoned areas being well in excess of the minimum (WT1 is c.1.75km from that of Lanesborough, WT22 would be c.1.8km from that of Keenagh, and WT17 would be 980m distant from Derraghan), it can be concluded that the proposed development (and therefore population growth potential) will not compromise the sustainable development of these settlements in accordance with the provisions of the statutory development plan.

8.2.5. Regarding the rural area, which is not zoned for development, the nearest dwelling is stated (EIAR para.5.2.2.2 Population) as in excess of 750m from the nearest turbine, as is detailed on map Drwg No.BNM-NB-PG-01-03 attached to pre-application consultation case Ref.PC033, which, again is well in excess of the minimum suggested separation distance under WEDG (2006). I am therefore satisfied that the proposed development, alone or taken cumulatively with other such development in the wider area (Sliabh Bawn WF) is not likely to have any significant adverse impact on the planned population for the surrounding area.

8.2.6. **Human health** – Potential for direct and indirect health impacts on the local population is raised as a concern for many third-party observers, including Jim McCausland and Dominic McGrath, John Kiernan, NDWFCG, Andrea and Jim McCausland and others, which mainly related to audible and inaudible (infrasound and low frequency noise), but also to risk of fire or explosion at the proposed BESS and from the proposed turbines.

8.2.7. The EIAR addresses human health impacts in depth in under section 5.3, with reference to appropriate array of relevant guidance and literature (Appendix 5.1 includes a summary of findings of 25 studies on wind farms and health). In the absence of adopted guidelines on addressing impacts on human health in EIA, the applicant notes the provisions of the EPA's draft EIAR guidelines 2017 which refer to the European Commission's *SEA Implementation Guidance* position that human health should be considered in the context of the other environmental factors including soils, water, landscape, air, etc., which (the draft guidelines submit) is consistent with the 2002 EPA Guidelines' approach (i.e. the assessment of the environmental pathways – air, water - which may affect health, evaluated by reference to accepted standards of safety in dose, exposure or risk). The EIAR also has regard to the UK's Institute for Environmental Management and Assessment's (IEMA) 2017 discussion document on proportionate assessment of health impacts in EIA, which suggests assessments should have a greater emphasis on health outcomes rather than on health determinants (the agents or emissions) and should rely on the WHO definition of health. The HSE indicated that this is the appropriate approach and agreed that a separate Health Impact Assessment is not required. I consider the approach taken in the EIAR to be appropriate, reasonable and comprehensive.

8.2.8. The EIAR considers the following health effects - Wind Turbine Syndrome, noise induced hearing loss, sleep disturbance and psychological effects; and the potential for impacts from the following emissions or outputs – infrasound, electromagnetic interference, air quality and dust emissions, shadow flicker, noise and vibration. It also considers potential health benefits, health improvement and general amenity that would arise.

8.2.9. Wind turbine syndrome - The EIAR's concludes, based on an extensive literature review (synopsised under s.5.3.3.2, with a more extensive summary in Appendix

5.1), that there is little evidence of Wind Turbine Syndrome (which is not an accepted medical term). In particular, the EIAR presents studies which have found no statistical relationship between the location of wind turbines and the location of sufferers (Chapman 2012), no evidence of direct adverse effect on human health (Merlin, 2015) and no pathological effects from wind farms (National Health and Medical Research Council of Australia, 2010). The EIAR concluded that no significant effects are foreseeable in this regard.

8.2.10. Noise-induced hearing loss – No significant risk arises from construction or operational phases.

8.2.11. Sleep disturbance – The WHO *Night Noise Guidelines for Europe* (2009) suggests an interim value of 45dB Lnight outside, again a yearly average. The WED Guidelines (2006) provide a *fixed limit of 43dB(A) will protect sleep inside properties during the night* but asserts that *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 nearest residence is 750m distant from a turbine in this case. The EIAR refers to the WHO *Environmental Noise Guidelines for the European Region* (2018) as the most recent and authoritative guideline regards to human health effects with the guideline of 45 dBL_{den} which is a measure taking into account day, evening and night exposure.

8.2.12. At the hearing, Dermot Blunnie further explained that the s.5.1 of the guidelines clearly state that the proposed noise threshold is not intended to be implemented as a noise limit but to serve as a basis for policy-making. However, he asserted that in the worst case turbine-noise propagation scenario the L_{den} value due to the operation of the turbines would be below the WHO guidelines conditional recommendation of 45dBL_{den} for wind turbine noise, and below the *WHO Night Noise Guidelines* recommended target of 40$dBL_{night,outside}$.

8.2.13. It can therefore be concluded that the proposed operational windfarm will not have a significant adverse impact on sleep of people within the vicinity of the proposed development.

8.2.14. Infrasound – Concern about the potential impacts of infrasound and low frequency noise (LFN), inaudible sound, were raised by many observers, including NDWFCG. Dr Alum Evans made a detailed submission on behalf of NDWFCG concerning

infrasound, background to standards (ETSUR-97) and the impacts on human beings including severe physiological effects and feelings of anxiety, nausea, etc., arising from infrasound which has resonance with human body. He referred to various studies (including Nina Pierpont study and those by Marianna Alves Pereira) which would appear to confirm the potential for impacts from infrasound. He also explains how the use of A-weighted scale doesn't take account of infrasound and asserted that normal sound-proofing is ineffective against it.

8.2.15. The EIAR notes the range of health issues often cited in respect of infrasound and LFN. It notes the South Australian EPA study (2013) which found infrasound commonly occurs in the urban environment, often from air conditioning, that in rural environments infrasound levels were lower than urban areas, and that houses adjacent to wind farms had infrasound levels no higher than houses located at a considerable distance from wind farms. A study by the Ministry of the Environment of the Federal State of Wuerttemberg (2016) concluded that wind turbines make no considerable contribution to infrasound levels and are clearly below the limits of human perception and subject to compliance with legal and technical requirements for planning approval, harmful effects cannot be deduced. On this basis the applicant concludes that there will be no significant effect on human health from infrasound.

8.2.16. EMF – EMF is generated by wind turbines, transformers and power cables. WHO guidance (*Electromagnetic fields and public health*, 2007) states that EMF is sometimes cited for potential health effects, including childhood leukaemia, brain tumours and other cancers. The EIAR indicates that no laboratory experiments have provided reliable evidence that EMF are capable of producing cancer, nor do human epidemiological studies suggest that they cause cancer in general. Regarding other alleged impacts (e.g. miscarriage, developmental abnormalities, depression), the Health Promotion Agency, UK (2007) indicates there is little scientific evidence that EMF below guideline levels present a human health hazard. It also notes the South Australian EPA which indicates there is evidence (albeit limited) that the level of EMF in and outside the average Australian suburban home is greater than the extremely low level close to wind farms and that there is no consistent evidence of human health effect to exposure to EMF at much higher levels than those. No significant adverse health impacts are therefore anticipated from EMF.

8.2.17. Air quality & dust – Subject to implementation of the proposed mitigation measures there will be no significant impact on human health from construction dust. An overall positive impact on human health is anticipated due to replacing fossil fuel generated electricity with renewable electricity.

8.2.18. Shadow flicker – The EIAR (s.5.3.3.8 Shadow Flicker) notes the minor risk of epilepsy from shadow flicker (one in 10 million according to Merlin, 2015). Shadow flicker can also have very significant impacts on the amenity value of a residential dwelling or other structures used by people, such as schools and places of work, which was a major concern of many of the observations on file. The EIAR provides that potential for shadow flicker will be mitigated through the automatic shutdown of individual turbines that might cause shadow flicker (detail of the intended programme of timing of shutdown of individual turbines are appended to the EIAR). Therefore, it can be concluded there is no significant adverse impact from shadow flicker subject to the implementation of mitigation.

8.2.19. Psychological impacts – The EIAR submits that there is no evidence of increased levels of depression or anxiety in the vicinity of other windfarms reports in the peer-reviewed literature and therefore it is reasonable to conclude that there are no such effects. Subject to adherence to the limits for noise and shadow flicker at sensitive properties, it is reasonable for the Board to conclude that the proposed development is not likely to have a significant adverse impact in this regard.

8.2.20. Noise & vibration – The EIAR concludes, based on the assessments in chapter 13 that noise and vibration impacts from construction would be temporary and distant from the nearest sensitive properties and would therefore not be significant.

8.2.21. Given the separation distance from noise sensitive properties (NSLs), the EIAR predicts (table 13.13) that the construction noise impact in the worst-case scenario will be 44dBL_{AeqT}, well below the threshold value of 65dBL_{AeqT} during the daytime period (table 13.1, from BS 5228-1:2009+A1:2014[7]). It also submits that vibrations effects would not be significant due to the separation distance from sensitive locations. The applicant's conclusion that the potential impacts would be negative, slight and of short-term duration is justified. A similar impact is anticipated for

[7] *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise.*

proposed road and track construction and for borrow pit extraction, which I consider also to be justified.

8.2.22. Regarding operational noise, the EIAR determined that the cumulative predicted noise levels with the development in operation would be within best practice noise curves recommended in the WEDG (2006) and whilst noise levels at low wind speeds will increase, the predicted levels would be low, albeit new. It concludes that the operational noise impact will be long term and not significant and that therefore there will be no significant adverse effect on human health from noise.

8.2.23. EIAR s.13.2.1.2.5 refers to *WHO Noise Guidelines for Europe* but submits that based on the uncertainties raised by the WHO regarding use of the L_{den} parameter for assessment of exposure, acknowledged by WHO as possibly a poor characterisation of turbine noise and may limit the ability to observe associations between wind turbine noise and health outcomes. At the hearing, Dermot Blunnie further explained that the s.5.1 of the guidelines clearly state that the proposed noise threshold is not intended to be implemented as a noise limit but to server as a basis for policy-making, however he asserted that in the worst case turbine-noise propagation scenario the L_{den} value due to the operation of the turbines would be below the WHO guidelines conditional recommendation of $45dBL_{den}$ for wind turbine noise, and below the *WHO Night Noise Guidelines* recommended target of $40dBL_{night,outside}$.

8.2.24. Vibrations from the operating turbines tail off rapidly with distance. There is no risk of it being felt by humans at the nearest residences and it is not likely to be felt by people standing, walking or cycling through the area.

8.2.25. Conclusion - Based on the detailed assessment carried out by the applicant, I am satisfied that the proposed development will not have significant direct, indirect or cumulative impacts on human health.

(a) Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

8.3. **Biodiversity**

8.3.1. This environmental factor is addressed in depth in chapter 6 of the EIAR and associated appendices and also in the NIS submitted with the application. The biodiversity assessment is comprehensive and is based on very extensive baseline surveys. Concerns about potential for significant adverse impacts on habitats (habitat loss, impact on peatlands) and species (mainly birds, but also bats and insects) were raised by many parties, including Jim McCausland and Dominic McGrath, Elspeth Hall, NDWFCG, the IPC, the IWT and by prescribed bodies.

8.3.2. **Habitats** - Habitat survey maps are contained in appendix 6.4, which generally indicate habitats within the footprint and within the immediate vicinity of the proposed development works, rather than comprehensive survey of the entire site and area surrounding the site. This fails to provide the overall habitat context of the proposed development within the site, landholding and landscape, which includes remnant bogs and hand cut bogs peripheral and adjacent to the site and extensive areas of recolonising birch woodland. However, the habitats survey included assessment of significant pockets of land adjacent to, but ostensibly outside, the anticipated footprint of development works indicated on proposed layout drawings. It is evident from the description the ecological character of the development site (s.6.5.2.2) that a more comprehensive habitats survey was carried out and recorded but not included. However, the additional habitats maps contained within the Bat Survey Report (Appendix 6.6) will assist the Board's assessment in this regard.

8.3.3. The site has a wide range of habitats, which have evolved and continue to evolve as the peat extraction activity has been completed across different sections of the site. In terms of significance, the highest rated habitats recorded on site affected by the proposed development comprise well developed *Bog Woodland* (WN7) (including at the eastern section of Derryaroge bog) of high local value (5.72ha to be removed), *Immature Woodland* (WS2) (1.11ha to be removed), *Scrub Woodland* (WS1) (1.05ha to be removed) and *Wet Heath* (HH43) (0.55ha to be removed).

8.3.4. The EIAR also refers to the presence of *Oak-Ash-Hazel Woodland* (WN2) in the eastern section of Lough Bannow (in addition to the east of Lough Bawn pNHA), but the location of same is not shown on the main habitat maps and the potential loss of this habitat type is not addressed. The more detailed habitat maps in the Bat Survey Report indicate that a very small section of this habitat may be located within the footprint of proposed turbine no.22, whereas the main habitat map (Figure 6.4C) indicates the habitats there as *Bog Woodland* (WN7) and *Immature Woodland* (WS2). However, the EIAR indicates that the area of *Oak-Ash-Hazel Woodland* (WN2) on site is immature and still developing, which may explain the difference in classification between the two surveys (the applicant confirmed to the hearing that the former survey was completed by Bord na Mona several years ago).

8.3.5. In addition, the location of Wet Heath (HH43) is not shown and it is neither listed, nor described in the EIAR under s.6.5.2.2. *General Ecological Character of the Development Site.* Although the extent of the habitat to be removed is very limited at 0.55ha, it is not apparent from where it is to be removed. As that habitat does not equate to Annex I priority habitat according to Fossit, I would accept the EIAR's rating of the loss of this area as moderate.

8.3.6. At the hearing, Joanna Allen-Hamilton satisfactorily explained why the *Bog Woodland* at Derryaroge Bog, which will be partly removed through the proposed development, was not Annex I priority habitat bog woodland, in view of Fossit's habitat guide and the EU's *Interpretation Manual of the European Union Habitats.* The rating of the loss of that habitat as moderate is therefore considered justified and, overall I consider the EIAR rating of the direct impact on these habitats as permanent moderate negative effects to be reasonable.

8.3.7. In terms of potential for indirect effects on habitats, the EIAR notes another large block of bog woodland at the eastern corner of Lough Bannow bog, fringing the c.50ha Lough Bawn pNHA (site code 001819), which is classed as Annex I priority habitat **bog woodland* (Natura 2000 code: 91D0). The boundary of the pNHA overlaps with that of the application site, but not with the footprint of the proposed development. The EIAR considered adverse impacts arising from increased drainage of hydraulically sensitive habitats located within Lough Bawn pHNA to be unlikely as the drainage regime proposed at the site is designed in such a manner as

to facilitate the rehabilitation plan, the goal of which will be to raise water levels within the site without creating open water flooding, as per chapter 8 of the EIAR.

8.3.8. In its written observation the NPWS raised concern about the potential for adverse impacts on raised bog, bog woodland and pioneer fen mosaic associated with the said pNHA and the Irish Peatlands Council also had concern regarding the potential impact on the pNHA. The matter was subject of discussion over the course of the hearing. The Précis of Evidence Biodiversity submitted to the hearing by Joanna Allen-Hamilton, which confirmed there will be no direct impact on any raised bog remnants including Lough Bawn, detailed the bog restoration works carried out around the pNHA. These included blocking field drains as per standard methodology, which has purportedly successfully raised and maintained water level on the high bog. A protective (30m wide) buffer zone has been developed around the margins of the high bog to buffer the pNHA and the rehabilitated area of high bog. The NPWS expressed concern to the hearing that the buffer zone is incomplete as it facilitates access for machinery, etc., to this area which *acts as a headland*. A map of the said buffer and rehabilitated area (Figure 1) were submitted by the applicant to the hearing (*NPWS Reponses: Day 1 Oral Hearing*). It is not clear from the map where the buffer is incomplete (i.e. within the landholding of the applicant) and to where access is facilitated.

8.3.9. The NPWS submitted that there is need for further mitigation details to prevent impacts to the pNHA from proposed wind turbine no.22 and associated track infrastructure. The applicant indicated to the hearing that it would be open to relocating the said turbine as a mitigation measure if required by way of condition in the event of a grant of permission. Whilst the turbine foundation would be c.220m distant from the pNHA boundary and maybe 110m or so from the protective buffer, the access track would be within c.30m of the buffer at its nearest point.

8.3.10. I am satisfied that the existing and proposed mitigation measures will improve the current and potential threat to the habitat within and surrounding Lough Bawn pNHA, such that there is no potential for significant direct or indirect adverse impacts on the pNHA. However, in the event of a decision to grant permission, the exact details of the mitigation measures should be subject of written agreement with the NPWS and the Local Authority, in order to limit any potential for residual ongoing adverse effects on the habitats within and surrounding the pNHA. The mitigation measure may

include the redesign of the access track route to increase to the maximum the separation distance from the pNHA and buffer zone through an appropriate realignment of the route, but I would not advise the relocation of the turbine as this may result in increased impacts on other environmental factors, including landscape and visual and on heritage. It would also be appropriate for the details of the buffer zone, including aforementioned headland access to be agreed with the Local Authority in consultation with the NPWS, to ensure optimum protection for the pNHA.

8.3.11. Regarding the IPC's concern regarding potential impacts on remnant bogs within the vicinity of turbines, with specific reference to proposed wind turbine nos.11 and 20, turbine no.20 would appear distant to any remnant bog and turbine no.11 is at least 250m from the nearest remnant bog and therefore outside the 150m drainage impact zone referred to in Ms Allen-Hamilton's Précis of Evidence to the hearing, which was not disputed. It may be that the IPC was referring to a pre-planning consultaiton layout. Given the existing ongoing surface water pumping from the site, which is proposed to continue with the windfarm in place under the draft rehabilitation plan, the proposed development would not appear likely to further significantly degrade the surrounding peatlands.

8.3.12. It should be noted that grid connection option B, to the west of R392, would appear to be situated on remnant raised bog. The habitats map indicate that is in an area of cutover bog (figure 6.4B, EIAR Appendix 6.4), however although it has been affected by drainage, it does not appear to have been extracted, at least not on an industrial scale. The extent of direct habitat lost would (I estimate) be in the region of 0.32ha, with indirect impacts difficult to quantify. In view of the loss of peatlands over this extensive site and the intention not to restore or facilitate the restoration of raised peatland habitat over the site as part of its draft site rehabilitation plan (nor subject of the application), I consider the cumulative direct loss of raised bog to be excessive and unwarranted. This impact can be avoided through the implementation of proposed grid connection option A. Should the Board decide to grant permission, it may attach a condition omitting the implementation of option A.

8.3.13. **Conclusion** – It is reasonable to conclude, based on the information submitted on file and otherwise available to me, that the proposed development will not have a significant adverse impact on terrestrial habitats within or surrounding the site. However, grid connection option B would appear to entail the loss of c.0.32ha

remnant raised bog, Annex I habitat, which the Board may consider (at best) a highly undesirable cumulative avoidable impact. In the event of a decision to grant permission the Board may consider it appropriate to attach a condition omitting grid connection option B, in addition to conditions requiring the relocation of the buffer zone to Lough Bawn pNHA.

8.3.14. **Birds** – I inspected the site on a number of occasions during summer (May and June) and the presence of birdlife was one of the more remarkable features, including common species (finches), the apparently ubiquitous cuckoo (heard throughout and sighted in Derryaroge Bog) and a large (unidentified) raptor taking flight from a perch (also Derryaroge Bog).

8.3.15. The EIAR focuses on target species that would be at potential risk from impacts associated with the proposed development, including from collision risk, disturbance, displacement (including through direct loss of habitat or indirect loss of habitat through avoidance behaviour) and species distribution. The target species were identified as species sensitive to this type of development, species listed in Annex I of the Birds Directive, including species being the features of interest of the local SPAs (Lough Ree SPA and Ballykenny-Fisherstown Bog SPA) and birds listed as of high (Red listed) and medium (Amber listed) for conservation concern, but with consideration also given to common species which have been identified as relatively sensitive to potential collision impacts from this type of development.

8.3.16. It notes the species recorded in the area in the *Bird Atlas 2007-2011 Distribution Maps* (EIAR table 6.13) and table 6.14 details the species recorded in field surveys over the winters 2014/15, 2015/16, 2016/17 and 2017/18. 9no. Red Listed (BoCCI) species (i.e. species that have recorded large population declines) were recorded – Black-headed Gull, Curlew, Golden Plover (Annex I of the Birds Directive), Redshank, Herring Gull, Grey Wagtail, Lapwing, Wigeon and Meadow Pipit – and 5no. Amber Listed species - Greenland White-fronted Goose, Hen Harrier, Kingfisher, Merlin and Peregrine Falcon – all falling under Annex I. These of the sensitive receptor species of particular concern, being rated as '*threatened*' due to large historical declines

8.3.17. The EIAR reports the overall level of site usage by species of high conservation concern (Red Listed / Annex I) was found to be low, with the majority of observations

concerning individuals commuting over the site, with foraging on site being rare. Of the Red Listed birds recorded in the breeding season surveys 2015, 2016 and 2017 (table 6.15), Curlew, Golden Plover (Annex I) and Lapwing are listed for wintering and breeding populations. Of the additional Annex I species recorded, only Merlin (Amber Listed) was noted as probable or confirmed breeder within the study area (as the species was noted carrying prey in the survey[8]) but considered unlikely to be nesting within the site or the fringing habitats due to the low number of observations recorded.

8.3.18. BirdWatch Ireland, referring to Merlin as *notoriously difficult to detect*, submitted that SNH guidance (2014) advises that dedicated Merlin surveys (2 years) are necessary where evidence of breeding Merlin has been found, unless a shorter period has been justified. Percival (2003) also suggests that more detailed site survey and /or observations of flight behaviour would generally be required where scarcer species (including Merlin), that would not necessarily be detected by basic surveys, may occur. The NPWS did not raise this issue in its observations on file.

8.3.19. Neither Dr Gittings nor any of the applicant's representative provided justification for a shorter period, notwithstanding that the applicant advised the hearing that it has recently commenced dedicated Merlin breeding surveys which would be complete in September. The applicant invited the Board to seek this information from the applicant before making a decision on this case, should it be required. As the applicant has not justified a shorter survey period, there would seem little benefit to the Board to request the results of a non-compliant survey. The Board may consider requesting the applicant to submit the results of Merlin breeding bird surveys carried out compliant with SNH (2014) guidance.

8.3.20. There is no European site or other site designated or proposed to be designated for the protection of Merlin within the vicinity and there is no suggestion (or likelihood) that the observed Merlin is connected to a European site. Dr Gittings submitted that the site is not located in one of the core breeding areas of distribution for Merlin distribution but accepted that this does not preclude the occurrence of breeding Merlin. The potential risk to Merlin from collision with wind turbines is not clear from

[8] A 5km foraging distance applies to Merlin according to SNH guidance, *Assessing Connectivity with Special Protection Areas* (2016) https://www.nature.scot/sites/default/files/2018-08/Assessing%20connectivity%20with%20special%20protection%20areas.pdf (accessed 10/06/19)

the evidence on file. SNH guidance (2014)[9] indicates that much of Merlin flight activity is at a relatively low height (<15m) but that they do fly at greater heights during display or when commuting longer distances. Its publishing of specific guidance (2016)[10] to reduce potential collision risk for Merlin and other raptor species (on afforested sites) alluded to collision risk as significant and would suggest that the existing and intended rehabilitated habitat (with cleared areas around turbines to mitigate potential bat impacts) would be suitable for Merlin nesting. Dr Gittings noted that there was one record of Merlin flying at potential collision height (10 seconds), with the risk of collision effectively zero, and that the lack of breeding Merlin survey does not affect the reliability of collision risk prediction as they would not contribute data to the CRM. On balance, given the results of the collision risk analysis, the methodology and detail of which was challenged by the NPWS, I do not consider it necessary for the Board to seek additional information concerning breeding Merlin surveys, but it is open to the Board to seek independent expert advice in this regard.

8.3.21. The ornithology survey methodology employed by the applicant was strongly criticised by Birdwatch Ireland in its written observation (the organisation was not represented at the hearing). In general, it was concerned that the surveys were carried out by multiple consultants and with inconsistency in the methodology employed over the period, but it also raised particular issue with gaps in data concerning individual species, including Whooper Swan and Greenland White-fronted Goose; the need for dedicated breeding surveys for Merlin, Peregrine falcon and Curlew; and dedicated surveys for Barn Owl.

8.3.22. The initial survey methods were subject of peer review by Aniar Ecology in May 2016 to advise on appropriate revisions to the survey approach (Appendix 6.2 refers). As noted by BirdWatch Ireland, the Aniar report criticised the initial surveys' spatial

[9] *Recommended bird survey methods to inform impact assessment of onshore wind farms* https://www.nature.scot/sites/default/files/2017-09/Guidance%20note%20-%20Recommended%20bird%20survey%20methods%20to%20inform%20impact%20assessment%20of%20onshore%20windfarms.pdf (accessed 29/08/19).

[10] *Wind farm proposals on afforested sites – advice on reducing suitability for hen harrier, merlin and short-eared owl* (SNH, 2016) https://www.nature.scot/sites/default/files/2017-09/Guidance%20note%20-%20Wind%20farm%20proposals%20on%20afforested%20sites%20advice%20on%20reducing%20suitability%20for%20hen%20harrier%2C%20merlin%20and%20short-eared%20owl.pdf (accessed 29/08/19).

coverage as inadequate (necessary offsite survey visits were infrequent and without expressed systematic survey methodology; inadequate coverage for winter bird surveys) and identified shortcomings with ornithological survey works carried out (failure to establish local and regional connectivity for Whooper Swan and Greenland White-fronted Goose; timing, coverage and co-ordination of VP and counts). BirdWatch Ireland considered significant gaps with the requirements of SNH guidelines 2014 to remain outstanding, particularly regarding connectivity assessments, dawn and dusk assessment and migratory assessment. Whilst the NPWS also raised concerns with the presentation of some of the data, this related to bird species being features of interest of European site. In particular it advised that the collision risk context for bird flight lines (indicated on flight line maps in Appendix 6.1 and 6.5) should be shown in context of relevant foraging and roosting areas, with species numbers and turbine locations within the zone and the site relative to predominant flight lines and also that the frequency and timing of flight line use by Whooper Swan and Golden Plover be indicated on map or by linked data.

8.3.23. In his Précis of Evidence to the hearing, Dr Gittings defended the survey methods in detail, including those relating to bird species being features of interest of relevant European sites, submitting that:

- the overall survey results combined with flight line data was sufficient to enable assessment of connectivity of the Whooper Swan population using the windfarm site with the Lough Ree SPA Whooper Swan population;
- although the additional VP surveys for the Whooper Swan and Greenland White-fronted Goose migration periods to/from Wexford Harbour and Slobs were not carried out, simple calculations (table 4.1 of Précis) predict that the predicted mortality risk would be negligible even if the entire populations of those European sites migrated through the proposed windfarm site at potential collision height, due to the avoidance behaviour evident among those species, unless those birds undertook lengthy stopovers (such stopovers were not evident in five years of surveys);
- the bulk of VP survey work and viewshed analysis was carried out after the Aniar Report, which addressed previous VP gaps by covering all proposed turbine locations:

- coordinated VP watches are not required under SNH guidelines (2017);
- the CRM (s.3.1.4) included procedures to resolve the inconsistent use of flight height bands between the various VP surveys, and it overestimates collision risk by using a lower limit for potential collision height (35-40m) compared to the actual blade height (55m), with no actual Whooper Swan flight activity recorded above 50m;
- and the VP surveys for winter 2017/18 and 2018/19 are a good representation of the Whooper Swan (and other waterbird) commuting to/from night roosts.

On balance, I would accept that the detail, coverage and methodologies of the bird survey is reasonably comprehensive and sufficient to enable the Board to determine those bird species at risk from the proposed development and carry out its environmental impact assessment and its appropriate assessment of the proposed development.

8.3.24. No party raised concern with the importance rating applied to species in the EIAR. Table 6.18 *Key Ornithological Receptor Evaluation and Selection Criteria* assigns a rating of '*locally important (higher value)*' for all of the species concerned, which is indicated as based on NRA's *Ecological Surveying Techniques for Protecting Flora and Fauna during National Road Schemes*, as detailed under Table 4 *Criteria for Establishing Receptor Importance* (NRA 2009). Given the possibility that the species include Annex I species which may be connected to almost adjacent European sites, and which constitute features of interest of those sites, I would question the importance rating applied.

8.3.25. No party raised concern at the sensitivity ratings applied, which are based on Percival's review (2003)[11]. Whooper Swan, Mallard, Common Tern, Golden Plover and Lapwing are rated *Very High*; Curlew, Black-headed Gull and Cormorant rated *High*; Hen Harrier, Merlin, Peregrine Falcon, Woodcock and Little Egret rated *Medium*; and all other bird species were rated as of *Low* sensitivity. The EIAR is incorrect in that Percival (Table 3 *Determination of Sensitivity*) actually applies a rating of *High Sensitivity*, not medium, to Hen Harrier.

[11] *Birds and Wind Farms in Ireland: A Review Of Potential Issues And Impact Assessment* (2003), at https://tethys.pnnl.gov/sites/default/files/publications/Percival_2003.pdf (accessed 27/08/19).

8.3.26. In its submission to the hearing, Dr Gittings focused specifically on Red Listed / Annex I bird species referred to in the submissions – Whooper Swan, Greenland White-fronted Goose, Golden Plover, Curlew, Merlin, Peregrine, Barn Owl and Black-headed Gull – and addresses the other 14no. Red Listed / Annex I species more generally.

8.3.27. **Operational impacts – Collision Risk:** In terms of potential operational impacts, the EIAR's Collision Risk Model (CRM) determined that the impact on any bird species will not be greater than long term, slight negative effect, being a result of low significance, with the greatest impact likely to be on Whooper Swan and Mallard, with a risk of collision of one per 212 years and one per 100 years respectively. This arises due to the relatively low transit rate (of the site) predicted and the high rate of avoidance behaviour exhibited by birds (recommended default rate of 98% for the CRM).

8.3.28. Other species, including Golden Plover (Annex I, Red listed) and Lapwing (Red listed) would be likely to risk more frequent collisions of one every two and every 16 years, respectively (Golden Plover has the highest predicted frequency of collision of any of the species considered.) At the hearing, the NPWS confirmed that it did not have an issue with the applicant's CRM and I am satisfied that the applicant has justified to the hearing the scope and detail of the various bird surveys informing the CRM. On this basis the Board may accept the credibility of the results and conclude that the number of mortalities arising over the operational period would be negligible, including cumulative impacts with other windfarms in the vicinity.

8.3.29. **Disturbance & Barrier Effect** – The literature is not agreed on the magnitude of disturbance displacement impact associated with operating turbines and the EIAR submits that there is an increasing body of evidence to suggest that wind farms do not affect bird distribution (according to Powlesland (2009)). The majority of studies show disturbance effects related to waterfowl over distances of up to 800m (wintering) and 300m (breeding), but that it relates to the availability of resources and where resources are limited the birds will be less sensitive. This impact is anticipated to reduce over time as birds become habituated to the turbines.

8.3.30. The potential impact on possible breeding Curlew was raised as a particular concern by NDWFCG and other parties and this concern was supported by the NPWS at the

hearing, although it was not an issue included it its observations. Curlews are Red Listed due to severe declines in its breeding and wintering populations. The NPWS confirmed it is a very rare breeding species in Ireland and emphasized the resources they are expending under the *Curlew Conservation Programme.* This breeding Curlew taskforce covers seven (somewhat flexible) sites including a roost at Inchcleraun island on Lough Ree (its most significant breeding site) and reflects the concern for and importance of the species. According to Mr Johnson, a single confirmed breeding pair at (or around Lough Bawn) would be significant, pointing out that there are only two or three breeding pairs on Lough Ree.

8.3.31. Whilst Curlew is not included on Annex I and therefore are not subject of protections afforded to Annex I species, Mr Johnson also submitted that the Birds Directive is very old, and the annexes haven't been changed to reflect the changed level of risk of species since it was adopted. It is subject of protection under the Wildlife Acts. In terms of their significance, he highlighted that Curlew are the only Irish bird species included on the *International Union for Conservation of Nature* and it is clear that the NPWS consider the possible presence of breeding Curlew as highly significant.

8.3.32. Dr Gittings submitted to the hearing that a single displaying Curlew was recorded in/adjacent the southeast corner of the site in summer 2015, c.560m from the nearest proposed turbine location, but none in 2016 or 2017. A dedicated breeding Curlew survey was carried out in summer 2018 in potential habitat at the south east section of the site (focused on Lough Bawn - see fig 4.5 of Précis of Evidence) and neighbouring lands, but no evidence of breeding Curlew was found. Although displaying birds were reported in March 2019, subsequent dedicated breeding Curlew surveys have not found evidence of breeding Curlew. Video evidence of recent displaying Curlew was also presented to the hearing by NDWFCG (within 600m of proposed wind turbines T13 and T17). Dr Gittings posited that that the repeated occurrence of displaying Curlew without subsequent evidence of breeding may indicate a lone bird.

8.3.33. Dr Gittings confirmed the displacement distance for Curlew is 800m. Mr Mulcahy agreed that the possibility of relocation of WT22 outside the displacement distance would have to be considered if breeding Curlew was evident but pointed out that the there is no evidence of same from surveys. The exact location of displaying Curlew is not identified on the maps and it is possible that additional proposed turbines

would encroach on potential Curlew breeding habitat. However, on balance, based the survey evidence presented by Dr Gittings and the information provided by the NPWS (concerning the very low breeding rates of Curlew in Ireland), I consider it to be unlikely for there to be breeding Curlew on the site or in the neighbouring vicinity, particularly given it is adjacent to an extensive active area of industrial peatland that would be expected to already cause disturbance and displacement to the species. Given the current status of Curlew under the Directive and the fact that it is not proposed for protection within Lough Bawn pNHA under a national designation, I do not consider the possibility of indirect impact on *possibly* breeding Curlew through disturbance to constitute an unacceptable environmental impact and I do not consider there to be sufficient grounds to warrant mitigation through relocation of WT22 or any other turbines in the event of a decision to grant permission.

8.3.34. In terms of barrier effect, the presence of turbines may disrupt bird flight lines, acting as a barrier between a roost and feeding site, or a barrier to a migration route. The increased energy expenditure involved in avoiding the barrier may be significant for a stressed population of birds with depleted fat reserves from their migration. Percival recommends a minimum separation distance of 200m to facilitate free movement of birds and avoidance of the barrier effect, whereas the applicant proposes a separation distance of at least 400m as mitigation by avoidance (in most cases the separation distance between turbines is far in excess of 400m). This issue was subject of much discussion at the hearing in relation to features of interest of European sites and will be considered further under the appropriate assessment below.

8.3.35. In table 6.26 (Disturbance, Displacement and Barrier Effect), the potential impacts are determined as short term, slight negative for all avian species except for Whooper Swan, Mallard and Golden Plover, for which a short term, moderate negative effect is predicted. Mallard is not listed under Annex I and is Green Listed, therefore a moderate negative effect is not of particular concern. The potential impact on Whooper Swan and Golden Plover, as Annex I species being a feature of interest of a European site in proximity, is addressed in the appropriate assessment, below. In terms of the impact being *short term,* this relates to the anticipated habituating of species to the turbines which, according to the Dr Gittings submissions to the hearing, will vary depending on the availability of foraging resources and with

time. It can also be assumed that it will depend on availability of roosting habitat (e.g. open water for Whooper Swan).

8.3.36. The availability of foraging resource and roosting opportunities depends on habitats on site. The potential direct loss and potential indirect loss (through disturbance and displacement) of habitats for foraging and/or roosting (day or night roosts) was subject of much discussion at the hearing, but primarily in relation to features of interest of Lough Ree SPA. The development area will replace only c.2.7% of the site area and the variety of habitats (a direct impact, see above), which I do not consider a significant.

8.3.37. It is submitted that the habitats on site are limited by the ongoing extensive peat extraction, with temporary habitats suitable for various waterbirds providing opportunistic feeding ground for limited periods of time (Dr Gittings informed the hearing that, for example, the presence of cotton grass provides a grazing source for Whooper Swan and the NPWS submitted that open water provides day roosting habitat for the species). It is further submitted that the onsite habitats are evolving and will continue to evolve as the peat extraction activity progressively ceases across the site (Seán Creedon indicated to the hearing that this will cease entirely by 2025), changing from exposed peat to regenerating native woodlands (dominated by birch) under the proposed draft site rehabilitation site, which proposes continued pumping on site to avoid the creation of open water. Under the said draft plan, I would accept that the site will progressively provide fewer foraging and roosting opportunities for waterbirds, with or without the proposed development and therefore displacement of waterbird species through the proposed development is not significant.

8.3.38. The site rehabilitation does not form part of the application but is subject of agreement with the EPA under condition no.10 of the IPC licence. The plan is at draft stage and has not been agreed. For reasons explained elsewhere in my report, I consider the draft site rehabilitation plan, entailing continued site pumping, to be contrary to the principles of the *National Peatland Strategy* (2015) and the Government's *Climate Action Plan 2019*. Within the evolving climate policy context, as the draft plan has not been agreed there is uncertainty as to the likely development of habitats on site in the '*without development*' scenario, which could potentially entail the rewetting of the site. However, notwithstanding this, it is quite

apparent that the total area of the existing varied habitats to be removed from the site, at 2.7%, coupled with maybe c.48ha (c.2.5% of the site) lost indirectly through avoidance behaviour[12] (the two areas will necessarily overlap) is not significant regardless of whatever rehabilitation plan may be agreed. It can therefore be concluded that the impact on birds through displacement and disturbance would not be significant.

8.3.39. **Mammals** – Protected mammals found through surveys to occur in the proposed development area were Irish Hare (Habitats Directive Annex V; Wildlife Amendment Act, 2000), European otter (Annex II and IV; WWA), Eurasian badger (WAA), Pine Marten (Annex V; WAA), Irish Stoat (WAA), Daubenton's bat (Annex IV; WAA; Bern Convention 1982; Bonn Convention 1983), Leislers bat (Annex IV; WAA; Bern & Bonn), Natterer's bat (Annex IV; WAA; Bern & Bonn), Common pipistrelle (Annex IV; WAA; Bern & Bonn), Soprano pipistrelle (Annex IV; WAA; Bern & Bonn), Brown Long-eared bat (Annex IV; WAA; Bern & Bonn), Nathusius' pipistrelle (Annex IV; WAA; Bern & Bonn), Red squirrel (WAA), Hedgehog (WAA)and Eurasian pygmy shrew (WAA). Based on the information provided by the applicant, it can reasonably be concluded that no significant adverse impacts would be likely during the construction or operational phases.

8.3.40. **Marsh Fritillary** is among the most endangered species in Ireland and is protected under Annex II and the WAA. Larval webs and suitable habitat (Devil's Bit Scabious, its host plant) were found on site at Derryaroge mineral island (centre of northern bog site section) and a large section of western Lough Bannow Bog (surrounding Derryclogher mineral island). Joanna Hamilton confirmed to the hearing that no works are proposed in the area of suitable habitat where evidence of the species was found and reported in the EIAR and that the Ecological Clerk of Works will carry out seasonal checks prior to construction stage and seasonal constraints deployed if necessary. It can be concluded therefore that there will be no significant adverse impacts on the species.

8.3.41. **Desmoulin's whorl snail** (*Vertigo moulinsiana*) protected under Annex II and listed as endangered in Ireland. It requires stable swamp habitat with tall vegetation.

[12] Based on 800m disturbance being commonly found distance for avoidance by waterfowl according to the applicant, the area per turbine ($\pi \times r^2$) is c.2ha and 48ha for 24 turbines.

Targeted species-specific Desmoulin's whorl snail surveys were undertaken in suitable habitat at Lough Bawn pNHA and within the vegetated drain running perpendicular to the northeast boundary of Lough Bannow Bog, parallel to the proposed amenity track accessing the Royal Canal. The species was not recorded at either site and neither location was considered to contain suitable vegetation for the species. As the other drainage ditches on site are not vegetated, they were not considered suitable habitat for the species.

8.3.42. The NPWS considers the proposed development poses a risk to Whorl snail due to nature of potential hydrological changes (it requires very stable and specific hydrological conditions), indicating that possibly the largest population of Whorl snail is located on a site below Lough Bawn (this was not named). The application site, the survey locations and Lough Bawn pNHA are not designated for Desmoulin's Whorl snail and it is not suggested that a possible population on the site is connected to a European site or other designated site (all SACs designated for the species are located at a significant distance, with none within County Longford or in any adjoining county, and no NHA is designated or proposed to be designated for the species within the county).

8.3.43. In its observations on file the NPWS indicated it required clarification on the survey techniques employed by the applicant, in particular whether the samples were studied only in the field or also in the laboratory. Following the Joanna Allen-Hamilton's response to NPWS concerns, the prescribed body reiterated its concerns and submitted that the failure to undertake examination of the samples in the laboratory was contrary to best practice methodology, explaining that the species is minute in size and difficult to detect with the naked eye. Joanna Allen-Hamilton further responded, justifying the approach taken by Dr Maria Long (a leading expert in Vertigo species) on the basis that the very small pockets of habitat present were noted to be of low suitability for the species; and that the methodology used is in accordance with standard practice development by Moorkens et al (2011), as per the NPWS Wildlife Manuals, No.55. The survey technique employed by the applicant would appear to be less than optimum, but on the basis that the majority of actual habitat available does not have the potential to support the species, I consider the approach to be justified.

8.3.44. Noting the restoration efforts that have been undertaken and that are proposed by the applicant to improve Lough Bawn pNHA (blocking drains to restore water levels and providing a buffer zone to the raised bog), it is reasonable to assume the improved stability of the hydrological conditions on site will provide for the long term survival of any remnant population that may be present within or surrounding the pNHA. In addition, as explained above, in the event of a decision to grant permission I would recommend that a condition be attached requiring alteration to the alignment of the access track serving proposed wind turbine no.22 (and others) to increase the separation distance from the pNHA and associated raised bog in order to reduce potential for adverse impacts on the hydrological stability of the said area. I am therefore satisfied that significant adverse impacts on Desmoulin's Whorl snail can be avoided.

8.3.45. **Fish & Aquatic ecology** – The EIAR indicates that network of drains on site have very little fisheries value and no salmonid potential. Some drainage ditches within Derryaroge and Lough Bannow bogs were noted to contain sticklebacks. Course fish – common rudd, bream, pike and roach – and stone loach, tench and brown trout were noted as occurring within the relevant national grid square (biodiversity Ireland maps).

8.3.46. The main surface water receptors are identified as watercourse draining the site (s.6.5.4), comprising Kinacarrow stream (EPA ID 26_3574) to the northwest corner of Derryaroge bog and Ballynakill stream / Griallagh River (EPA ID 26_3574) to the east and northeast, both of which flow north to discharge to the Shannon, north of Lanesborough. Three stream drain Derryadd Bog: the Griallagh (EPA ID 26_625a) to the east of T10-T17; the Rappareehil stream (EPA ID 26_3871) south of Mount Dillon works and along the western boundary of the bog, flowing north to the Shannon. The Derrygeel stream (EPA ID 26_593) flows across the southern section of Derryadd Bog before joining with the Rappareehil and Lerhery stream

8.3.47. Inland Fisheries Ireland (IFI) expressed serious concerns regarding potential impact on fish and aquatic biodiversity, in particular arising from adverse impacts on water quality during construction works, with direct effects on fish from runoff contaminated by silts, peats, hydrocarbons and cement materials, including damage to viscera and gills, resulting in disease and possibly death; fish kills from concentrated or

prolonged periods of suspended solid releases; smothering of effs and coating of redds during spawning impacting greatly on population; indirect effects on fish from loss of food sources (smothering of invertebrates which are food for fish) also affected by impacts on water quality. In particular, failure of the proposed construction timetable to take account of the closed season creates particular risks during the spawning season (October-December). IFI also expressed concern about assessments of the water environment carried out by the applicant and considered there to be uncertainty regarding the potential impacts arising.

8.3.48. These concerns relate primarily to watercourses located outside the site, but which drain the site, including Ballinakill River and Curraghroe stream, which it reports are salmonid watercourses, tributaries of the Shannon, with good stocks of brown trout and a valuable nursery stream with good trout spawning habitat. However, Curraghroe stream would appear to be located to the north of the Shannon draining Sliabh Bawn wind farm and is not hydrologically connected to the site. In addition, no watercourse within the vicinity is indicated as a salmonid watercourse under the EPA's mapped data at catchments.ie.

8.3.49. I am satisfied that the issues relating to potentially significant impacts on surface water quality and surface water flow regime with potential for indirect significant adverse impacts on fisheries and aquatic species will be adequately mitigated by implementation of the CEMP, the SWMP and best practice construction techniques (see water and hydrology) and that, subject to compliance with conditions advised thereunder and necessary standard conditions in this regard, no significant adverse impacts on fish and the aquatic environment are likely to result.

8.3.50. **Conclusion** – Based on the foregoing assessment, it may reasonably be concluded that the proposed development is not likely to result in significant adverse effects on biodiversity. Regarding BirdWatch Ireland's submission that 2 years survey for Merlin is required under SNH guidelines (2014) and to the applicant's submission to the hearing that the Board may request additional information in this regard to enable the applicant to complete its survey, it is for the Board to determine whether this information is necessary, however based on the evaluation of this issue (see s.8.3.20), I do not consider that this is necessary.

8.4. Land, soil, water, air and climate

8.4.1. Land

8.4.2. This is addressed under chapter 7 of the EIAR. For clarity, Recital 9 of the Directive clarifies that issues surrounding 'land' and 'soil'[13] refer to land-take, including the need to address the unsustainable increase of settlement areas over time, the economic and social significance of good land management, including soil, and the need for urgent action to reverse land degradation. It advises that projects should therefore consider and limit their impact on land, particularly as regards land take, and also on soil specific matters including as regards organic matter, erosion, compaction and sealing. Appropriate land use plans and policies at national, regional and local level are also noted as relevant in this regard.

8.4.3. The EIAR does not address land-take, however the proposed development only removes a portion (c.2.7%) of this extensive site from its current (near expiring) use for peat extraction. The impact of the proposed development on potential or proposed after-life use of the site post peat extraction is relevant but has not been specifically addressed under land-take. The proposed amenity use of the site is positive, providing for public access to lands not previously accessible and demonstrates that the development of wind energy does not prevent lands being used for complementary purposes. I do not therefore consider land-take to be a significant issue in this instance. Regarding possible off-site effects on lands in the vicinity, such as the effectively sterilisation of lands from residential development, I would note that the surrounding lands are not zoned for planned residential development but rather are agricultural lands to accommodate agricultural and other compatible uses. As noted under the policy section, above, the proposed wind turbines would be located in excess of 500m distance from residential zoned lands in the vicinity and therefore would not conflict with the minimum 500m separation distance from any dwelling the applies under policy WD4 of the Development Plan.

8.4.4. No significant adverse impacts are anticipated.

[13] In particular, the Commission Communication of 22 September 2006 entitled 'Thematic Strategy for Soil Protection' and the Roadmap to a Resource-Efficient Europe is relevant regarding land and soil.

8.4.5. **Soil & geology**

8.4.6. Chapter 7 of the EIAR refers. The soil on site generally comprises cutover raised peat, currently under peat production, with two small areas of *Basic Poorly Drained Mineral Soils with Peaty Topsoil* within the vicinity of WT3 and T22 associated with discreet areas of *Till Derived from Limestone* subsoil. The EIAR does not indicate the importance, if any, of the soils on site, however it is well known that such soils are very poor from an agricultural perspective.

8.4.7. Table 3.1 *Excavation Volume Summary in the Peat Management Plan*, Appendix 7.3 of the EIAR provides a figure of 904,600m^3 for peat removal. I am satisfied that this is a worst-case scenario based on the applicant's response to questioning at the hearing and that the direct loss of peat soil is not a significant adverse impact. The significance of the potential loss of carbon storage through removal of peat is addressed separately under the assessment of potential climate impacts elsewhere in the EIAR.

8.4.8. A *Peat Stability Risk Assessment Report* it appended to the EIAR (appendix 7.4) which found there to be a risk of instability related to the need for deep excavations during construction, but that with the mitigation measures proposed (including battering back of excavations to a safe angle or construction of granular berm or temporary sheet pile wall as support (as per s.7.5.2.6), the risk is considered to be low. A *Peat Management Plan* for the proposed development is included as appendix 7.3 of the EIAR. The EIAR indicates that the recommendations of the PSRA report and the PMP will be taken into consideration during the design and construction phase and that best practice guidance regarding same must be inherent in construction. In addition, a temporary works design for foundation excavations, hardstandings and substation foundations will be carried out and excavation works monitored by a suitably qualified and experienced geotechnical designer. I am therefore satisfied that the potential risk of peat slide onsite will be adequately mitigated.

8.4.9. The GSI indicates no karst features onsite, but a number of such features outside the site boundaries, with two turloughs and a group of enclosed depressions c.3-4km to the west of the southern portion of the site, and another group of enclosed

depressions c.2km to the east of the northern portion of the site. However, based on the site investigation the EIAR considers it possible that karst features (voids, conduits and highly weathered zones) are located below the site extents which have not been identified due to the thick cover of peat and subsoils and a possible sinkhole was identified to the south-east of WT21, and weathered limestone with minor dissolution at the joints noted in rotary drilling of Derryadd Bog. The EIAR concludes that the site is not sensitive geologically due to its low geological value.

8.4.10. Potential for moderate, short to long term effects on soil and geology from hydrocarbon release are to be mitigated (s.7.5.2.4) through the fuel management plan (included in the CEMP) and good site management s.7.5.2.5, to reduce potential effects to not-significant, long-term negative.

8.4.11. **Conclusion** – I am satisfied that the proposed development will not result in significant adverse impacts on soil and geology.

8.4.12. **Water / Hydrology / Hydrogeology:**

8.4.13. Potential impacts on water are considered in the EIAR under chapter 8 *Hydrology & Hydrogeology* which was prepared by Tobin Consulting Engineers' hydrologist and hydrogeologist, John Dillon. The Construction Environmental Management Plan is attached as Appendix 2.2 of the EIAR and the Surface Water Management Plan as Appendix 8.4. This has been supplemented by additional information and clarifications of existing submitted information in the applicant's submission to the oral hearing, prepared by Declan Morrissey, John Dillon and Pierce Faherty, a copy of which is attached to the file.

8.4.14. The existing baseline environment, comprising a drained and industrially extracted extensive raised peatland, is very heavily modified, with only very small remnant areas of relatively intact raised bog evident in the aerial photographs (at and surrounding Lough Bawn at the southeast corner of the site in Mosstown and Coolnahinch townlands; at the mid-south at Corlea; at in the mid-west at Derryshannoge; at the northwest in Derryaroge townland and at the northeast in Ballynakill townland). The site drainage discharges to the Ballynakill River to the east and north; to Lough Bannow stream to the west and to Ledwithstown River / Bilberry stream to the south (see figures 8.1 and 8.3 EIAR), all being within the River Shannon catchment. The peat extraction site is currently operated under IPC

licence no.P0504-01). I note the Shannon and some of the tributaries draining the site are recorded by the EPA as under pressure from the extractive industry. The extensive internal drainage network is indicated in figures 8.3A, 8.3B and 8.3C, however it does not appear to show the recently constructed or deepened, drainage channel cut through bed rock to the west of the elevated woodland area at the north-central area of Derryaroge bog (between the proposed locations of wind turbines nos.3 and 4).

8.4.15. The site is upstream of Lough Ree SAC and Lough Ree SPA. Lough Bawn pNHA overlaps the southeast of the site at Derryadd bog and Lough Bannow pNHA almost adjacent the northwest of Lough Bannow bog, both of which are hydrologically connected to the application site. Between Lough Bannow stream and Lough Ree to the west, there is a karstic area with turloughs which would appear to be hydrologically connected to the site. The surface water network and groundwater system, and the aforementioned sites may be regarded as key sensitive receptors. To the east of the site is the Royal Canal, which is not hydrologically connected. According to EPA data, the Curraghroe stream (referred to by the IFI, appears to be located north of the Shannon and drains Sliabh Bawn wind farm and is not hydrologically connected to the application site.

8.4.16. **Water quality** - There is potential for direct impacts on quality of surface waters, in particular, but also to groundwater, from extensive construction works, which is an issue of particular concern to IFI, but also to other observers. As noted above, IFI made an extensive and detailed written observation in this regard and again at the oral hearing. The HSE, in its written observation, indicated it was satisfied that surface water and groundwater will be adequately protected through the mitigation measures proposed by the applicant.

8.4.17. The EIAR reports that the overall status of surface waters/rivers in the vicinity of the proposed site is *Poor Status* (Ballyleague Bridge, Lanesborough), based on low macroinvertebrate value (Q-value), with a rating of Q3, with a rating of Q3-Q4 (moderately polluted) 4km upstream on the Shannon at Termonbarry. The only other monitored watercourse in the area is the Farran / Fallan River 5km to the east (not hydrologically connected to the site) which as a rating of Q3-4 *Moderately Polluted.* The EPA catchments.ie website indicate that the Upper Shannon (inclusive of the unnamed watercourse draining the northwest corner of the site) is of

Poor status and *At Risk* of not meeting the WFD objective to achieve *Good* status, whilst all other watercourses draining the site are under review and without a designated status.

8.4.18. The baseline surface water quality data for the site presented in the EIAR (tables 8.3 and 8.4) is from monitoring required in respect of the applicant's EPA IPC Licence, the results of which are submitted as being as expected in a peat soil / subsoil environment. It is proposed that these may be used as a baseline for comparative studies during the lifetime of the proposed wind farm.

8.4.19. Additional survey data was compiled for Lough Bannow, Ballynakill and Ledwithstown watercourses and submitted to the hearing (attached as Appendix 1 to the *Précis of Evidence Hydrology and Hydrogeology*) to address concerns raised in IFI's initial observations about inadequate physical and aquatic biodiversity assessments for watercourse within the site boundary. It reports the watercourses to be primarily characterised as *Moderate* or *Poor* due to river straightening and drainage. No macroinvertebrate sampling was undertaken to inform watercourse characterisation as, it was submitted, the drainage channels within the site are highly modified and substrate and therefore not unsuitable for such sampling. Whilst IFI suggest that macroinvertebrate sampling should or could have been undertaken on watercourses suitable for sampling outside the site boundary[14], IFI's initial observation only referred to the need for additional assessments in respect of watercourses within the boundary[15].

8.4.20. IFI considered the Q-values provided for the River Shannon and River Farran not to be relevant due to the distance of the monitoring points from the watercourses intersecting the site. It submitted to the hearing that Q-values are required for channels (watercourses) receiving discharge from the site, with suitable survey locations required to be identified and agreed with IFI and Longford County Council and other relevant bodies in advance of a decision on the application.

8.4.21. The applicant also confirmed that all samples in May 2019 were below 25mg/l for total suspended solids (TSS), ammonium ranged from 0.4mg/l, orthophosphates

[14] Note, only one of the survey points was wholly within the site. Another three were located on the boundary. 6no. were located outside the site.
[15] I.e. those that would receive discharges from the proposed development.

ranged from below detection up to 0.04mg/l, which indicated as what would be expected for a drained peatland environment.

8.4.22. There would be no direct discharges from the proposed development to watercourses outside the site. Discharges from the site are currently controlled by the EPA IPC licence for the peat extraction operations, with discharges pumped from the site and, in some cases, discharged by gravity. It is proposed to continue to pump drain the site to maintain a similar water level indefinitely and prevent open areas of water from developing on the site under the draft rehabilitation plan to be agreed with the EPA in accordance with condition no.10 of the IPC licence. It is proposed to discharge surface water, during the construction and operational periods, via proposed attenuation / settlement ponds, to the existing internal drainage system of canals and settlement ponds on site, which in turn discharge to watercourse at the site boundaries. The applicant confirmed that peat extraction shall have ceased before the commencement of construction on site (by the year 2025), therefore it can be concluded that there will be limited potential for cumulative impacts on surface water during and after the construction period as the extracted peatland continues to become progressively more stabilised with vegetation (this is already evident) in line with the proposed draft site rehabilitation plan. Although, as noted elsewhere in this report, the rehabilitation plan for the site is uncertain as a final plan has not yet been agreed by the EPA.

8.4.23. A Construction Environmental Management Plan is included as Appendix 2.2 of the EIAR, with surface water management measures addressing: erosion and sediment control during construction; management of concrete; spill control for fuel, oils and chemicals; for works near watercourses (the 20m buffered required by IFI was confirmed to the hearing and instream works are proposed to be agreed with IFI); and for monitoring during construction (in addition to ongoing monitoring required by the IPC licence). Details of surface water management are included in section 2.6 of the EIAR and a Surface Water Management Plan is attached as Appendix 8.3, with drainage details on the submitted layout plans and drawing no.10325-2024 (typical SW settlement ponds & drainage details).

8.4.24. As recommended by IFI in its initial observation, it would be appropriate and reasonable that a detailed, structured monitoring programme for the duration of the construction period be agreed in consultation with IFI, the Local Authority and

relevant stakeholders (OPW) prior to the commencement of development. Should the Board decide to grant permission, a condition may be attached in this regard.

8.4.25. S.7.5 of the CEMP provides that all in-streams works will be carried out in accordance with the advice of, and in consultaiton with IFI and that sufficient notice will be given to IFI before pre-approved in-stream works commence. This is consistent with the IFI's submission to the hearing that consultation and agreement with the IFI be obtained in advance for all watercourse culverts and for cabling and grid connections that cross watercourses, and for all works on/to existing bridges, culverts and watercourse (including method statements and timings).

8.4.26. It is not clear from the information on file the locations where discharges from the proposed development would be monitored. Monitoring of discharges for the IPC licence appear to apply only at the point of discharge from the site boundary (this would be appropriate as the entirety of the site is licenced for peat extraction). Monitoring surface water discharges from the wind farm construction site during construction period (and, if necessary during the operational life) would necessarily take place at the point of discharge from the proposed attenuation ponds. This is consistent with the position of IFI which indicated that it requires details of proposed water quality standards and water quality outputs from the attenuation ponds, in addition to details of monitoring of effectiveness of sediment control proposals including trigger levels to inform provision of further surface water settlement, which have not been included in the SWMP. In the event of a decision to grant permission it would be appropriate that details of water quality monitoring during construction and, if necessary, during operation be agreed with IFI, etc., by condition. Due to the risk of peat instability identified in the EIAR, IFI also require details of drainage and stability for the proposed excavation of borrow pits, which I consider would be acceptable to be agreed by condition prior to the commencement of development on site if permission is granted.

8.4.27. The applicant confirmed to the hearing that it would provide the 20m buffer zone from watercourses during construction, as required by IFI, and IFI submitted to the hearing that a method statement for all works within the buffer zone should be subject of prior consultation and agreement with the IFI, etc. As proposed by the applicant, IFI requires the location of concrete chute washing area to subject of consultation and agreement in advance. IFI also requires details of biosecurity for

each works location to be subject of consultation and agreement in advance. This is reasonable.

8.4.28. The details of proposed mitigation measures are included under section 8.5, include implementation of best practices construction methods to prevent surface water and ground water pollution, implementation of the Construction Environmental Management Plan, compliance with CIRIA Document C741 *Environmental Good Practice on Site,* and integration of all mitigation measures into the Surface Water Management Plan which will be overseen by the appointed Site Ecologist and the Project Manager and subject to regular audit throughout the construction phase. The applicant gave further commitments at the hearing to comply with the relevant IFI[16] and Shannon Regional Fisheries guidance documents[17].

8.4.29. The applicant confirmed to the hearing that the limit for total suspended solids in discharge from the construction site will be 25mg/l, as required by IFI, that shale would not be used for the construction of access roads for the site, which was a concern raised by IFI due to potential impact on water quality and fish, that the surface water drainage system will require daily inspection and regular removal of deposited settlement to ensure protection of surface water and to maintain the effectiveness of the system for movement of water off site. It is proposed to monitor and maintain the effectiveness of the temporary drainage system and of sediment control measures for the duration of the construction works, with records of maintenance to be maintained by the contractor on site. Details of silt bag and silt fencing maintenance and installation specifications were submitted to the hearing, however IFI still had concerns about the use of silt bags in particular.

8.4.30. The applicant addresses the IFI concerns regarding fire at the BESS and resultant potential contamination of surface waters. It is proposed that fire will be tackled by dust or air to reduce risk of runoff. As noted in the CEMP, the main contractor will be responsible for developing the emergency plan as part of the health and safety plan. I consider this to be acceptable.

[16] *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Watercourses* (IFI, 2016).
[17] *Protection and Conservation of Fishery Habitat with Particular Regard to Road Construction* (Shannon Regional Fisheries, 2009),

8.4.31. Based on the information submitted with the application and to the oral hearing, I am satisfied that the proposed development can be constructed and operated without significant adverse impacts on water quality. Notwithstanding that IFI requested (at the hearing and not in its initial observation) that the applicant carryout monitoring to determine a Q-value of the watercourses receiving discharges from the site prior to the Board making a decision on this case, given the nature of potential impacts which arise primarily from temporary construction works, the proposed mitigation measures to protect water quality, including details of the CEMP and SWMP and other details which are required by IFI to be agreed in advance of commencement of development, I am satisfied that the proposed development can be carried out and operated without significant adverse effects on surface water quality.

8.4.32. **Surface water flow alterations** – The constructed development will increase the extent of permanent impermeable surfaces by <2ha and permanent permeable surfaces by 33ha (2.7% of the site), which could affect infiltration capacity of soils and increase the rated and volume of direct run off. This is mitigated by design which incorporated surface water control measures. The applicant submits that the creation of preferential flow paths through construction of roads will be prevented and normal flows in surface water maintained, referring to s.8.3 of the EIAR which set out that runoff will discharge to surface water attenuation ponds adjacent proposed infrastructure prior to release to the existing field drainage and existing settlement infrastructure.

8.4.33. The applicant provided details for calculations for sizing of settlement ponds to allow for 24hr retention (1 in 10 year) during construction. IFI considers the applicant has not demonstrated how it is proposed to limit surface water runoff to greenfield rates. As the site is heavily managed in terms of being pump drained, and it is the applicant's intention to continue to pump drain the site (indeed this will be necessary due to the proposed finished levels of the infrastructure), it is evidently within the means of the applicant to continue to control runoff from the site.

8.4.34. At the hearing the applicant committed to all culverts being sized and installed to the standards specified in its initial observation to the application. I am therefore satisfied that there will be no adverse impacts on the flow of surface waters within the site.

8.4.35. **Groundwater** - The EIAR identifies that construction works have the potential to impact on groundwater from excavations and accidental spillage of hydrocarbons, and to groundwater well supplies from dewatering for excavations. Groundwater quality is currently rated as of *Good* status by the EPA, but its risk status is *Under Review*.

8.4.36. The EIAR demonstrated that there is only limited, if any hydrological connectivity between the site and Fortwilliam Turlough and the karst area to the west. The IFI disputes that the impact of hydrocarbon spillage would not be significant on ground waters. The standard best practice mitigation measures proposed in the EIAR are appropriate and sufficient to avoid potential for adverse impacts on significance on groundwater quality. The applicant has demonstrated that the zone of drawdown from the proposed borrow pits and excavations would not impact on any public or private wells due to distance of the proposed works therefrom.

8.4.37. **Flood Risk** – A Flood Risk Assessment is attached as Appendix 8.1 of the EIAR. The finished levels of turbines, substations, masts and access roads are raised to above estimated pluvial level. Surface water run-off from the site is proposed to be limited to greenfield runoff rate through the proposed surface water management system including storage ponds for attenuation (s.2.6 of EIAR refers). It is submitted that the FRA takes account of Longford's Strategic FRA within the *County Development Plan* and that there is no proposal to increase discharge from the overall site as a result of the proposed development. Given the nature of the site, the current proposals to keep pump draining the extracted peatland and the stated intention not to increase discharge, I do not consider the potential flooding on site (which the FRA acknowledges is liable to flood in certain locations) to be a significant issue and would accept that the proposed windfarm, in itself, would not increase flood risk offsite due to the mitigation measures proposed.

8.4.38. Principle P16 of the *National Peatland Strategy* provides that, *generally, Bord na Móna cutaway bogs that flood naturally will be permitted to flood unless there is a clear environmental and/or economic case to maintain pumped drainage.* In response to questioning Seán Creedon was unable to confirm that any clear environmental and / or economic case had been reached to inform the applicant's decision to keep pumping the site indefinitely. Whilst he indicated that allowing the site to flood has the potential to affect surrounding properties through raised water

table, he made clear he wasn't suggesting this was the case for this site. It cannot be determined from the information on file whether or not there would be any potential positive impacts on flooding off site through allowing the site to be rewetted.

8.4.39. **Conclusion** – Based on the foregoing assessment, I am satisfied that the proposed development, subject to implementation of the detailed mitigation measures and commitments outlined in the EIAR, the CEMP, the SWMP and at the oral hearing will not have any significant adverse impacts on hydrology or hydrogeology.

8.4.40. **Air & Climate**

8.4.41. These factors are address under Chapter 12 Air Quality and Climate – The EIAR provides no site-specific baseline data for the site but refers to data from air quality monitoring sites at Longford, Mountrath, Emo and Monasterevin for Air Quality Management Zone D (rural Ireland), which suggests that air quality is good. However, it would seem reasonable to assume that this operational extraction bog generates dust locally during dry weather. In this regard it should be noted that Bord na Móna operations are governed EPA IPCC licence P0504-01, a condition of which requires Bord na Móna to submit annually to the EPA a report on dust monitoring at identified DSL as part of the AER, and stipulates that activities on-site shall not give rise to dust levels off site at any Dust Sensitive Location which exceed an emission limit of 350 mg/m2/day. The details of compliance, or not, with this condition would provide a better understanding of the baseline situation associated with the current operations on site, but they do not appear to be on file. The EIAR submits that in the do-nothing scenario the bogland would continue to be harvested by Bord na Móna for power generation until it transitions to other activities – it has committed to cease harvesting peat for power generation by 2030. Seán Creedon confirmed to the hearing that it is actually intended to cease extraction by 2025.

8.4.42. **Air** - Construction activities will generate dust and will generate exhaust emissions from vehicles and machinery, as short term, slight negative impacts which will be reduced further through implementation of mitigation measures to mitigate dust. Cumulative impacts with other such development within 20km are anticipated to be negligible. During the operation period the wind turbines will have an indirect long-term significant positive impact on air quality by avoiding generation of pollutants and greenhouse gases through generation of electricity from conventional fossil fuel fired

generation plant. Emissions of NO_x, SO_x, PM and secondary effects will be avoided through the proposed development. Cumulative impacts would be positive and long term.

8.4.43. **Climate** - I am satisfied that the EIAR addresses potential impact of loss of peat within the footprint of the development, provides adequate justification in terms of overall GHG emissions balance arising, and demonstrates that there would be no significant direct adverse impacts in terms of climate change from the proposed development.

8.4.44. However, I am not satisfied that the EIAR considers the potential for indirect impacts on climate change in terms of implications for ongoing carbon emissions from the extensive extracted peatland site into the future, which have not been quantified. I am also not satisfied that the EIAR considers the potential losses in terms of potential carbon sequestration that would occur over the lifetime of the development where the site allowed to rewet naturally.

8.4.45. As set out in the policy section, above, there is, and has been over the last few decades, a very strong policy context support for renewable energy development as part of the international consensus to address climate change. In contrast the policy support for climate change mitigation, through working with the natural environment to secure or increase carbon capture in peatlands, despite its potential significance, has been less directive notwithstanding the adoption of the *National Peatland Strategy* in 2015. In addition to accepting the principle of renewable energy being used for renewable energy, it is a principle of the *Strategy* (P19):

> *The potential contribution of peatlands rehabilitation, restoration and enhancement to climate change mitigation and adaptation, in addition to peatland preservation, will be fully explored…* [by the EPA and DCCAE under Action 13].

Principle P17) provides that:

> *In deciding on the most appropriate afteruse of cutaway peatlands, consideration shall be given to encouraging, where possible, the return to a natural functioning peatland ecosystem. This will require re-wetting of the cutaway peatlands which may lead in time to the restoration of the peatland ecosystem;*

And principle P16 states:

> *Generally, cutaway bogs that flood naturally will be permitted to flood unless there is a clear environmental and/or economic case to maintain pumped drainage.*

8.4.46. It is not apparent that the principles underlying the *Strategy* formed part of the considerations of the applicant. It may be argued that the principles impose no specific obligations on the applicant, however principle P5 of the Strategy makes clear that there is an obligation on *Semi State companies…and public authorities …* [to] *discharge their functions in such a way to support the objectives of this Strategy.* Consideration of the rehabilitation or restoration of the site has not been viewed within the context of climate mitigation and adaptation; site rehabilitation or restoration (the return to a natural functioning peatland) does not form part of the applicant's considerations on this application; and, having regard to principle P16, Seán Creedon was unable to confirm whether any economic or environmental case informed the proposal to maintain pumping of this site.

8.4.47. The Government's *Climate Action Plan 2019* reinforces and elaborates on the climate mitigation strategy, including the potential for peatland restoration / rehabilitation to contribute significantly to Ireland achieving its targets and obligations concerning GHG emissions. It sets out steps to be taken by Bord na Móna (and other agencies) as part of the implementation of Action 133, including the assessment *of the optimum post production after-use across all Bord na Móna peat extraction sites* and the *timely implementation and optimum management practices on extraction sites as they retire from production.*

8.4.48. Therefore, whilst the Board may have permitted the approach proposed by the applicant previous (where rehabilitation / restoration of the extracted peatland site did form part of the application) on similar sites (e.g. Mount Lucas wind farm development was discussed at the hearing in this context), the evolution of climate change policy context in the interim provides that a more holistic, integrated and ambitious approach is required in the management of these degraded landscape features. The requirements of the *Action Plan* cannot be regarded as some unexpected bolt from the blue. Bord na Móna will be well aware of the potential importance of peatlands, including industrial extracted peatlands forming part of its

80,000ha of landholding, within the carbon cycle even without the publishing of the *National Peatland Strategy* in 2015, which provided a clear signpost to the future approach to extracted peatlands in view of Ireland's climate change obligations and targets.

8.4.49. As noted already, the rehabilitation of the extracted peatland site does not form part of the application but is to be agreed with the EPA under condition no.10 of the IPC Licence no.504. The Board may decide that the issue of site rehabilitation falls outside the scope of its considerations in this case, however it will have to consider the potential implications that the proposed wind energy development itself will have on the nature and extent of possible rehabilitation measures that can be implemented on this site.

8.4.50. The proposed infrastructure would have a finished level of between 0.5m and 1.0m above finished site level (post completion of currently ongoing peat extraction) which varies widely across the site. This will severely limit the extent of rewetting of drained peatlands on the site which will have to be subject of extensive pumping during the operational period to avoid flooding of the infrastructure. Whilst it is possible that the lowest parts of the site may approach saturation, the extant peat on the majority of this undulating site will remain unsaturated and continue to act as an on-going source of carbon emissions, notwithstanding that it would be *partly* offset[18] by natural regrowth of broadleaf woodlands (already evident on much of the site). I therefore consider the proposed development will be likely have a long-term indirect significant impact on climate through ongoing carbon emissions from this extensive drained peatland site, although the applicant has not considered same and there is no information on file that would enable the Board to quantify this impact on climate change. Cumulative adverse impacts would result from wind energy on similar Bord na Móna industrially extracted peatlands that are not subject to rewetting. There is no information on file that would enable the Board to assess potential cumulative adverse impacts on climate change in this regard.

[18] The *National Peatland Strategy* (s.5.3.2) indicates that peatlands drained for forestry are more complex (compared to restoration and rehabilitation of drained peatlands) as growing trees absorb CO_2 and may partly offset the ongoing CO_2 losses from drained peat.

8.5. **Material assets, cultural heritage and the landscape;**

8.5.1. **Communications infrastructure**

8.5.2. **Transport and Traffic** – Potential impacts are assessed in chapter 14, focussing on the effects of additional traffic movements generated by the proposed development during construction and operational phases. Concerns about construction traffic impacts were raised by Cloontagh NS Board of Management and others (on R398 in particular).

8.5.3. There will be very significant construction traffic over an approximately 24-month development period, generating 34,574no. truck loads, excluding extended and large articulated loads (312no.) associated with the erection of the 24no. proposed turbines, 120no. staff PCU movements per day (assumes 2 persons per car).

8.5.4. The assessment, based on a worst-case scenario where traffic will all arrive from the one direction, found that generated traffic will result in the capacity of centre network links approaching saturation, most notably on the N63 east of Lanesborough which is estimated to operate at 92% capacity with current background traffic (plus estimated growth to 2021) and at 98% with construction traffic. This is a significant impact given that 85% RFC is considered at capacity, but short term, and I note neither TII nor the Local Authority's Roads Design Section raised any objection in this regard.

8.5.5. In terms of impact on junction capacity, the EIAR examined only the N63/R392 junction in Lanesborough. The assessment assumes all employee traffic will arrive at peak, but that deliveries will travel outside peak, which has been adequately justified by the applicant. At worst, the impact is predicted to increase the RFC of the junction from 54.6% to 57.1% in the PM peak from the N63 from east. It can be seen that the increase is not particularly significant in itself and, compared to a maximum operational junction capacity RFC of 85%, it would not result in the junction being overloaded and is not a significant adverse impact.

8.5.6. Construction of underground cable options for 300m along the R392 would take place over 2no. days (150m per day), with a stop-go system in place to ensure the road remains open at all times. This is not a significant impact.

8.5.7. Large deliveries have the potential to have the greatest impact, taking place over 43no. days, with the delivery route proposed to be via the M6, the N61 Athlone-Roscommon, the N63 to Lanesborough and the R392. The effects would be significantly reduced if the deliveries are made at night, as is now the norm, and the deliveries are proposed to be governed in accordance with traffic management measures included in section 14.8. A delivery route assessment has been undertaken and is appended to the EIAR, which has determined that no permanent works will be required on any third-party lands. Only temporary modifications have been identified as necessary to existing roundabouts, run-over areas, signs and street furniture, which are proposed to be agreed with the local authority including details of reinstatement, with access via the motorway networks required to be subject of agreement of TII.

8.5.8. The EIAR assessed the potential impact of proposed junctions or amended junctions to accommodate construction access. No significant impacts are anticipated by the applicant as any effects will be temporary and it is assumed that any construction access entrances will be closed on completion of construction works. This can be required by condition if permission is granted.

8.5.9. The EIAR includes only cursory consideration of operational impacts, estimating only 20 trips to and from the site per day generated by maintenance staff and visitors for amenity purposes. The applicant proposes to carry out a review of amenity-related traffic movements 3 years post commencement of operation, to inform whether there is the need for an amenity specific traffic management plan to be agreed with Longford CC. This issue can be agreed by condition should permission be granted.

8.5.10. The applicant submitted revised proposals omitting the proposed amenity accesses to the N63, which was identified as a significant road safety concern and national roads capacity issue, contrary to TII policy. Access is now proposed to be accommodated via Lanesborough and access across the N63 will be accommodated via the existing industrial railway underpass as suggested by TII. This could be confirmed by condition.

8.5.11. Operational traffic from the windfarm operations will be minimal. No significant adverse impacts on traffic and transport operation and infrastructure is anticipated subject to compliance with conditions.

8.5.12. **Telecommunications - Communication** - There is potential to affect communications including TV broadcasts, microwave links, aircraft navigation (VOR), Instrument Landing System for aircraft approach to landing, radar, Safety of Life at Sea (SOLAS) transmissions, Long Range Navigational Systems (Loran), cellular radio for portable telephones, and satellite communications. Potential effects consist of interference with microwave communications link systems through reflecting and blocking signals. Jim McCausland and Dominic McGrath raised this as a concern (concerning communications and tv/radio).

8.5.13. Extensive pre-planning consultation has taken place between the applicants and relevant interested parties (55no. detailed in Table 11.2) with details provided in the EIAR, with most operators raised no objection on the basis that they have determined through in-house analysis (commonly a calculation of the '*Fresnel*' zone clearance required) of data provided by the applicant that the proposal poses no threat to current microwave links.

8.5.14. 2rn (formerly RTE Network Ltd), which provides a transmission service for all broadcast services across Ireland, operates an extremely important microwave link between Coolderry link site to the main station at Cairn Hill. The proposed development provides sufficient clearance (350m required, but c.500m achieved from WT6 and WT7). 2rn request to be consulted as the project moves forward to monitor the situation and make interference calculations in advance of turbine installation. ESB Telecom Services operate a number of point-to-multipoint microwave links through the site from at least 7no. sites to the nearby Ardagh Hill ESB site and has identified WT16 as most likely to interfere with some of their radio circuits. The applicant has agreed to ESBTS's request to restrict micro-siting of WT16 and to further (unstated) options to avoid interference, on which the applicant is in agreement. Ripplecom operate many microwave circuits carrying broadband to customers in the area and expect some interference may be likely to five end customers, which would be reversible, frequent and brief in character. The EIAR considers it will be possible for the developer to remediate broadband service if interference occurs. A standard condition may be attached in this regard should permission be granted.

8.5.15. **Television and radio** - Digital TV and FM radio signals in the area are received generally from Cairn Hill TV mast 23km to the northwest, but some may receive

signals from other masts. Interference may manifest in 'ghosting' where a second signal is created through reflection of the original signal off turbine blades and is dependent on a range of factors. No interference is expected to satellite, cable or microwave-based TV reception but 2rn considers interference may affect viewers who have aerials orientated towards the proposed turbines. The potential number of receivers that could be affected is greatly reduced due to the prevalence of SaorView and other digital systems which afford much greater multipath or ghosting protection compared to the obsolete analogue TV system. In the absence of mitigation measures interference would be a significant, long-term negative impact. The applicant has agreed to sign a protocol with 2rn to guarantee that all mitigation measures required to avoid or reduce this potential effect will be implemented. S.11.5.1 details additional possible mitigation measures to protect microwave radio circuits where interference has been found to occur, in addition to the siting of turbines outside of calculated Fresnal zones. This entails rerouting the circuit around the interference source using possible alternative sites to avoid the turbine, possibly involving alternative nearby sites to house new equipment, the addition of extra cabins on a telecommunications site to house new equipment, new antennas, new wireless link licences and upgrading utilities on the best choice site to support the new equipment. In the event of a grant of permission a condition should be attached in this regard.

8.5.16. Regarding impact of EMF, the effects from a wind turbine are asserted to be negligible within a few meters and will be governed by the requirements of EMC Directive 2004/108/EEC. The potential effect on sensitive receptors from magnetic fields during operational phase is determined as neutral and imperceptible.

8.5.17. **Aviation** – The applicant consulted the IAA, the Air Corps and the airports under the control of the DAA, in addition to Knock Airport, Galway Airport, Trim Airfield and Abbeyrule Airfield to determine their requirements, if any. The EIAR refers to the requirements of the IAA and the Air Corps standard requirements pertaining to agreement of a scheme for aviation obstacle warning lighting, notification at least 30 days prior to commencement of development, and provision of as-built co-ordinates of the development for charting purposes. Both have submitted observations to the application as prescribed bodies, with no objection subject to standard type conditions. No significant effects are therefore anticipated on aviation operations.

8.5.18. **Property values** – This is addressed under EIAR chapter 5 Population and Human Health, s.5.2.3.2. Charlie Sorohan, Andrea and James McCausland, NDWFCG and Jim McCausland and Dominic McGrath and others raised this issue.

8.5.19. The EIAR refers the findings of a UK study on *The effect of wind farms on house prices* carried out by the Centre of Economic and Business Research which found no detectible negative impact on house price growth within a 5km radius of sites and concluded that house prices are not driven by the presence of absence of windfarms. This was largely confirmed by a Scottish study of over 500,000 property sales. There are no such similar studies in Ireland.

8.5.20. It would seem plausible that the proximity of a dwelling to wind turbines would be a determining factor in property value, and that the larger, more prominent and more numerous wind turbines are within a development, the more likely there is to be significant factor. Property value is also likely to be impacted by the perception that noise is associated with windfarm development, again this will be related primarily with separation distance. Given that the *WEDG (2006)* does not refer to impact on property value but sets standards in relation to minimum setback distance from and maximum noise impacts at residential properties, it may be reasonable of the Board to take the view that subject to compliance with the standards that the issue of permanent material impact on property value does not arise. As the proposed development complies with these standards, I would not anticipate any significant impact on residential property value.

8.5.21. **Cultural heritage**

8.5.22. Chapter 15 of the EIAR provides a comprehensive assessment of potential impacts on cultural heritage. The IPC, John Duffy, Niall Dennigan and others, including Longford County Council's Heritage Officer drew attention to potential direct impacts on archaeological heritage with the application site and potential indirect impacts on the context of built heritage within the surrounding area. The site is rich in archaeological heritage with an extensive list of recorded monuments (a large proportion were toghers). The applicant submits that the majority of that heritage has been either archaeologically excavated or removed through peat extraction activities (of 306no. recorded monuments within 500m only 9no. survive) and none of the extant monument would be impacted directly and therefore potential for direct impacts on same would appear to be low. The Archaeological Division of the DAH&G made no observations on this application[19]. The Heritage Officer considered positively the EIAR assessment and supported the proposals to archaeologically assess and monitoring prior to and during construction. I would accept the EIAR's conclusion that no surviving recorded monument, Protected Structure or NIAH recorded structure will be directly impacted by the proposed development, subject to implementation of the proposed mitigation measures (s.15.5.2 refers) and that direct impacts on subsurface archaeological heritage can be avoided.

8.5.23. There is potential for indirect significant impacts Corlea Trackway, a site of significant cultural heritage adjacent to the south of site. That heritage item comprises the remains of one of a number of remarkable wooden trackways in Longford, situated c.600-m south of the site. The purpose-built tourist facilities surrounding the trackway, including a built-enclosure for the original trackway, a replica trackway following the same alignment northwest towards the application site, and an extensive rehabilitated (partly rewetting) peatland park, in addition to the Corlea Archaeological Settlement and Biodiversity Project attached as Annex 6 of the *Development Plan* attests to the significance of that heritage site to the county. The EIAR rated the potential impact as *long-term negative* (EIAR s.15.4.5.1) with no reference to level of significance in line with the magnitude scale in table 15.2.5.1.1. The Council's Heritage Officer requested that every effort should be made to

[19] The Board's administration section confirmed with its counterparts in the Department that the section had no observations to make.

minimise the visual impact from the proposed wind turbines and associated infrastructure would have on the visual amenity of the Corlea Trackway (inter alia other protected structures and key sites), suggesting that this could be undertaken by screening or, where necessary relocating or removing turbines which have a negative effect (referring to turbine nos.17, 18, 19 and 21).

8.5.24. Siobhán Tinnelly responded that no significant direct or indirect effects (arising during the operational phase) were identified in respect of turbines 17, 18 and 19, with only a neutral effect of no significance on setting for the most part. She clarified that the findings of an indirect, *long-term negative significant effect* on cultural heritage, including Corlea Trackway impacted by proposed turbine T21, is not a permanent impact and would be readily reversible upon decommissioning (the EIAR indicates that the site may be proposed for further wind energy use at the end of its 30-year operational period). Based on a revised photomontage, AH3a (supplementing existing photomontage AH3), Ms Tinnelly submitted the potential impact on Corlea Trackway is indirect, *long-term negative and moderate to slight in effect,* contradicting the higher rated magnitude of impact made earlier in the submission.

8.5.25. The Board will see that all 24no. proposed turbines would be visible from the replica trackway, with only the most distant turbines being obscured by vegetation screening in the growing season, and the Board will necessarily make its own determination on the significance and acceptability, or not of same. In my opinion I would consider the magnitude of the effect on the setting of Corlea Trackway to be, at very least significant as it would significantly alter a sensitive aspect of the landscape context, (with interrelated impacts on same as a tourist facility, as is recognised in the EIAR). However, notwithstanding this, I do not consider the indirect impact to be unacceptable, particularly in view of the acceptability of such development on open peatland landscapes under the *Wind Energy Development Guidelines* (2006) and having regard to the results of Failte Ireland surveys on visitor opinions on wind turbines. The proposed windfarm can be viewed within the continuum of human occupation of this landscape over millennia, including its use as an industrial landscape for peatland extraction.

8.5.26. Mitigation of visual impacts on sensitive heritage receptors through screening, as suggested by the Council's Heritage Officer is not realistic. Screening within the

application site would be ineffective screening at Corlea Trackway (under the control of the applicant) would further erode the character of that heritage site; and the other receptors are not under the control of the applicant and therefore such mitigation measures are not within the gift of the applicant to implement.

8.5.27. I consider the potential visual impact on the Royal Canal (photomontages LVIA, AH1-2, LC3); and on RPS and NIAH properties in the town of Killashee (photomontages LVIA CP4) to be acceptable. I am satisfied that the applicant has demonstrated (at the hearing) that the impact on the distance Granard Motte would not be significant and that cumulative impacts on cultural heritage, taken with Sliabh Bawn wind farm, would not be significantly adverse or unacceptable.

8.5.28. **Conclusion** – The potential impacts on cultural heritage, including subsurface archaeology would not be significantly adverse or unacceptable subject to the implementation of the mitigation measures proposed.

8.5.29. **Landscape**

8.5.30. Landscape and visual impacts are addressed under chapter 9 of the EIAR, supported by extensive photomontages (two booklets), maps of the Zone of Theoretical Visibility and Route Screening Analysis (including for sections of the Royal Canal), all of which are attached either as appendices or in separate booklets to the EIAR. The assessment includes a landscape impact assessment, visual impact assessment and cumulative impact assessment. Cloontagh NS Board of Management, John Kiernan, Andre and James McCausland, NDWCG and others raised landscape and visual impacts as a concern.

8.5.31. **Landscape impact** - The site is contained within a single landscape character area under Landscape Character Assessment for the county under the Longford CDP, being LCU 6 – Peatlands. The peatland LCA *is dominated by extensive tracts of raised bog interspersed with mixed forestry and areas of scrubby vegetation. The topography is notably flat, with the majority of the land lying below the 50m contour line. This, when combined with the limited vegetation cover and extensive peatland cover mean that views are available across wide areas throughout the unit.* It is considered a low sensitivity landscape under the LCA. The site is largely contained within that area identified under the CDP as a preferred location for wind energy development, except at the southeastern section which is neither a preferred nor

non-preferred location. As noted in the policy section, above, '*flat peatland*' landscapes such as the application site are considered generally acceptable for extensive windfarms of tall turbines under the WEDG (2006). LCU6 is intersected by the Royal Canal to the east of the application site, which has a high sensitivity rating.

8.5.32. The EIAR also considers the potential landscape impact on Counties Roscommon, Westmeath and Leitrim. Regarding Roscommon, it notes, in particular the landscape character designations of its eastern (Shannon-side) - LCA5, 6, 7 and 8 - which are all rated of Very High Value, and that County's wind energy policy context (Renewable Energy Strategy), which identified LCA5 (to the northwest of the application site and of a similar landscape character to LCU 6), as a preferred location for wind farm development. Regarding Westmeath, it notes LCA6 (adjacent the Shannon) and LCA7 (inland of same) to the south of the site adjacent the county boundary. LCA7 is identified as having medium capacity for wind energy development.

8.5.33. The landscape sensitivity of the central study area (c.5km) and the wider area is rated as medium-low, excepting the higher sensitivity of the linear corridors other Royal Canal and River Shannon. The magnitude of the landscape impact is estimated by the applicant as *long-term, medium-low* within the central area and *low to negligible* outside this area, decreasing with distance. And the applicant rates the level of impact as *moderate-slight* within the central area and *slight to imperceptible* outside that area. In general, I would concur with the conclusions of the applicant's assessment of landscape impacts.

8.5.34. **Visual impact** - The visual impact assessment considered 46no. sensitive receptor locations via accompanying photomontages, with the detailed assessment attached as appendices, with a summary of the results contained in the main body of the EIAR. The summary is tabulated in table 9.11, cross referencing distance to turbine, number of turbines visible (in the montage), receptor sensitivity, magnitude of visual effect and significance of visual impact for each visual receptor position (VRP). The most sensitive receptor (VH – very high sensitivity) is identified by the applicant as the Hill of Uisneach (DR24) in Co. Westmeath, an elevated, ancient ceremonial hilltop associated with the festival of Bealtaine, within the open countryside c.25km to the southwest of the nearest proposed turbine. Five other receptors were rated as of high sensitivity – (DR02) Rathcroghan heritage area, Co. Roscommon, c.26km to

the northwest; (DR05) Graveyard at Granard, Co. Longford, c.26km to the northeast; (DR16) designated scenic route, causeway to Saints Island c. 7km to the south; (DR25) recreational amenity feature at Inchcleraun island c. 11km to the west-southwest; and (DR26) designated view and recreational amenity feature on Lough Ree c.13km to the south.

8.5.35. I would have reservations about the sensitivity rating applied to Corlea Trackway and, accepting that there is a degree of subjectivity in the process, would question the way the criterion to determine sensitivity (first table in Appendix 9.4) has been applied. In particular, I would suggest that '*strong association*' rather than '*moderate association*' should apply to '*sense of remoteness / tranquillity*', '*integrity of the landscape character within the view*', '*sense of place*' and '*degree of perceived naturalness*'.

8.5.36. In terms of the photomontages, I do not consider the submitted photomontages to represent a worst-case visual scenario. Apart from many the views being based in the growing season (there are many outside the growing season also), in many of the views the turbines are turned in side profile which minimises their visibility, particular when partly screened by intervening vegetation. In those cases, there is potential for greater visual impact than is suggested in the image (e.g. LC1). I do not consider the moving CGI video imagery of the proposed development is necessary, as suggested by an observer at the hearing, and note that it is not required (or advised) under the GLVIA.

8.5.37. In the EIAR the applicant considers separately the potential for visual impacts on groups of receptors – designated views (s.9.4.3.2), local community views (s.9.4.3.3), centres of population (s.9.4.3.4), major routes (s.9.4.3.5) and tourism, amenity and heritage features – which is reasonable. The sensitivity of views are rated using a systematic, but unweighted, 14-point scale of values (see first table, appendix 9.4). Many of the values are highly subjective and, as no one site is likely to score highly in each of the 14no. values, this has the effect of diluting the overall sensitivity rating of the site.

8.5.38. Designated views – The visual impact on sites >10km distant is generally rated *slight* to *slight-imperceptible* and is not rated higher than *moderate-slight* in any instance (two local roads in Roscommon overlooking Lough Ree, DR17 and DR18). In view

DR17 all 24 turbines will be visible (nearest 16.7km) and 21no. will be visible from DR18 (c.13km distant). The distant views (c.25km) of the windfarm from the Hill of Uisneach (DR24), the receptor of highest rated sensitivity is rated *slight-imperceptible*. I would concur with the applicant's determination on designated views.

8.5.39. Local community views – 4no. views were specifically selected to represent typical views for local residents (LC1-LC4) within 5km of the site, but the other views are submitted as representative also. However, this is not a specific residential visual amenity assessment which have been submitted with applications for similar developments in the past, and it therefore does not appear to take particular account of the *high level* of sensitivity of residential property (as recommended in the GLVIA and as implied under section 6.9 of the WEDG). Rather, the most sensitive views, LC1 and LC3, are rated medium, reflecting their association with recreational (Royal Canal) or other amenity functions (graveyard). The others, including LC2(i) and LC2(ii) (within an unambiguous rural dwelling context) and LC4 (which reflects views of dwellings to the east), are rated only medium-low when the GLVIA and the WEDG (2006) recognises them as highly sensitive.

8.5.40. The EIAR recognises that the potential visual effects are likely to arise from prominent (close) turbines appearing within rural residential scenes where there may actually be little sense of the vast cutaway flat peatland context existing beyond the boundary hedgerow of the nearest dwellings (referred to as out-of-context views). However, it concludes that none of the views would be significant and would range from *moderate-slight* to *moderate*.

8.5.41. Arising from concerns raised in the observations submitted by Andrea and Jim McCausland (of Cloontaghmore) about the potential for significant adverse visual impacts on properties located along the R398. The McCauslands' household is one of a number of dwellings (and Cloontagh NS) situated along R398, with turbines located to the north (17no.) and to the south (7no.), potentially visually surrounding those dwellings. Richard Barker, in his Précis of Evidence proposed that photomontage MR7 was included in the original LVIA as a worst-case scenario for receptors along the R398 in terms of viewing exposure, but supplemented this with views LC5(i) and LC5(ii) at the hearing. The additional photomontages illustrate the 'without' and 'with-development' scenarios for their home as viewed from the public

road, providing some idea of the visual impact. However, the Board should be cognisant that LC5(i) does not capture the actual likely visual impact on views from the rear of the dwelling (and its rear private opens space) as the turbines are not visible in the roadside view being obscured by the dwelling. It is not possible for Mr Barker to determine from LC5(i) that only two turbines will be visible in that direction. I find his assertion that the combined two viewing arcs of turbines account for only 50-degrees out of 360 not to be credible. Although the view of turbines will be obscured from various properties by the contours of the land and, seasonally by vegetation, I am not satisfied that the applicant has demonstrated that this will mitigate significantly the potential adverse visual impacts. However, the nearest turbines (T15 and T18) would not be closer than 1km to the McCauslands' dwelling (Mr Barker states 1100m) and all other turbines would be more distant.

8.5.42. Mr Barker submitted that the McCauslands' property is one of the only locations from which potential views of turbines extend beyond 180-degrees within the study area and that other properties along the road tend to have a view in only one direction. Where dual aspect visibility exists, the impacts are likely to be similar to that in LC5 and the visual impacts are not considered significant by Mr Barker.

8.5.43. On balance, I consider the visual impact on dwellings along the R398 will be significant due to the scale and number of turbines that are likely to be visible at various times of the year, but I don't consider that the visual impact will necessarily be adverse. And within the context of the WEDG concerning wind energy development within different landscape types and given the separation distance and the presence of screen vegetation, I do not consider the impact to be unacceptable.

8.5.44. Centres of population – I am satisfied that the applicant has demonstrated that the visual impact on the surrounding settlements would not be significantly adverse (CP1-CP7 refer).

8.5.45. Major routes – I am satisfied that the applicant has demonstrated that the visual impact on major routes would not be significantly adverse (MR1-MR8 refer).

8.5.46. Tourism, amenity and heritage features – I would anticipate there will be a significant visual impact on the Royal Canal where turbines will be visible along many parts of the tow paths (AH1 and AH2 refer). However, given the original purpose of the canal infrastructure I do not consider the visibility of modern energy infrastructure to

constitute a significant diminution of its character and setting which also benefits from substantial screening vegetation along much its length.

8.5.47. In terms of visual impact, the most significant visual impact is *substantial moderate* at AH3, Corlea Trackway, which has been classified as of *high sensitivity,* with visitors strongly attuned to the landscape around them, including how it would have appeared in historic times. The EIAR recognises that the site affords one of the clearest, closest and most comprehensive views of the proposed windfarm and that the scheme represents a marked visual change. However, I would accept the applicant's assertion that the scheme, as viewed from Corlea Trackway is not without aesthetic merit.

8.5.48. The view of the turbines from the external areas of the Corlea Trackway site will be significant in themselves, but, as suggested by the applicant, they will not surprise the visitor on arrival on site as they will be exposed to them travelling to the site. I would agree with same. However, the following section of the EIAR raises some concern about the impact on the historic trackway contained with the visitor centre and, ultimately, the potential for significant adverse impact on the visitor's experience of same:

> *The exposed section of trackway is also enclosed, but at the end of the presentation shutters rise to reveal the surrounding landscape and the turbines will be visible as a distinctive background feature in this context. This will generate a juxtaposition of the ancient and the modern, which is unlikely to be lost on visitors.*[20]

I have some concern about the impact on the tourist experience of this flagship tourist facility for County Longford. However, I note that Failte Ireland did not object to the proposed development. On balance, I would agree that the overall visual impact would be at least *substantial moderate*, as determined by the applicant, but I do not consider the impact to be unacceptable but to be undesirable.

8.5.49. Cumulative impacts – I am satisfied that the potential cumulative landscape and visual impacts of the proposed development taken with the Sliabh Bawn and Skrine

[20] EIAR, p.545

wind energy development would not be significantly adverse and would be generally acceptable.

8.5.50. **Conclusion** – I am satisfied that the proposed development would not have unacceptable significant adverse of landscape and visual impacts, having regard to the recommendations of the WEDG (2006).

(e) the interaction between the factors referred to in points (a) to (d).

8.6. Interactions

8.6.1. I am satisfied that the EIAR considered the relevant interactions between the factors of the environment, as referred to above, and I have completed an assessment of the relevant interactions in my assessment, above.

8.7. Reasoned Conclusion

Having regard to the examination of environmental information contained above, and in particular to the EIAR and supplementary information provided by the developer, and the submission from the planning authority, prescribed bodies and observers in the course of the application, including submissions made to the oral hearing, it is considered that the main significant direct and indirect adverse effects of the proposed development on the environment are, and will be mitigated as follows:

- Significant long term indirect positive impact on climate and air from provision of a largescale clean energy source that will replace current energy supplied from fossil fuel sources;
- Significant long term indirect adverse impact on climate due to the ongoing pumping of the entire industrial extracted peatland site for the duration of the construction and operational phases to facilitate the wind farm development as currently proposed, resulting in ongoing carbon emissions from the remaining peat soils on site and preventing recommencement of the natural carbon storage mechanism of peatlands. These impacts would result in a significant adverse effect on the environment which have not been quantified or considered by the application within the EIAR or otherwise during the

course of the application, cannot be addressed by amendments imposed by condition.

- Significant direct adverse impacts on water quality, with indirect impacts on the biodiversity (the aquatic environment), during construction from surface water runoff contaminated by sediment and / or by accidental spillage of hazardous substances (concrete, hydrocarbons) which will be mitigated by the best practice construction methods set out in CIRIA Document C741 (2015), implementation of an agreed Construction Environmental Management Plan and the Surface Water Management Plan overseen by the appointed Site Ecologist and Project Manager.
- Significant indirect adverse impacts on population and human health arising from shadow flicker at residences or within other sensitive receptors (schools, businesses) by humans which will be mitigated by avoidance through the automatic shutdown of individual turbines that might cause shadow flicker as per the intended programme of timing of shutdown of individual turbines appended to the EIAR.
- Significant direct and indirect adverse impacts on population and human health from noise and visual impacts which have been mitigated through avoidance by design through the provision of >750m separation distance from sensitive receptors.
- Significant adverse impacts on birds from collision risk which has been mitigated by avoidance through design including the location of the turbines away from the River Shannon and the provision of >400m separation distance between turbines.
- Significant indirect impacts on Lough Bawn pNHA, and potentially on Desmoulin's Whorl snail and Curlew, which will be mitigated by remediation measures to improve and protect the hydrology of the habitat, including provision of a 30m buffer zone, and, in the event of a grant of permission by condition requiring the rearrangement of the access track to / from proposed turbine no.22 to increase the separation distance.
- Significant direct impacts on Annex I remnant raised bog habitat through grid connection option B which, in the event of a grant of permission, will be

mitigated through avoidance by way of condition omitting option B and requiring the implementation of grid connection option A only.

- Significant adverse impact on the landscape setting of Corlea Trackway visitor centre, an important and sensitive cultural heritage feature and an important material asset (tourist attraction) within County Longford, which cannot be adequately mitigated by screening. Having regard to the positive impacts on climate arising from the proposed renewable energy project, in view of Government policy on and obligations in respect of climate change, it is considered that this impact does not warrant a refusal of permission or the removal of the offending turbines by way of condition in the event of a grant of permission.

9.0 Appropriate Assessment

9.1.1. The proposed development is not directly connected with or necessary for the management of any European site and the requirements of A.6(3) of the Habitats Directive (and Part XAB of the Planning and Development Act, 2000, as amended) are therefore engaged.

9.2. Stage 1 Screening

9.2.1. The applicant carried out ;an appropriate assessment screening exercise, which is contained in appendix B of the NIS submitted on file. The applicant considered the potential for significant effects on European sites within a 15km buffer (Figure 1 of the Screening Report refers), in addition to hydrologically connected sites outside this zone, in view of their conservation objectives, detailed, with reference to their Features of Interest, on table 3.2 of the Screening Report, as follow: – Lough Ree SPA 004064 (c.2.5km to west), Lough Ree SAC 000440 (c.2.5km to west), Fortwilliam Turlough SAC 000448 (c.4.3km to east), Ballykenny-Fisherstown Bog SPA 004101 (c.4.5km north), Lough Forbes Complex SAC 001818 (c.4.7km north), Mount Jessop Bog SAC 001450 (c.3.3km east), Brown Bog SAC 002346 (c.5.8km north), Corbo Bog SAC 002349 (c.7.5km west), Clooneen Bog SAC 002348 (c.10.8km north), Annaghmore Lough SAC 001626 (c.15.8km northwest) and River Shannon Callows SAC 000216 (c.22.8km south). I am satisfied that the applicant has considered all relevant European sites in its screening assessment.

9.2.2. The applicant determined based on the source-pathway-receptor model that the potential for significant effects on **Lough Ree SPA, Lough Ree SAC, Ballykenny-Fisherstown Bog SPA** and **River Shannon Callows SAC**, in view of their conservation objectives, could not be ruled out (see table 3.4 of the Screening Report). Disturbance displacement from SPA-supporting habitat within the application site and from collision risk with proposed turbines were considered to pose potential for direct/indirect effects on species that are Features of Interest of the two SPAs. Indirect effects from deterioration of water quality due to sediment release during construction, was also considered a potential risk to Features of Interest of the two SACs. I would agree with the conclusion of the applicant's screening assessment.

9.3. Stage 2 appropriate assessment

9.3.1. It is not possible to rule out the possibility of adverse effects on four European sites – Lough Ree SPA, Lough Ree SAC, Ballykenny-Fisherstown Bog SPA, and River Shannon Callows SAC.

9.3.2. **Lough Ree SPA (site code 004064):** Only generic conservation objectives (2no.) are currently available for the site. It is the Conservation Objective '*to maintain or restore the favourable conservation condition of the bird species*[21] *listed as special conservation interests for this SPA*', namely:

- Little Grebe
- Whooper Swan
- Wigeon
- Teal
- Mallard
- Shoveler
- Tufted Duck
- Common Scoter
- Goldeneye
- Coot
- Golden Plover
- Lapwing
- Common Tern
- Wetlands and Waterbirds

It is also the Conservation Objective '*to maintain or restore the favourable conservation of the wetland habitat*[22] *at Lough Ree SPA as a resource for regularly-occurring migratory waterbirds that utilise it.*'

[21] Note: The favourable conservation status of a species is achieved when:
• population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
• the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
• there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

[22] Favourable conservation status of a habitat is achieved when:
• its natural range, and area it covers within that range, are stable or increasing, and
• the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and

9.3.3. **Construction phase** – There is no potential for direct effects on the European site as the proposed development and application site is located wholly outside the SPA site boundary. There is potential for indirect effects on bird species associated with the SPA through habitat loss and fragmentation and indirectly through disturbance displacement. The NIS screens out potential for adverse effects during the construction phase on Common Scoter, Goldeneye and Common Tern as the site does not provide suitable habitat for these species and the results of the field surveys found they rarely occur within the study area; and similarly it screened out potential for adverse effects on Wigeon, Tufted Duck, Teal, Shoveler, Little Grebe and Coot as they were recorded rarely or not at all in the field surveys.

9.3.4. Potential for adverse effects could not be ruled out on Whooper Swan, Mallard, Lapwing and Golden Plover based on the precautionary principle.

9.3.5. Potential for adverse effects on the SPA through adverse impacts on its wetlands and, by association, the water bird communities of the European site could not be ruled out as the site is hydrologically linked to the SPA via drainage ditches and streams and possible sediment releases to, or contamination of the water courses by concrete and / or fuels may arise from construction works.

9.3.6. **Operational phase** – There is potential for direct adverse effects on birds of special conservation interests of the SPA from collision with operating turbines. A collision risk model (CRM – contained in appendix 6.5 of the EIAR) was generated by the applicant, with the CRM analysis taking account of the particulars of the bird species and specifications of the turbines. The CRM results were used to inform the design phase, specifically the positioning of turbines away from sensitive areas to avoid impacts. It was not possible to determine collision risk for Wigeon, Teal, Tufted Duck, Little Grebe, Common Scoter, Shoveler, Goldeneye and Coot due to their very low occurrence. Using the precautionary principle, potential adverse effects arising from collision risk could not be ruled out for Whooper Swan, Mallard, Golden Plover, Lapwing and Common Tern.

In addition, the NIS notes the risk of potential adverse effects on the SPA through disturbance and barrier effects. Disturbance, which effects wintering waterfowl up to 800m breeding waterfowl up to 300m, may therefore reduce the availability of

• the conservation status of its typical species is favourable.

resources for avian receptors. Operating wind turbines may disrupt flight lines, acting as a barrier to migration routes or between roosts or feeding site, resulting in displacement and effective habitat loss to a species and a reduction in bird density locally. However, birds become habituated to such development and disturbance displacement effects are considered to be short term. The layout of the proposed development provides (at minimum) 400m separation between turbines, which compares favourably with the minimum 200m separation distance advised by Percival (2001) to facilitate the free movement of birds and avoidance of barrier effects. The NIS considers, based on the precautionary principal adverse effects from disturbance displacement cannot be ruled out for Whooper Swan, Mallard, Golden Plover, Lapwing and Common Tern.

9.3.7. **Assessment of potential effects** - To better inform its appropriate assessment, the applicant has devised site specific conservation objectives for the special conservation interest species of Lough Ree SPA, based on the generic conservation objectives for the site and site-specific conservation objectives documents available for other European sites with equivalent special conservation interest species or, where this was not available, species that had the same seasonal use of the SPA. I consider the attributes, measures and target set out in the NIS in Table 7-5 *Evaluation of Potential Adverse Effects on the Conservation Objectives from the Proposed Development* to be relevant and justified.

9.3.8. The potential for the above stated adverse effects during construction and operational phases were therefore brought forward for further evaluation and potential mitigation in respect of Whooper Swan, Mallard, Golden Plover, Lapwing and Common Tern, which are set out in Table 7-9 *Summary of Potential Impacts and the Evaluation of Significant Adverse Effects.*

9.3.9. **Whooper Swan** – *Habitat loss & fragmentation*: There will be no direct effects on the SPA, but there is potential for indirect effects. The overall area of land to be lost to construction is c.51.8ha or 2.7%, a very small portion of the development the c.1900ha site and a small area of the existing mixed-habitats existing across the site (see habitats survey maps in Appendix 6.4, and within the Bat Survey Report Appendix 6.6 of the EIAR).

9.3.10. The NPWS referred to the Whooper Swan's usage of the site as opportunistic, which refers to the species making use of new or transitional habitat (open water and areas of cotton grass) that has emerged across parts of the site on cessation of peat extraction and before the regeneration woodlands (evident over much of the site) takes hold. Dr Gittings' Précis of Evidence states that the main area of Whooper Swan flight and ground activity occurs in the northern section of the site in Derryaroge Bog (representing up to 11% of the local population at times). This is a significant level of usage, albeit occasional or opportunistic. Based on the survey results, it is his contention that the population of birds using Derryaroge Bog have little connectivity to Lough Ree SPA and are associated with a separate roost to the north (actual location not identified). Based on discussion of dusk/dawn flight directions the NPWS conceded that a separate northern roost is likely, but not definitively proven by the possible range of survey techniques available (e.g. bird tagging).

9.3.11. The middle and lower sections had much lower levels of activity around flooded areas, although the applicant accepted that the flocks may include birds from local populations centred to the south on Lough Ree SPA (or turloughs to the west). Again, the usage may be considered occasional or opportunistic. The NPWS noted that the Whooper Swan using these areas may therefore be functionally related to the SPA, and that the survey data also suggested interconnectivity north to south across the application site. Dr Gittings countered the that these locations are greater than 5km from the SPA and therefore outside the foraging range for Whooper Swan roosting within the SPA, but again no home roost location for these birds were determined. It is therefore possible that some portion, or all of the Whooper Swan population using the application site are functionally related to Lough Ree SPA.

9.3.12. The boundary of Lough Ree SPA quite closely follows the lake perimeter and the birds using the European site are dependent on foraging habitat surrounding the lake. The birds use a range of habitats including agricultural fields (such as the Ballynakill/Bunacloy Field site referred to by Dr Gittings), which are extensive in the vicinity of the SPA. In terms of availability of alternative foraging grounds of the type available at Derryaroge Bog (extracted peatland), Dr Gittings demonstrated (figure 4.2 of Précis of Evidence) that Derryaroge Bog accounts for 14% of such habitat within the foraging range (5km) of the probable roost site of the Whooper Swan

using the application site at Derryaroge Bog. Even disregarding the foraging available for Whooper Swan on agricultural grasslands, there would appear to be extensive similar habitat available on extracted peatland within the vicinity. The loss of less than 3% of existing habitats at Derryaroge Bog and on the remainder of the site is not significant in this context, even if the Whooper Swan population are connected to the SPA and therefore it can be concluded that no adverse effect will result on the integrity of Lough Ree SPA in view of its conservation objectives relating to Whooper Swan.

9.3.13. The NPWS considered it necessary for the applicant to provide mitigation through alternative suitable opportunistic habitat for the species within the site. As I do not consider there to be potential for an adverse effect on the integrity of the SPA through loss of habitat for Whooper Swan, there is no need for mitigation through provision of alternative habitat within the site[23].

9.3.14. *Operational effects* - The applicant employed a Collision Risk Model to determine the potential for collision between bird species and operating turbines, which is contained in Appendix 6.5 of the EIAR. The applicant submits that the model follows the relevant SNH Guidance. Regarding the CRM methodology and assessment employed by the applicant, in response to questioning by the Inspector the NPWS did not indicate any concerns in the applicant's employment of the CRM and I am therefore satisfied that the Board may rely on the applicant's collision risk modelling.

9.3.15. A threshold of 1% increase in annual mortality (against background mortality rates in the population is applied as a significant impact (from Percival 2003). The applicant predicted the risk to be very low with 0.14 collisions predicted for Whooper Swan within the nominal 30-year operational lifetime of the proposed development, representing only a slight change to baseline conditions. Table 6.24 of the EIAR confirms that based on the estimated rate of collision risk, one collision can be expected over a 212-year period. It can therefore be concluded that no adverse effect the integrity of the SPA will result, from Whooper Swan collision with

[23] Dr Gittings made much of the evolving habitats developing across the site as the extraction activity ceases, including the assumption that the draft site rehabilitation plan will be implemented, the main point being that the habitats on site (regeneration woodland with no open water) will not be suitable for Whooper Swan. The rehabilitation plan and habitat evolution were discussed at length at the hearing, however I do not consider this to be of particular relevance to the Board's carrying out of appropriate assessment within the context of the instant planning application.

operational turbines on the application site, in view of the conservation objectives pertaining to Whooper Swan.

9.3.16. Regarding potential impacts on migrating Whooper Swan (and other species), Dr Gittings accepted that the recommendations of the Aniar Report (advising on revisions to the bird surveys methodology) were not implemented. He submitted calculations to the hearing (see table 4.1 of the Précis) to demonstrate that were the entire Wexford Harbour and Slobs population of Whooper Swan and Greenland White-fronted Goose to migrate through the site at collision height the predicted mortality would be negligible. Whilst this risk would rise if migrating birds had stopovers on site en route, no evidence of stopovers was detected during the five years of surveys. It can therefore be concluded that no adverse effect the integrity of the SPA will result, from Whooper Swan collision with operational turbines on the application site, in view of the conservation objectives pertaining to Whooper Swan.

9.3.17. It should be noted that provision has been made to avoid collision risk through design, through provision of a separation distance between turbines of at least 400m (much greater in most cases) as against a minimum 200m advised by Percival (2003).

9.3.18. Whilst overhead powerlines can present a hazard of collision mortality to birds, I would accept the NIS conclusion that due to the presence of existing overhead power lines in the location of both overhead grid connection proposals and the short length of the two overhead line options (1km and 480m), the risk is of low concern to local birds. The risk of collision for Whooper Swan is considered negligible and it can be concluded that there will be no adverse effect on the integrity of the SPA in view of its conservation objectives related to Whooper Swan. V

9.3.19. *Disturbance, displacement and barrier effects* – Whooper Swan may avoid operating turbines, reducing their foraging area, to a distance of between 200-600m for the species, with the distance reducing as birds become habituated to the turbines and as food resources deplete.

9.3.20. It is submitted that it is not a factor for the Whooper Swan using the site at the use is opportunistic during flooding events within an evolving habitat context om site, with the majority of the local population concentrated offsite along the Shannon. It is certain that the proposed development will result in some displacement of Whooper

Swan by avoidance and may result in a reduction in the existing (albeit transitional) suitable habitat available areas of foraging / day roosting on site. Having regard to the applicant's submission regarding the extent of alternative foraging habitat available outside the site, the total site area and the relatively limited area of the site that would be affected by physical infrastructure, the additional area that would be affected by displacement, totalling (my calculation) a maximum c.27ha[24] and which would overlap the development area in part. I do not consider the extent of area affected to be significant.

9.3.21. It can therefore be concluded that there will be no adverse effect the integrity of the SPA in view of its conservation objectives for Whooper Swan, whose population has been increasing in Ireland since 1995 and is considered stable.

9.3.22. **Mallard, Lapwing, Golden Plover:** The NIS concluded that there would be no adverse effect on the integrity of the SPA, in view of its conservation objectives, arising from potential adverse impacts on Mallard, Lapwing and Golden Plover, on a similar basis as its consideration of potential impacts on Whooper Swan.

9.3.23. **Common Tern:** The NIS considered only the potential impact on this species from collision risk. It determined that as the flight activity of the species was concentrated along the River Shannon (away from the proposed turbine and grid connection locations) collision risk is not predicted to have ecologically significant adverse effects for this species. Therefore, it can be concluded that there will be no adverse effect on the integrity of the SPA in view of its conservation objectives.

9.3.24. **Lough Ree SPA conclusion** – Based on the information submitted with the application and presented and interrogated at the oral hearing between the parties and by the Inspector, I consider the proposed development will not adversely affect the integrity of the European site in view of its conservation objectives.

9.3.25. **Ballykenny-Fisherstown Bog SPA (site code 004101):** The site is designated for Greenland White-fronted Goose and it is the conservation objective *to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.*

[24] πr^2=3.14x0.6x0.6x24

9.3.26. The proposal poses a risk of mortality of the species from collision risk with operating turbines and a risk of habitat loss, disturbance displacement and barrier effects (see NIS table 7-7). The NIS indicates that the SPA was regularly used by the species up to the 1980's but that it has not been recorded on the European site in recent years. According to the Ballykenny-Fisherstown Bog SPA Site Synopsis, it is thought the species have abandoned the peatland site in favour of grassland sites elsewhere. There is a Greenland White-fronted Goose roost on Inchcleraun Island within Lough Ree, but the bird surveys carried out by the applicant recorded no more than three of the birds on site within the study area (winter bird survey 2015/16), well below the threshold of a flock of national importance (109no. birds) and no flight activity was recorded within the study area. Therefore it can be concluded that the would be no adverse effect on the integrity of the SPA, in view of its conservation objectives, arising from habitat loss and fragmentation, disturbance displacement, barrier effect and collision risk to Greenland White-Fronted Goose.

9.3.27. **Lough Ree SAC (site code 000440):** It is the Conservation Objective *to restore the favourable conservation condition of:*

- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation
- Semi-natural dry grasslands and scrubland facies on calcareous substrate (Festuco-Brometalia) (* important orchid sites)
- Degraded raised bogs still capable of natural regeneration
- Bog woodland

It is the Conservation Objective '*to maintain the favourable conservation condition of:*

- Alkaline fens
- Limestone pavements
- Otter Lutra lutra

The status of Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles as a qualifying interest of the SAC is currently under review and the outcome of same will determine whether a site-specific objective is set.

9.3.28. **Assessment of potential effects** – There is no potential for direct effects during construction or operations as the proposed development does not overlap the SAC and the proposed infrastructure is setback from watercourses. Due to the nature of

the proposed development the following qualifying interests of the SAC are indirectly at risk from water quality impacts during the construction phase in the absence of mitigation and implementation of best construction practice – natural eutrophic lakes, degraded raised bog, alkaline fens and otter as detailed in the NIS on table 7-6 *Evaluation of Potential Adverse Effects on the Conservation Objectives from the Proposed Development.*

9.3.29. These require good water quality to maintain/restore a favourable conservation status. The sensitivity of an environmental factor is based its ability to absorb an effect without perceptible change. Based on the nearest EPA monitoring sites to the north and south, rating the quality of water at Q3 (moderately polluted) downstream and Q3-4 (slightly polluted) upstream of the discharge point, the hydrological environment is considered moderately sensitive. A summary of the potential for adverse effects are detailed in table 7-9. Contaminated run off (sediment and / or fuel / hydrocarbons leakages) and introduction of invasive species during construction poses direct and indirect threats to aquatic species (as a food source for Otter), Otter and to the habitats concerned - natural eutrophic lakes, degraded raised bog and alkaline fens. There is potential for introduction of invasive species, with long term impacts, and for short-term effects of displacement (of Otter – 150m distance) through human presence and works during construction.

9.3.30. There is limited suitable habitat on site for Otter as most of the water features within the site consist of drains which dry up during prolonged dry period, however Otter signs were recorded in Derryadd and at a drainage ditch northeast of Lough Bannow. No direct impacts are predicted on other breeding / resting sites as no confirmed holts / resting places were recorded on site. As there is only limited suitable Otter habitat within 150m of the proposed development and disturbance would occur only during construction phase, no adverse effects are likely. No disturbance is anticipated during operation phase.

9.3.31. The proposed mitigation measures to address potential effects on the habitats and species concerned are detailed under NIS table 8-1, including preventing the spreading of invasive non-native species and maintenance of water quality through surface water mitigation measures (detailed in section 8.0 of the NIS and complemented by measures in the EIAR and referred to above).

9.3.32. **River Shannon Callows SAC (site code 000216):** It is the Conservation Objective *to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected:*

- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
- Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
- Limestone pavements*
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)*
- Otter Lutra lutra

9.3.33. Molinia meadows, Alluvial forest and Otter are potentially vulnerable to indirect water quality impacts from the construction phase of the proposed development as they required good water quality to maintain / restore a favourable conservation status (see NIS table 7-8) . As noted already, the hydrological environment is considered to be moderately sensitive. Contaminated run off (sediment and / or fuel / hydrocarbons leakages) and introduction of invasive species during construction poses direct and indirect threats to aquatic species (as Otter fishery value) and Otter and to the habitats concerned. However, as the Otter foraging limit is c.20km no adverse effects are anticipated as the SAC is 22.8km distant.

9.3.34. **Mitigation measures & design** – The NIS include detailed design and mitigation measures for all phases of the proposed development in section 8 to address the potential for adverse effects on the qualifying interests of each of the European sites concerned. These include detailed construction phase mitigation, surface water impact mitigation, operational phase mitigation and decommissioning phase mitigation.

9.3.35. Construction phase mitigation include measures to avoid adverse effects on key ecological receptors, which include timing to avoid breeding bird disturbance; timing to avoid nocturnal fauna disturbance; avoidance of high (local) value habitats or habitats evaluated as key ecological receptors for any of the European sites in turbine siting; avoidance of potential breeding sites for protected mammals in siting turbines and access routes; use of temporary silt screens and employment of IFI recommendations for instream works as set out in EIAR chapter 8; as part of the

CEMP ecological monitoring will take place by a suitably qualified Ecological Clerk of Works (role/responsibility detailed); mitigation measures as per NRA (2010) guidance to be employed to prevent spread / introduction of noxious weeds and alien species if encountered during construction.

9.3.36. In terms of surface water impact mitigation measures, it is indicated that the IFI were consulted and will be consulted in developing a Construction Management Plan and that their requirements must be adhered to. The detailed proposals are set out in the NIS. As noted above, IFI were party to the hearing and raised issues with the applicant's approach. This is addressed in the EIA, above, under section 8.4.12 Water / Hydrology /Hydrogeology.

9.3.37. Regarding operational impacts, the proposed design provides for, at minimum, a separation of 400m between turbines to avoid barrier effects for birds. To reduce collision risk with species of special conservation interest turbines are not proposed on Cloonbony Bog on in the northern section of Derryarogue Bog to ensure suitable setback from the River Shannon, from Lough Ree SPA and from Ballykenny-Fisherstown SPA; and in the event of an overhead power line being selected as the preferred grid connection, bird flight diverters will be installed as per best practice guidelines (EirGrid, 2012).

9.3.38. Decommissioning will be amended as appropriate to best practice then current. It will take place outside the bird nesting period (outside 1st March – 31 August) to protect nesting birds, in those area where sensitive species are found and will be informed by breeding birds carried out before decommissioning takes place. Decommissioning will take place during daytime hours to avoid disturbance of resident nocturnal fauna. The decommissioned site will be allowed to naturally recolonise with birch scrub and emergent wetland vegetation, thereby increasing its ecological value.

9.3.39. **In-combination effects** – The projects (within 15km of site) and plans considered in the applicant's appropriate assessment are detailed in section 9.0 of the NIS. The projects considered appear to be reasonably comprehensive and have been assessed under s.9.3 of the NIS. It can be concluded from the assessment that there will be no adverse in-combination effects on the integrity of Lough Ree SAC and Lough Ree SPA in view of their conservation objectives.

9.3.40. However, in terms of plans, it should be noted that there has been no consideration of county development plans for county Roscommon or Westmeath, which each contain large portions of Lough Ree SPA and Lough Ree SAC. In this regard policy P-WIN2 of the *Westmeath County Development Plan* also directs largescale wind energy projects to cutaway peatlands and Map 5 of the Plan indicates that the western lowlands of the county (a similar distance from Lough Ree SPA and Lough Ree SAC as the current application site) has highest capacity (that is medium capacity) for wind energy development in that county. Roscommon County Council's *Renewable Energy Strategy* identifies lands north of the Shannon at Lanesborough, north of Lough Ree SPA and Lough Ree SAC and west of Ballykenny-Fisherstown Bog SPA, as *most favoured* for wind energy development potential, in addition to extensive lands to the west of Lough Ree. This encompasses Mount Dillon and Derrycashel industrial extracted peatlands identified in map Areas out of Peat Production (DWG. No. BNM-PG-DD-OH-01) attached to Dr Gittings submission *Response to the NPWS submission (Ornithology)*.

9.3.41. In addition, the Regional Planning Guidelines for the Midlands Region 2010-2022 (which continue to have effect in the dissolved region until the RSES is made and adopted) acknowledge the potential for cutaway industrial peatlands to, inter alia, accommodate large scale wind farms. Given the plan context, there is potential for other significant wind energy developments on lands favourably identified for such development and in similar proximity to Lough Ree SPA and Lough Ree SAC and in closer proximity to Ballykenny-Fisherstown Bog SPA.

9.3.42. Whilst there is potential for in-combination effects, on the basis that any such proposed development considered under the neighbouring county plans would necessarily take account of flight lines of birds being qualifying interests of the SPA within the design of the proposed scheme and incorporate similar mitigation and also be subjected to appropriate assessment, it can be determined that there would be no adverse effect on the integrity of Lough Ree SPA, Ballykenny-Fisherstown Bog SAC and Lough Ree SAC through in-combination effects in view of those sites' conservation objectives. It can be concluded that there would be no adverse effects on River Shannon Callows SAC.

9.3.43. **Other issues** - Concerning third party observations that the Board cannot carry out its appropriate assessment due to absent information (lacunae) contrary to the

judgement of the CJEU in Peter Sweetman and Others v An Bord Pleanála (C-258/11), I am satisfied that within the site context of the instant application, there are no lacunae such as would prevent the Board from carrying out appropriate assessment. Having regard to the foregoing assessment, I do not consider the issues arising in CJEU-164/17 Edel Grace and Peter Sweetman v An Bord Pleanála to be relevant to this case. The issues arising un CJEU judgement in the case of People Over Wind v An Bord Pleanála C-323/17 concerning mitigation measures being taken into account at stage screening also does not arise. Regarding CJEU judgement in the case of Brian Holohan and others v An Bord Pleanála, I see no conflict with the Board's carrying out of appropriate assessment and allowing (should the Board do decide) the applicant to decide which grid connection option (A or B) to implement as the assessment takes account of the potential for significant effects from both options on the integrity of each European site in view of those sites' conservation objectives (I have advised the Board that option B should be omitted for reasons detailed above). Furthermore, I am satisfied, based on the submissions made by the parties, including the NPWS and IFI, that there is no reasonable scientific doubt about the direct, indirect and in-combination environmental impacts or effects of the works proposed on lands which fall outside the boundary of any European site.

9.3.44. **Conclusion** - I consider it reasonable to conclude on the basis of the information on the file, which I consider adequate in order to carry out a Stage 2 Appropriate Assessment, that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the European site Lough Ree SPA (site code 004064), Ballykenny-Fisherstown Bog SPA (site code 004101), Lough Ree SAC (site code 000440), River Shannon Callows SAC (site code 000216), or any other European site, in view of the Conservation Objectives of those sites.

10.0 Recommendation

I recommend that permission be **REFUSED** for the proposed development in accordance with the following reasons and considerations set out in the draft order, as follows:

Matters Considered

In making its decision, the Board had regard to those matters to which, by virtue of the Planning and Development Acts and Regulations made thereunder, it was required to have regard. Such matters included any submissions and observations received by it in accordance with statutory provisions.

Stage 1 - Appropriate Assessment Screening:

In completing the screening for Appropriate Assessment, the Board considered the identification of the European sites in the area which could potentially be affected, and the identification and assessment of the potential likely significant effects of the proposed development, either individually or in combination with other plans or projects, on these European sites in view of the sites' Conservation Objectives. The Board was not satisfied that the proposed development, either individually and in combination with other plans or projects, would not have potential for significant effects upon the European sites of the Lough Ree Special Protection Area (004064), Lough Ree Special Area of Conservation (000440), Ballykenny-Fisherstown Bog Special Protection Area (004101), and River Shannon Callows Special Area of Conservation (000216), in view of the sites' Conservation Objectives and that a Stage 2 Appropriate Assessment was required.

Stage 2 - Appropriate Assessment:

The Board adopted the report of the Inspector and agreed with his conclusions in relation to the Stage 2 Appropriate Assessment that, with the implementation of the proposed mitigation measures, the proposed development of the windfarm

and associated infrastructure would not, either alone or in combination with other projects and plans, adversely impact the integrity of any European site.

Environmental Impact Assessment:

The Board completed an Environmental Impact Assessment and agreed with the Inspector in his assessment of the likely significant effects of the proposed development, which include positive and negative climate impacts, adverse impacts on population and human health, water, biodiversity including birds and habitats, and on cultural heritage and material assets. The Board concluded that the likely significant positive impact from the renewable energy project is insufficient to offset the avoidable long-term significant adverse impact on climate arising from ongoing CO_2 emissions from the extensive drained peatland, and the prevention of natural carbon sequestration of the peatland through the continuation of the existing pumped drainage of the industrial extracted peatlands, which cannot be resolved by condition.

Reasons and Considerations

1. The proposed development constitutes a non-integrated approach to the redevelopment of industrially extracted peatlands for renewable energy projects. Despite the significant positive impacts arising in terms of reduction CO_2 emissions from energy production, the proposed development will result in potentially significant (but not quantified) ongoing CO_2 emissions from the extracted peatland and forgo the site's carbon sequestration potential over the lifetime of the operations, perhaps indefinitely, due to the proposal to pump drain the site, which will be necessary to prevent flooding of the proposed infrastructures situated 0.5m to 1.0m above finished extracted peat levels. It is feasible to avoid this adverse impact through appropriate design at the outset, but it is not feasible to resolve same by condition.

   Having regard to:

- The national binding target to reduce CO_2 emissions by at least 30% below 2005 levels by 2030 under the EU's *Effort Sharing Regulation ((EU) 2018/842)*;
- The provisions, measures and specific actions set out in the Government's *Climate Action Plan 2019, To Tackle Climate Breakdown* (June 2019), necessary to resolve Ireland's current trajectory to be >25% off target for greenhouse gas emissions reduction target to 2030, in addition to Ireland missing the 2020 target by approximately 5%, and which recognises the need to develop and manage Ireland's peatland as a carbon sink as part of overall carbon balance sheet of the state through, inter alia, providing for additional research to assess sequestration, storage and reduction of emissions of carbon through the management, restoration and rehabilitation of peatlands as outlined in the *National Peatland Strategy 2015-2025*.
- Action 133 of the *Annex of Actions* attaching to the *Climate Action Plan*, which places specific obligations on Bord na Móna to *assess the optimum post production use across all Bord na Móna peat extraction sites* and the *timely implementation of optimum management practices on extraction sites as they are retired from production.*
- The principles detailed in the *National Peatland Strategy 2015-2025* (Department of Arts, Heritage and the Gaeltacht, 2015), which inform the recently adopted *Climate Action Plan* and which provides a long-term framework for the responsible management of all peatlands, optimising their social, environmental and economic contribution to the State, including the role of peatlands within cross-cutting area climate change and climate change mitigation;

It is considered that the proposed development, would be contrary to the Government's *Climate Action Plan 2019, To Tackle Climate Breakdown* (June 2019) and to the he *National Peatland Strategy 2015-2025* (Department of

Arts, Heritage and the Gaeltacht, 2015) and will, in itself and by precedent, taken cumulatively with similar development on industrially extracted peatlands into the future, militate against Ireland meeting its obligatory greenhouse gas reduction target to 2030 under the EU's *Effort Sharing Regulation ((EU) 2018/842)*, would be contrary to the proper planning and sustainable development of the state and would set an undesirable precedent for similar unsustainable development going forward.

John Desmond
Senior Planning Inspector

06 September 2019