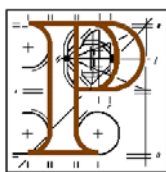


An Bord Pleanála



Inspector's Report

PL05.PA0040

Development: 49 no. wind turbines, 2no. meteorological mast 2no. electrical 110kv substations 9 no. borrow pits and all associated works at Meenbog and other townlands, County Donegal

APPLICATION

Applicant:	Planree Ltd
Local Authority:	Donegal County Council
Application Type:	Strategic Infrastructure Case (S 37 E)
Oral Hearing	None
Transboundary Consultation:	Yes – Northern Ireland
Prescribed Bodies	Dep. of Environment, Community and Local Gov. Dep. Commerce, Energy and Natural Resources Dep. of Arts, Heritage and the Gaeltacht Dep. of Transport, Tourism and Sport Environmental Protection Agency Irish water Inland Fisheries Ireland National Roads Authority The Heritage Council The Arts Council Health Service Executive Commission for Energy Regulation An Taisce Failte Ireland Irish Aviation Authority Loughs Agency Northern Ireland Planning Service
Submissions:	251 parties
Inspector:	Suzanne Kehely
Date of Inspection:	13-15 th April and 24-26 th November 2015
APPENDIX	Report by Board appointed consultant ecologist

1 INTRODUCTION

This is an application for permission for a wind farm under S. 37E (1) of the Planning and Development (Strategic Infrastructure) Act, 2006. The application is for development classified within Schedule 7 principally being: 'An installation for the harnessing of wind power for energy production.... having a total output greater than 100 megawatts.' Pursuant to Section 37E(3) and given that the proposed development is likely to have significant effects on the environment of a transboundary state, that being Northern Ireland, the Department of Environment, Northern Ireland was invited to make observations in addition to a list of prescribed authorities. A comprehensive range of submissions was made by the relevant authorities.

I inspected the site initially in April 2015 in quite clear conditions and more recently in November in more showery and overcast conditions between extremely heavy rainfall events. On an initial appraisal of the information and submissions and having regard to the environmental sensitivity of the site in the context of its proximity to a complex range of Natura 2000 sites and potential priority species and habitats within or connected to the site, a consultant ecologist was appointed by the Board to appraise ecological impacts of the proposed development. The interim report (June 2015) found that the information was seriously inadequate to the extent that the Board would, most likely, be seriously compromised in its EIA and AA functions.

Following a recommendation to proceed to report on the application without an oral hearing, the Board gave consideration to the possibility of requesting further additional information. However upon further consideration following a memo from this inspector dated 4th September setting out the detailed nature of likely issues arising, the Board directed to proceed to reporting on the case. Accordingly an oral hearing was not considered to be necessary at this time. In line with procedure the applicant was invited to respond to the submissions on file. A large volume of material was submitted on 2nd October 2015. This has not been the subject of revised public notices nor was it circulated for further comments. The flora and fauna documentation and appended data were referred to the Board appointed ecologist for further review and this report was subsequently submitted on 19th October 2015.

Intended as an aid to informing the Board's appraisal of the lodged scheme the applicant has submitted a range of alternatives based on the potential for removing up to 11 turbines. This for example would remove ancillary borrow pit requirements and a compound. This alternative is presented in the context of visual comparison with another alternative of lowering the height of some turbines. This primarily is aimed at addressing the concerns of the planning authority should the Board deem such measures are required. In these terms the applicant has not strictly proposed a revised scheme.

While the potential for omission of 11 turbines as indicated in the applicant's response to submission is noted and referred to in this report, this assessment is primarily based on the application as originally submitted, namely the proposal for up to 49 turbines and associated works.

2 SITE LOCATION AND DESCRIPTION

The site is located to the south east of County Donegal and extends across an upland terrain over a distance of some 15km in an east west direction close to and partly along the border with Co. Tyrone to the south of the site in Northern Ireland. The development site extends over 30 townlands. The wind turbine development is proposed in Belalt, Owennagadragh, Ballyarrell Mountain or Cornashesk, Corradooey, Corlea, Cronalaghy, Lismullyduff, Meenagolan, Meenreagh, Gortahork (ED Gleneely), Carn, Corraffrin, Kinletter, Tievecloghoge, Trusk, Taughboy, Meenbog and Croaghonagh. The Proposed Grid Connection Route extends through Cashelnavean, Tawnawully Mountains, Keadew Upper, Friarbush, Ardinawark, Keadew Lower, Cullionbuoy. The proposed transport route extends through Gortnamuck, Raws Lower, Raws Upper, Egglybane and Tievebrack.

The site boundary for the purposes of the planning application is outlined in the Site Location Map (in file) and in more detailed sets of drawings appended to the EIS and contained in the small box file. The site is contained within a wider study area of 4,387 hectares which was examined for purposes of the EIS. The landholding is outlined in blue in the A3 drawing. The development site location includes a cluster of sites linked by narrow linear routes for the access and/or grid connection (trench cabling) which are at 3 points; one along the N15 and one across open ground in the centre of site and finally a route along a public local road up to the R235 regional road.

The planning authority has provided documentation supporting its ownership of a small pocket of land within the site which is not identified by the applicant. One of the objectors has also stated withdrawal of consent. I consider the omission of the planning authority holding to be potentially an issue. The details submitted on 2nd October include a clarification of site ownership in Appendix 16-1 (Site Layout - sheet 9 of 44) which shows the small square outlined in red which is contained within the site boundary as delineated within the original application details submitted in February. There is no new site location map or site notices. In relation to legal interest and other parties the applicant has submitted evidence of consent – While this may be withdrawn at a later stage, for the purposes of the application I am satisfied that sufficient interest has been demonstrated. As pointed out by the applicant, planning permission does not overwrite the rights of private landowners.

The N15 lies to the North and West of the site at distances in the order of 1.5 to 7 km. The nearest towns are Ballybofey/Stranorlar (Donegal) and Castlederg (Tyrone) at 5km to the north and south respectively and Castlefinn 7km to the north. These towns among other settlements along the N15 are located along the River Finn and the site rises to the south from this River Valley terrain. The site is in this upland rural area with a landscape character that is largely open moorland with extensive commercial coniferous forestry plantations (in the order of 47% of the site). The area is drained by three separate river basins, two of which are tributaries to Lough Foyle and one to Lough Eske. In the eastern end of the site the surrounding landscape is more agrarian in nature featuring smaller fields and small farm holdings. Housing is dispersed and this is more prevalent in clusters on approach roads north of the site and to a lesser extent to the south of the site near the border. There are two

community/school premises in the vicinity of the study area in Gleneely on the Killygordon Road and Scoil Pádraig Naofa in Meenreagh which are both within a few kilometres of the site. St. Cairealls Primary school is further away in a small rural village about 5km to the south in Tyrone. A hostel is also signposted in the area. There are also schools and churches in the surrounding settlements at distances in the order of 5km from the site. The residences are marked on figure 2 of the EIS and amount to 266 properties (including derelict) within a 1km distance from the study area boundary. The distance from turbines is also provided for each property within a certain range. 56 properties are within 1km of the nearest turbine. House no 262 (consenting party) is nearest at 400m. There are 4 properties at a range of 510-580m (property nos. 266, 263, 219, 217) but most are nearer the 1km range. Properties P58, P67, P177, P201, P216, P217, P218, P219, P220, P221, P222, P255, (P255 and P67 are shown as not consenting in Fig 4.1 dated 21/9/2015) P256, P257 and P262 are stated as either belonging to landowners who are involved in the proposed development or homeowners who have provided the relevant consent.

The site falls into 2 areas. Area 1 relates to the western end and is best identified as Carrickaduff Hill. It is a moderately elevated area ranging in levels between 180m to 300m and slopes downwards generally in a north westerly direction. Lough Mourne lies to the North West and this is a public water supply for Letterkenny for up to 20000 (35000 when augmented) people. This site area is about 1.5 km – 2km east of the N15 and the scenic Barnesmore Gap.

Given the proximity to the border with Northern Ireland (with parts of the site defined by it) the river catchments throughout the site drain to both Ireland and Northern Ireland. There is an extensive network of watercourses in this area which feed for the most part into the Mourne River and to a lesser extent the Finn River catchments.

Significantly the Bunadownen River flows through the Western end up gradient of Lough Mourne and feeds into the Mourne Beg River downstream of the Lough. However, a proposed culvert by the local authority will divert the Bunadownen River directly to the Lough to augment the water supply. The area substantially comprises forestry lands. The site has frontage onto a local road (approx.1.5 km off the N15) and is otherwise served by a network of forestry tracks throughout the site.

There is an operational quarry site to the west of the development site and a forestry plantation in Co. Tyrone to the east. This local road which fronts the northern boundary of this part of the site crosses the border with Tyrone and runs roughly parallel with the Mourne beg River to its north. It meets with a north south local road at Croagh Bridge over the Mourne Beg. This route is a main spine through the site between Ballybofey and Croagh Bridge area in Northern Ireland.

Area 2 is slightly lower lying and relates to the middle and eastern end and centres around Lismullyduff. It is divided by a network of local roads which also serve residences north and south of the site. The land similarly includes extensive forestry lands and open moorlands which are served by forestry tracks. The road from Killygordon and Cross Roads - a vibrant commercial and residential settlement in its own right - traverses the site. This is quite busy providing access to frontage development, a school and onto Carn Road in the direction of Castlederg in Tyrone.

The roads are poorly aligned in the vicinity with limited scope for enhancement and limited capacity it would appear for heavy loads or high volumes of traffic. For example, the junction just south of Crossroads is via a turn over a humped narrow bridge with poor sightlines. The road has two cottages fronting onto the edge of the carriage way.

There are in excess of 320 wind turbines already built or permitted in the area (20km range) and these locations are plotted on maps (e.g. Fig 11.5) along with the proposed wind turbine locations for a further 86 in both Ireland and Northern Ireland.

The site is alongside a designated area of Especially High Scenic Amenity which includes the dramatic Barnsemore Gap to the western end of the site. There are preserved views in the direction of Barnsemore Gap and to the south of the N15.

There are trekking /cycling routes in this vicinity. The Ulster Way traverses a northern part of the study area and Lough Trusk is located to the North West. A hostel is located to south of the centre of the site in the Mourne Beg river valley. The Northwest cycle trail route traverses the site. It overlaps with the proposed development area for the grid connection route along the public roads between the N15 and Tuaghboy area where the grid connection route turns onto a forestry track. The route is depicted in the ZTV maps which depict amenity areas and routes in the context of theoretical visibility ranges of turbines.

The roads are typically narrow and many are flanked by drains/ditches. There are consequently numerous bridges some of which are stone arched - some of which are noteworthy. Most significantly the Bridge at Castle Finn is a protected structure and this is located on the intended haul route. Croagh Bridge to the south across the Mournebeg River and other bridges both east and west east of this are also attractive old stone arch bridges. These serve cross border traffic e.g. through site environs to Castlederg in Tyrone and its hinterland.

There are in the order of 50 conservation designations on sites within 15km of the site which includes Northern Ireland. Designations include – SPAs, SACs, pNHAs (Ireland only) and ASSIs (Northern Ireland only). These designations are not mutually exclusive with many European designations overlapping domestic ones. The development site is not within any of these sites as delineated.

3 DEVELOPMENT DESCRIPTION

3.1 Overview

The site extends across 3481 hectares within a study area of 4387 ha. The development area constitutes 2% of this area which is equivalent to 96.8 hectares. The output will have the capacity for providing electricity to 55000 households. In accordance with the public notices the development comprises:

- (i) Up to 49 No. wind turbines and all associated hard-standing areas with a total estimated capacity of output of 105MW. Each turbine will have a maximum overall blade tip height of up to 156.5m.

- (ii) 2 no. permanent Meteorological Masts up to a maximum height of 110 metres.
- (iii) 2 no. 110kV Electrical substations, each with, 2 no. control buildings, associated electrical plant and equipment, and waste water holding tank.
- (iv) All associated underground electrical and communications cabling connecting the turbines to the proposed substations and connecting the proposed substations to the permitted 110KV Clogher substation in the townland of Cullionbuoy, Co. Donegal.
- (v) New access junctions and improvements to sections of the public roadway to facilitate delivery of abnormal loads.
- (vi) Upgrade of existing and provision of new site access roads and associated drainage.
- (vii) 9 no. borrow pits.
- (viii) 6 no. temporary construction compounds.
- (ix) All associated site development works.

The application is for a ten year permission and is for a 25 year operation. It is accompanied by an NIS, an EIS and sets of drawings illustrating the site context, layout and proposed structures and infrastructure construction methodology. The EIS is appended with a book of panoramic photomontages on cropped A1 sheets.

3.2 Turbines

A total of 49 turbines are proposed in two separate independently accessed areas.

In Area 1 a cluster of 20 turbines is proposed in an area extending approx. 2.6km by 2.8m approximately spaced at angles and by distances no less than 500m from each other. The nearest turbine to the N15 is 2.2km east of this route just north of Barnesmore Gap.

In Area 2 a further 29 turbines are proposed in a more scattered format extending over a distance of 10 km between T21 and T49. There are multiple clusters within this area.

2a – This is centrally located approx. 800 south east of Trusk Lough. It comprises 5 turbines T21-25. This area is served by forestry tracks – two off the main north south public bog road route between Kinletter and Croagh Bridge, one directly off a residential public bog road to the north east and one at the end of a cul de sac local bog road off the same residential road. A bog Track runs south of the proposed turbines between the cul de sac (housing cluster) and the Kinletter road. The development area is mainly open Mooreland with forestry to the north east.

2b - This is also centrally located being east of 2a and comprises 8 turbines T26-33 and is flanked by the cul-de-sac road to the west and to the east by a local bog road linking Lismullyduff north of site to the south west toward Tievecloghoge and also via a fork to Meenloskybane Burn and onto Co. Tyrone (Cavan Road) south east of site.

2c - This is immediately east of 2b and contains 9 turbines over 2km (east west) distance. This is largely fronted to the west by the fork to the M. Burn and to the east by the Killygordon -Castlederg bog road. It is also traversed by another public bog road providing an alternative route between Lismullyduff and M.Burn via Cronalaghy.

It is also served by a fairly good SE NW track linking with public roads at each end. A fourth track at the end of a public road from the Killygordon/Crossroads area also traverses the northern part of this site.

2d – This is the most eastern cluster and the nearest turbine is about 1.6km from 2c. A cluster of 7 turbines is proposed. This fronts onto the Killygordon-Castledearg road on its west side and has frontage on a short stretch of public bog road between an access road off the R235 and the local road to Liscooly(N15) A forestry track/farm access traverse the northern section of this area in a north south direction. Forked access tracks provide access from the public road network to the north east.

Turbine specifics

The turbine parameters are set in terms of blade tip height at a max of 156.5m and estimated rated output range of between 2-3MW (total capacity is 105MW) but are not actually specified. Nordex117 used for noise prediction. Rotor diameter is stated to be up to 117m.

Each turbine structure /compound comprises foundation base, a hard standing and an assembly area and each are specified in a plan in Appendix 4-1. However these are not entirely accurate. The EIS states in section 4.1.3.4 that 'The hard standing areas shown on the detailed layout drawings included in Appendix 4-1 to this report are indicative of the likely sizes required, but the extent of the required areas at each turbine location may be optimised on-site depending on topography, position of the site access road, the proposed turbine position and the turbine supplier's requirements.'

A generic methodological framework is provided for each component and stage of turbine construction. Fig 4.4 shows a typical arrangement for works access and drainage.

In the response submission a revised layout shows a possible omission of 11 turbines.

3.3 Access

There are two principal accesses proposed to the site for construction haulage and operational stages: one directly off the N15 through an existing quarry site to the west of the site and one off the R235 via Castlefinn on the N15 to serve the site from the east. It is proposed to upgrade 32.1km of existing forestry roads/tracks (some of which are public roads) and construct 24km of new roads most of which are to access the turbine of the main tracks. It is proposed to widen the carriageway from around 3.5m to 6m by widening on one side.

A set of 44 drawings (reduced to 13 site location plans drawings in Appendix 4-2) illustrates the layout which incorporates different grades of roads eg. Floating roads, temporary tracks.

Area 1: The lands associated with Turbines 1-20 and associated pits, compounds and sub-station are proposed to be accessed principally by the quarry road access. The access junction and road are proposed for upgrading along with an extensive

network of existing roads and tracks. There are presently two accesses off the Bog Road (N15 to Teivecloghe) which are onto forestry tracks and these accesses/junctions and tracks are also proposed for upgrading.

[Inspector's Note: No vertical sections are shown of the proposed N15 access junction upgrading despite limited visibility on the horizontal plane.]

Area 2(a,b,c,d): This is proposed to be serviced by a dedicated single route off the R235 to the east of the site. There are a number of north south local public roads intersecting the site and dividing it into roughly quarters. In order to provide east west access directly from the R235 access point, new junctions are proposed onto these dividing public roads.

All new junctions and upgraded junctions are illustrated in drawings which show the horizontal alignment including the provision of sightlines. The applicant has submitted drawings demonstrating geometric capacity of roads and junctions for turbine delivery.

It is stated that the roads will be widened to 6m and on one side only

[Inspector's Note: Detailed drawings of the particular stretches of road to which this applies are not provided. E.g. there are no sufficiently scaled drawings with topographical survey data.]

New roads within the development land (i.e. off the public road and main forestry tracks) need to be constructed for access to turbines.

The EIS sets out a detailed methodology for roads, new excavated roads, new floating roads, upgrading works.

The borrow pits will provide the majority of all rock and hard-core and sites are adjacent to roads.

Delivery:

Delivery for turbines is anticipated from Killybegs (In Response submission it is stated to be from Donegal – which could still originate from Killybegs). The main accesses are off the N15 and the R235 which requires crossing the River Finn at Castlefinn. This bridge is in the NIAH.

All access and junctions take account of a blade length of 57.3m and have been tested for safe access by using Autotrack. A range of measures are proposed such as convoy escorts, tests and other such measures as previously used for similarly scaled development.

[Inspector's Note: Delivery routes for construction materials are not clearly specified. The NIS states 'Other construction materials, particularly those from local suppliers, may be delivered via other public road routes during the construction phase of the proposed development. These other routes will be specified in the detailed traffic management plan prior to the commencement of the construction phase.']

In the response submission further clarification of access geometry for abnormally large loads is given and sightline provisions within landowners interest are shown in Appendix 11-3

160m sightline provision with the exception of J16 (98m) but this is to Carrickaduff Hill and the N15 is an alternative.

Drawings of N15 junction demonstrate 220m sightline – it is noted by the applicant that the PA has no objection in principle. It is clarified that routes A and B will be used for material and plant and that routes have been assessed. There will be 12 junctions into the site (off public roads)

3.5 Borrow pits:

A total of nine borrow pits are proposed throughout the site where there is rock outcropping. Each pit is strategically located to provide foundation material for an immediate catchment of proposed turbines and associated road network preparation. Table 7.8. quantifies total estimated borrow pit excavation volumes at **569,770m³**

Area 1 – four pits,

Pit no 1 is on the western boundary north west of the Bunadown River - extraction volume is estimated at 92739 m³

Pit no 2 is also on the western boundary to the south - extraction volume is estimated at 63494 m³

Pit no 3 is about 100m SW of T12. - extraction volume is estimated at 96174 m³

Pit no 4 is about 100m SE of T2 - extraction volume is estimated at 72498 m³

Area 2 – 5 pits

Area 2b – 3 pits

Pit no.5 is 250m SW of T29 - extraction volume is estimated at 37405 m³

Pit no 6 is 280m east of T27 -extraction volume is estimated at 31551 m³

Pit no 7 is 100m east of T33 -extraction volume is estimated at 29686 m³

Area 2c – 1 pit

Pit no8 is 100 west of T41 - extraction volume is estimated at 65653 m³

Area 2d – 1 pit

Pit no 9 about 200m west of T48 - extraction volume is estimated at 80570 m³

Plans and section drawings for each pit are provided and demonstrate phased cellular approach to extraction in addition to the restoration and finished levels and boundary relative to surrounding topography.

Excavation is stated to be kept above the water table [Inspector's note: although there is no probe test confirming this.] It is stated that the pits will facilitate the

overburden from the excavation works associated with the site preparation work for hard surfaces, foundations for turbine base and access areas.

Table 4-2 sets out co-ordinates, area, volume of extraction and purpose. The hard-core volume ranges from 29,687m³ to 96,174 m³.

[Inspector's note: While the turbine and associated hard standing areas are provided the specific areas of road to be constructed is not specified or readily identifiable]

It is expected that some blasting will be required in addition to the rock breaking. This will be with notification agreement with the planning authority.

When peat is restored the finished depth will be up to 7.5m and sides will be sloped at a range of 0 to 9.5m deep.

A peat management plan is provided in relation to the estimate **566,752 m³** volume of peat to be managed. Peat will be stored in the pits in a cellular system. Some temporary storage will be used beside works area subject to technical ecological assessment.

Pit nos. 2 and 5 are indicated as omitted in reduced turbine layout in applicant's response.

3.6 Electricity Substation

- One in Meenbog Area 1 for Turbines 1-20
- One in Cronalaghy Area 2 for Turbines 21-49

3.7 Construction compounds

Four compounds are proposed in the drawings throughout the site. They range in sizes in the order of 160m by 90-120m. Each will have a control building approx. 18m x 10.4m and 6m high. Staff facilities will be on site but waste will be tinkered off site.

Two are proposed in Area 1, one large and one small, (18000m², 4,800m²).

One is proposed centrally aligning with the eastern boundary of Area 2a (6,200 m²)

One is proposed in area 2d (15,360 m²)

[Inspector's note: There are 6 compounds in the public notice but this is not indicated in drawings. In the event of permission this would need to be specified in the absence of further clarification.]

The smaller one (Compound no. 1) would be omitted if scheme reduced by 11 turbines in accordance with the suggested reduced layout.

3.8 Grid Connection

It is proposed to lay a grid connection underground linking the substations in Areas 1 and 2 and connect to the grid in permitted 110kv substation at Clogher. (Fig 4.1, 4.28).

It will involve works at three bridges. One day of works is estimated for each of these bridges. Generic sections are shown for bridge and watercourse crossings.

Alongside the Lowerymore River it is proposed that this will follow the route of the old railway tracks in a trench which will be back filled

Directional Drilling will be used to link two substations across open lands where there is no track or road. It will cross two tributaries of the River Mourne Beg at two bridges in Meenreagh and Tievecloghage and also a tributary of the River Mourne Beg at a bridge in Meenbog. It will go under the watercourses without impacting on the channels. (e.g. Fig 4.27)

Road closure will occur but not for more than one day.

Grid connection will continue along the access quarry road to the N15 and then along the hard shoulder of the N15 to local road in Keadew Lr over a distance of 8.9km. The route passes a school and turns up an access route to an existing wind energy development site.

3.9 Tree felling

Forty seven per cent of the site is stated to be under forestry. It is proposed to fell 121.4 ha along access routes, in turbulence catchments and in works areas. This will be subject to felling licences the application for such being dependant on planning permission. 123.7ha of land is proposed for replanting. . This is not shown in the initial plan.

In the applicant's responding information details are provided in relation to proposed plantation lands.

3.10 Drainage

A set of 1:2500 drawings illustrate the proposed drainage infrastructure such as for example, lagoons, settlement ponds, drains, culvert and discharge points relative to natural water courses, roads, hardstanding and works areas.

The drainage design has been prepared by Hydro Environmental Services Ltd. (HES), and by the firm's principal, Mr. Michael Gill. It is driven by the need to protect the integrity of the natural watercourses within and surrounding the site and downstream catchments into which they feed, such that there will be no negative impact on the water quality of the site and its associated rivers and lakes. The underlying approach is based on keeping water clean by avoidance/diversion and by attenuation and settlement with controlled diffuse release informed by experience and best practice. (Appendix A -4 illustrates preliminary design) It is proposed to augment the existing forestry drainage network (manmade) for the construction and

operational stages of the development. The layout is designed such that no roads are proposed through natural drainage channels nor are direct discharge to these natural watercourses proposed. A 50m buffer is delineated on the layout drawings and development is generally set back in accordance with this.

No routes of any natural drainage features are proposed to be altered and turbine locations and associated new roadways have been selected to avoid natural watercourses. No direct discharges are proposed to any natural watercourses, with all drainage waters being dispersed as overland flows. All discharges from the proposed works areas will be made via settlement ponds and over vegetation filters at a minimum of 50m and distance from streams and lakes respectively. Buffer zones around the existing natural drainage features have constrained the layout of the proposed development. Fig 8.3 maps the river catchment and sub-catchment. Within the study area the sub catchments are numerous but the turbine works are primarily concentrated in the Mourne catchment. The grid connection along the N15 is alongside and crosses the Lowerymore River and this is the only part of the development which is within the Lough Eske catchment. The Mourne Beg direct catchment is free of turbines and borrow pits but is traversed by the grid connection.

The Mourne Beg Subcatchments

- Bunadowen River Catchment
- Glendergan River Catchment
- Shruhingarve Stream Catchment
- Carrickshandrum Stream
- Mourne Beg Direct Catchment
- Cross Roads Stream Catchment
- Drumcannon Stream Catchment

River Finn Subcatchments

- Corraffrin Stream Catchment
- Meenloskybane Burn Catchment
- Garvagh Burn Catchment
- Dreenan Burn Catchment
- Pullyernan Burn Catchment
- Tievebrack Stream Catchment

Lough Eske sub-catchment

- Lowerymore River Catchment

Crossings

There are in the order of 27 existing stream crossings as part of the forestry road network and it is proposed to upgrade where necessary and as a part of the extended road network further 9 stream crossings are proposed. Directional drilling proposed rather than riverbed works/channel interference.

Features of drainage system

- Artificial drains will be diverted. Check dams will be used for water discharging to artificial drains but not in natural watercourse and this will restrict flow, control erosion and promote sedimentation behind dam.

- Roads will be widened on opposite side of existing drains.
- Interceptors drains will be placed up-gradient with velocity controlled by check dams.
- Surface water management in works area to prevent run-off contamination.
- All drainage is to overland and via settlement ponds and or vegetation filters which are at minimum of 50m from watercourses
- Swales to be placed down gradient side of watercourse intercepting potential silt.
- All will be subject to a Management regime.
- Surface water will be managed by piping and gradient to convey away to avoid erosion. Silt busters and silt bags are also intended to be used. Various measures considered either on own or cumulatively depending on precise circumstances or particular area.
- Culverts. Following survey work four new stream culverts proposed which will also be subject to Section 50 licence (Arterial Drainage Act 1945). They will be appropriately oversized for mammals and designed to avoid ponding but will incorporate silt collection.
- Silt fence is additional precautionary measure in either single or multiple layers depending on location. This is in accordance with measure in 'Control of Water Pollution of Linear Construction projects.' CIRIA 1996.
- A total of 9 new stream crossings and 7 upgraded crossings are proposed these are set out in figures 8.4, 8.5
- 2 are on tributaries of the Bunadownen River downstream of the proposed intake point. 6 turbines and 1 borrow pit are up-gradient or close to tributaries to Garvagh Burn which flows south into Tyrone. There are 4 existing stream crossings and 1 is proposed. 4 turbines are at a source point of the Glendergan river (Mourne sub catchment) which also flows south across the border. 2 crossings are proposed here.
- No dewatering is proposed in borrow pits. They will be fairly shallow with horizontal excavation. Water entry will be controlled by interceptor drains and single point outlet.
- The use of Floating Road drainage is stated to retain hydrology of peat land
- Drainage in cable trench will be managed by short section management minimising run-off. Excavated material to be stored up-gradient with excess going to pit.

3.11 Construction Plan

A preliminary construction and environmental management plan (appendix 4-3) is appended to the EIS and deals with drainage, peat and overburden waste and is proposed to be updated to include all mitigation measures, conditions and measure to address site conditions as they emerge.

Fig 4.40 illustrates the scheduling/phasing of stages. [Inspector's note: It does not appear to address borrow pit preparation.] Details would appear to be intended to be worked out during planning permission and it is expected that such a programme would be detailed to address issues arising in the planning process. This is based on the understanding that 'The requirement for an Environmental Management Plan (EMP) to be prepared in advance of any construction works commencing on any wind farm site and submitted for agreement to the Planning Authority is now well-established. Such a process is intended to address the mechanisms for proposed procedures for the implementation of mitigation measures.

Refuelling is generally off-site although some limited refuelling will be carried on site within particular conditions.

Concrete will be delivered in ready mix deliveries and chutes will be cleaned only on site. Delivery will be outside normal hours. One turbine foundation will typically be completed in one day. Good practice will be used in delivery management of concrete and washing will be minimal. Dust suppression measures will be employed in borrow pits and wheel washing will be done if required.

3.12 Community Gain

It is proposed to make an initial contribution of €6250 per MW upon commissioning plus per annum €1250 per MW into a community fund which would amount to a total of €3,281,250 total over 25 year life. It is suggested that money could be managed by a community fund liaison committee for local projects such as a Renewable Energy Fund or money for residents within a certain distance of any turbine. Recreational and amenity proposals such as off road cycling trail running could be considered appropriate for fund financing.

3.13 Temporary hardstanding

This will be constructed for drilling rig and launch pad are delineated on 1:2500 site layout drawings. There will also be temporary track for 1770m for off road cable laying for the grid connection between areas 1 and 2.

3.14 Met mast

One mast in Area 1 – about 200m west of T12 at a ground level of 250-260mAOD
One mast in Area 2b - midway between T32 and 35 at a ground level of 210-220mAOD

3.15 Peat Management

A detailed Peat Stability study has been carried out and concludes that there will be no risk of peat slide on site. All turbine locations are at acceptable factors of safety, i.e. >1.30 (A few locations close e.g. at 1.6 and 1.7.)

Appendix 4 -2 includes a Peat Management Plan

Table 7.7. Estimated Peat Excavation Volumes

<u>Development Component Area (m²)</u>	<u>Peat Volume (m³)</u>
49 no. Turbines, Hardstands & Crane Pads 285m ² excavation footprints at Turbine foundation with 1,930m ² hardstand and 78m ² crane pad	151,650
2 no. substations Substation footprint	34,500
Access Roads Assumed 7.0m wide development footprint along new proposed Access roads and 3.5m widening along existing access roads, where applicable 184,000	
2 no. Meteorological Mast Foundation footprint and 293m ² hardstand for each mast	400
4 no. Construction Compounds	
4 no. construction compounds –various size footprints	53,600
9. no borrow pits 9 no. borrow areas – various size footprints	142,600
Total Peat Volume	566,750

3.16 Potential for reduction

In applicant's response to written submissions, the applicant illustrates a reduced scheme whereby 11 turbines are omitted as a part of potential reduced scheme. Two of the proposed pits and one compound would be omitted arising from the omission of 11 turbines with consequent reduced impacts

4 SUBMISSION BY PLANNING AUTHORITY

The planning authority acknowledges the statutory role of the Board in its EIA/AA functions and in this context has made a lengthy submission comprehensively appraising all other aspects of the development. It raises critical issues in relation to public water supply, residential amenity, roads and traffic safety and visual/scenic amenity. It highlights the inadequacies of the information submitted and in some instances recommends revisions to the scheme. In the first instance, the planning authority recommends addressing these matters by way of additional information. Alternatively, reasons for refusal are proposed in the absence of such information. In the event of permission, conditions are recommended to address outstanding matters. Ultimately the planning authority seeks to modify or remove 39 of the turbines.

The minutes of the Council meeting are attached to the submission. The Council elected to pass a motion to refuse permission for the proposed development on grounds of impact on residential amenity primarily by reason of shadow flicker and scale, visual dominance in eastern end and visual injury to Barnesmore Gap views, risk to public water supply and public safety by reason of traffic hazard.

5 SUBMISSIONS BY PRESCRIBED BODIES, NORTHERN IRELAND BODIES AND NGOs (National Government Organisations)

5.1 Background

The Board has received submissions from a number of notified prescribed bodies as initially specified in the Board's direction in the pre-application stage of this proposal. In addition to this, the Board invited a submission from Irish Water following receipt of the application.

5.2 Dep of Arts, Heritage and Gaeltacht

Development not in SPA/SAC/NHA but potential to impact:

- River Finn SAC (0020301)
- Pettigo SPA 004099 Within 10km and
- L.Derg SPA 004057)
- NI designated conservation sites – refer to NIEA

Nat. Grid connection works have potential impact on:

- L.Eske+Ardnamona Wood SAC (00163)
- Croaghonagh Bog SAC (000129)
- L.Hill Bog NHA (002452)
- Meenagarranroe Bog NHA (002437)
- Barnesmore Bog NHA 002375
- Cashelnavean Bog NHA 000122

More specifically, there are serious concerns about Habitats and Species listed in Habitats and Birds Directives and protected under Wildlife Act:

- Site within grid squares H09,19,29,08,18,28 with following rare species: Globe Flower, Irish Lady's Tresses and Marsh Fritillary.
- Could significantly damage/destroy Freshwater Habitat + species of R.Finn /Foyle catchments e.g. Atlantic.Salmon, Otter (Annex II species)
- Could damage/destruction of heath/bog habitat (Annex 1)
- Could Interfere with Annex I migratory species – Greenland White fronted Goose, Whooper Swan
- Could disturb Migratory/breeding birds Harrier, Merlin Eagle, Golden Plover (Annex I)
- Could disturb/damage mammal, Hare, Bat, badger

Impacts by

- Deterioration of water quality in R. Mourne Beg and R. Finn and tributeries due to pollution from s.w. run-off at construction /rd/pits stage and post construction.
- Deterioration water quality due to peat erosion/bog burst
- Direct loss of habitat

- Damage to adjacent habitats due to inappropriate construction
- Interference with migratory routes/flight lines of wintering birds
- Disturbance to wildlife/avifauna at construction and operational phases.

Outstanding critical issues:

While these issues raised at scoping stage have been substantially addressed, concerns remain about a number of issues that have not be adequately addressed

- Bird survey data insufficient - No effort to map bird activity across site
- Issues of displacement for Hen Harrier not given enough consideration. 100m displacement range inadequate. Should use 500m
- Area between Carrickaduff Hill and L.Mourne sig as breeding area for Hen Harrier. Lands around Tievecloghoge + Kinletter winter roost site for Hen Harrier – 2 pairs breeding within 1km. No evidence of activity not in surveys. Over emphasis on collision risk and not enough on disturbance. Further Hen Harrier survey taken in 2015 with attention to traditional breeding sites and further surveys mapping of bird activity for Annex 1 species (swan, Merlin, Peregrine, Eagle, Plover and risks identified re collision and disturbance.
- Construction and Environmental Management Plan and a detailed habitat management plan should be included in the EIS. Should consider Annex 1 Habitats e.g. Natural Dystrophic Lakes and Ponds, Atlantic Wet Heath and European Dry Heaths, active Blanket Bog and Blanket Bog.
- EIS must outline criteria for selection of temporary storage locations of overburden as well as measures to prevent peat erosion/bog burst and deterioration in water quality including downstream waters in Natura 2000 sites.
- No construction works to be within Mar-Aug (EIS states works will start Aug to end of March)
- Mitigation measures should be robust to ensure Construction works particularly the underground connection under crossing the Lowerymore River do not have a significant adverse effect on the Natura sites L.Eske+Ardnamona Woods SAC.

There **needs to be a better understanding of bird dispersal** from L.Swilly and through Barnesmore Gap so that potential impacts can be screened out regarding SPAs, most notably, Pettigo Plateau and Lough Derg.

5.3 Irish Peatland Conservation Council (NGO)

Permission should be **refused**

- **Destruction of blanket bog** - a globally rare resource. 2.95ha of blanket bog will be lost in a county where only 20% of the original resource remains. It should be protected under EU Habitats Directive and Ramsar Convention. Deteriorating status of area extraordinarily rich in biodiversity and known for large number of protected species. 49% of Ireland's endangered birds, 15% of Irish Flora, 26% of Irish mammals supported in these areas

- The 51 sites of conservation concern contain Active Blanket Bog, Alkaline Fens, European Dry Heaths, Alpine and Boreal Heaths and Transition Mires and quaking bogs.
- Wind farms not conducive to restoration of these habitats which are generally poor or bad.
- IPCC refer to UK study where 7 out of 12 bird species (of similar species) were reduced close to turbines.

5.4 Irish Water – no written evidence of consultation by applicant

- **Lough Mourne is of strategic importance** for the northern part of Donegal and currently supplies 17,000 people. There are long term plans to augment this supply to serve North Donegal, including Letterkenny, by constructing a raw water intake from the Bunadownen River. This proposed development has the potential to impact on the quality of water on the Bunadownen River and should therefore be considered by ABP when assessing the application.

5.5 Failte Ireland (Consultants)

- Unlikely to be significant negative impacts on tourism
- Supports renewable energy- positive impact
- Main impacts at construction stage which can be mitigated –defer to ABP
- Acknowledges tourism sector policies in development plan. Donegal part of Wild Atlantic Way – which is not in the study area.
- Key walks/routes identified.- none within site except North West Cycleway . Worst impact is altered view.
- landscape is already altered by commercial forestry - 65% of site
- acknowledges character of wider area by reference to potentially 406 turbines within 20km. This supports the fact that wind farms are part of established land-use in the area
- Landscape will be further altered and views altered – imperceptible to moderate.
- Community gain is positive impact

5.6 DAU

- Archaeologically rich area in context of Neolithic to Post Medieval heritage => potential for discovery. Permission should be subject to condition to adhere to section 12.6 of EIS
- No protected structures in development site but 6 within study area 3 NIAH structures within the study area and 7 NIAH bridges on delivery route.
- Bridge over Bunadownen River is in NIAH 1860

5.7 NRA

The authority is concerned about:

- haul route and maintenance and safety issues
- N15 access –private access at point of 100km speed limit – conflict with national policy

- structural capacity of national road network – needs evidence of agreement with planning authority

5.8 HSE- No impact

5.9 Irish Aviation Authority

- Irish Air Corps requires turbines to be a minimum distance of **.25 nautical miles from the Northern Ireland border**: This affects the eastern cluster where the Air Corps has clarified that it periodically conducts security operations in this area which require helicopter overflight and landings to be carried out close to the border.
- The response submission clarifies that despite consultation this matter did not arise. However it is demonstrated that this condition can be complied with but this is in the absence of third party consideration.

5.10 Inland Fisheries Ireland

- Concerned about significant length of cable laying along the N15 and up to Clogher substation which is within the **Lowerymore River** catchment, a salmonid and developed tributary of the River Eske system. It is recommended that prior to any trenching work a contingency plan/work methodology must be developed in relation to any pumping that may be required. Pumping to this river is not favoured.
- Reference is also made to the riverbank stability where significant sections have been reinforced which is indicative of the vulnerability of the river to severe erosion. Cabling must not jeopardise the integrity of the existing bank protection.

5.11 An Taisce

- Notes the significant scale and transboundary impact with Northern Ireland.
- Need to strategically justify the site on policy grounds while protecting the area from significant adverse impacts on ecology, landscape character and residential amenity.

5.12 Birdwatch (NGO)

Curlew, Golden Plover, Red Grouse, Merlin, Hen Harrier (T14 within 250m of HH breeding site), Whooper Swan and Greenland White-fronted Geese are associated with the site region. These species are vulnerable to the type of development proposed and further information is required to rule out adverse impacts on protected species.

Northern Ireland Planning Service
Submission by Department of Environment – Strategic Planning
Division

5.13 Strategic Projects Division

- The site is located adjacent to an area of high scenic amenity due to its open and remote character. It is policy to protect the skyline at the headwaters of the Derg Valley. It is concluded with reference to various planning policies that the proposal by reason of its 'scale and nature in terms of proximity the border and the number and height of the turbines will have a significant adverse impact on the character of the landscape and the visual amenity in Northern Ireland'
- Properties less than 10 rotor diameters away are identified as being subject to loss of amenity. The management of forestry is identified as an important mitigation method.

5.14 Landscape Architects

- Concerned about scale and extent of development in border landscape.

5.15 Northern Ireland Environment Agency (NIEA) - Water Management Unit

- Concerned about proximity to the Derg and Mourne management units and need for robust mitigation measures to protect water quality and ecology.

5.16 Northern Ireland Water

- Concerned about impact on waters upstream of Derg Water treatment Works from where raw water is abstracted to supply a large area of Tyrone.

5.17 NIEA – Natural Environment Division:

- Agrees with NIS – no significant or indeterminate impacts likely on conservation objectives of any Natura 2000 sites.

NIEA –Historic Monument Unit

- No objection

5.18 NI Loughs Agency

- The Agency highlights the presence/ abundance of salmon, trout, lamprey and eel in the Mourne Beg River which is within /bordering the site and which is a tributary to L.Derg and both are part of L.Foyle and its Tributaries SAC. Special protection required
- The agency highlights potential impacts – obstruction of fish migration upstream and downstream during and after construction, Disturbance of spawning beds, Increase in silt, risk of large scale peat movements, point source pollution, Loss of shelter and cover, and drainage issues
- Further information required prior to any grant re culvert details, silt management plan and fuel oil management protocol

5.19 Transport NI

- Concerned about haul routes – not clear to what extent the NI road network will be used.
- Concerned about damage to roads and that there is no means within the development framework to recoup cost by NI authorities. Need to be involved in traffic management plans to protect roads etc.

5.20 Derry City and Strabane District Council –Environmental Health Services

- Potential exists for significant transboundary impact due to noise
- Concerned about less conservative noise limits and impact on NI dwellings. Further information required. Noise survey required that is compliant with ETSU-R-97 and Institute of Acoustics Good Practice Guide. In the absence of such, a refusal of permission recommended.
- Noise impact assessment on parameters set out in its report recommended.

5.21 Tourism Northern Ireland

- Concern about impact on tourism industry in Northern Ireland. (detailed submission)

5.22 Forest Service

- Need to ensure adequate set back from forestry in Northern Ireland and that measures for tree felling are in accordance with best practice.

5.23 Strabane District Council

Concerned about residential amenity (by reason of noise shadow flicker proximity, scale and extent), visual impacts and protection of Flora and fauna and water quality. This submission is supported by Omagh District Council

5.24 RSPB

- Conservation charity with limited resources: supports Birdwatch submission in this case.

5.25 Rivers Agency

- No comment.

5.26 Economic Division

- Likely to have limited positive impact on economy.

6 OBJECTIONS

6.1 General

In the order of 250 objections have been lodged to ABP – the majority of whom request an oral hearing. The vast majority of these objections are from the townlands within the study area and the immediate environs. Some are residents of nearby towns. The majority of submissions are from individuals who either work locally or farm in the area. There are also interest group submissions representing for example fishing/angling, sporting organisations, schools, Finn Valley action group, and railway enthusiasts. A list of these parties is contained in a pouch at the back of the file. I have read all these submissions and noted their content. I am also aware that the observing parties have referred to the constraints to submitting a detailed technical analysis of certain issues on a case of this scale and extent and the anticipation of an opportunity to more thoroughly investigate issues at an oral hearing. The issues can be summarised under the following headings.

6.2 Health and residential amenity

These matters pertain substantially to shadow flicker and noise. In a general context the objectors raise concerns about the community health impact particularly in relation to

- vulnerable groups such as the schools (Gleneely NS, Glencovit NS, Dromore NS Meenragh NS) which have students with special needs.
- Cause and Aggravation of a range of mental and physiological conditions. Impact caused by low frequency and infrasound components which can travel great distances and are a source of annoyance and harmful to health
- Concerns about impacts of windfarm on health and consequent depreciation property values.

At a more specific level

- Shadow flicker impact unacceptable. 54 homes will experience flicker in excess of guidelines and 22 turbines are identified as being a cause of this. The mitigation methods are not acceptable as they are impractical and place undue burden on the home owner.
- Noise Impact unacceptable. 106 impacts are identified as being within 10 rotor diameter distance.
 - Inaccuracy in distances e.g, property no. 215 is 830m away but is stated at 936
 - Blasting will cause noise impact. Pits 5-9 are close to homes
 - Waiver is ethically wrong
 - Information inaccurate as turbine type not specified.
 - Application of appropriate noise criteria;
 - Infrasound and low frequency noise;
 - Amplitude modulation;
 - Health concerns.
- The aerodynamic noise has a particularly low frequency and infrasound components that can travel large distances (Prof. Evans 2014 talk and Hanning and Evans 2012) - more annoying and harmful to health.
- sleep deprivation within 2km (night shift) Nina Pierpoint book on syndrome.
- Planning guidance limit of 43bd Exceeds 40db Env. Noise Dir (2002/49/EC)
- Background ambient noise – Guidelines outdated – soon to be amended and lowered – high electro-magnetic issues
- Noise travels through building even closed.
- Noise critical in terms of sleep loss and autistic (Steigler & Davis 2010)
- Were noise guidelines for NI used?
- Prevailing winds south west so houses to north east worst affected.
- Noise during 24 month construction- Blasting noise in certain conditions- Borrow pits nos. 5-9 are close to homes.

6.3 Flora and Fauna

- The concerns of the DAHG are reiterated with reference to a wide range of species identified in the locality.
- In addition to the issues raised about what are substantially protected species and habitats, there is concern about impact on livestock, (cattle, sheep)

horses and bees by reason noise and shadow flicker. This would interfere with farming and recreational activities.

- Very sensitive management is required to minimise the potential impact on the freshwater pearl mussel.
- Impact of forestry: Afforestation, harvesting and road construction are a potential source of sediment and nutrients (particularly phosphorus) to rivers. This is especially the case where forests are planted on peat or peaty soils. Implications for water quality and aquatic ecology

6.4 Visual Impact

- Impact on landscape character in Barnesmore Gap.
- Impact on residential amenity.
- Transboundary impact on landscape character in Tyrone.
- Impact on tourism, recreational amenity and local heritage
- Will become unattractive place to live with depreciation in property values

6.5 Pollution of watercourses and fish stocks on fisheries

- Impact on public water supply
- Impact on fishing activities/ groups such as Ulster Angling Federation, Foyle Association of Salmon and Sea Trout Anglers

6.6 Pollution of ground water, public water supplies and group and private wells

6.7 Peatslide

- Factor of safety method in determining risk is dated and inappropriate for the site characteristics
- Insufficient survey to back assumptions on peat and groundwater

6.9 Traffic and Roads and Telecommunications

- Impact at construction stage, disturbance due to road blockages/diversion
- Impact on structures such bridges and roads over longer term.
- Interference with aeriels and communication systems. Eg. TV, Phone, Internet.

6.10 Lack of consultation

6.11 Loss of Recreational Amenity

- Injury to emerging Tourism industry
- Donegal Railway Restoration Society. At odds with its mission statement to restore railways.
- Injury to and loss of scenic walking routes / access to site of local folklore interest. A local Mountaineering group has raised concerns in this regard.
- Damaging fish stocks will damage angling

6.12 Safety

- Aviation – proximity to border
- Proximity of turbines to road

- T34 doesn't meet with exclusion zone of 300m from main power line
- Borrow pit safety risk for people and livestock – even after restoration
- Release of radon – no radon barrier if before 1980
- Distraction to driving

6.13 Construction nuisance:

- Traffic disruption and noise, blasting, dust and safety

7 APPLICANT'S RESPONSE TO SUBMISSIONS

The applicant submitted a substantial volume of material in response to all submissions on file. A lot of the material reiterates the EIS findings. While all issues are responded to, key aspects include

- Clarification of site boundary concerning the local authority's interests
- Options for removal of up to 11 turbines with the consequence of revising impacts: Additional photomontages and visual impact assessment
- Flora and Fauna: further survey work has been completed
- Road and junction geometry clarified
- Pollution of water: clarification of scope of impact – no further mitigation deemed necessary due to measures proposed and the reduced impact if scheme reduced.
- Peat slides
- Noise data.
- Forestry: locations of proposed plantation sites and impact assessment.

The following details are appended

Revised layout

Drawings with 38 turbines and specifically:

- Updated Drawing 0822-57-Rev A (T48 alteration) to provide .25NM distance from border.
- House Locations & Photo Locations Map

Flora and Fauna

- Breeding and Winter Compiled Bird Data – surveys between date ranges of (23/10/2013 to 21/9/2015).
- Flight line maps: golden Plover, Hen Harrier, Peregrine Falcon, Merlin, Curlew, Red Grouse, Whooper Swan, Golden Eagle at various vantage points
- Copies of NPWS Licences for Stage 1 and 2 Margaritifera margaritifera Surveys (1/12/14-31/12/15)
- Hen Harrier Foraging Habitat Calculation Tables

Shadow Flicker

- Map of House Locations where Shadow Flicker Exceeds DoEHLG Threshold

Noise

- Review of Noise Predictions at Republic of Ireland Properties:

Table A.1 Noise Assessment for Receptor Properties in the Republic of Ireland (No Uncertainty Considered for Turbine Noise Emissions)

Table A.2 Noise Assessment for Receptor Properties in the Republic of Ireland (+2dB Uncertainty Considered for Turbine Noise Emissions)

Table B.4 Noise Assessment for Receptor Properties in Northern Ireland based on a daytime lower limit of 37.5dBLA90 (+2dB Uncertainty Considered for Turbine Noise Emissions)

Health

- Health Study References

Roads and Traffic

- Traffic Management Plan: outlines scope of issues
- Site Access and Junction Sightline Drawings

Forestry

- The body of text presents details of proposed forestry plantation sites which amount to 127 hectares. These are in counties Clare, Mayo, Cork and Roscommon. Technical Approval Forms for forestry planting are appended in various formats for the following sites:
 - Carrowkee, Porsoon Co. Clare - 18.79ha to be completed by 30/6/2014
 - Cloonmore, Co. Mayo - 11.3ha to be completed by 31/12/2016
 - Heath Mayo - 34.56 ha to be completed by 30/6/2017
 - Laragh and Ross, Co. Roscommon - 12.4ha to be completed by 31/12/2015
 - Curragh, Co. Cork - 16.36ha to be completed by 30/6/2017
 - Glantane Beg, Co. Cork - 2.93 to be completed by 30/6/2017
 - Molougha Co. Clare - 12.5 ha
 - Unspecified location -18.77ha.(Main text refers)

Site ownership

- Updated Drawings 0822-26-RevA (Landholding Clarification). This outlines the local authority interest in ground at the proposed water intake location.

8 STRATEGIC PLANNING GUIDANCE

8.1 National Spatial Strategy

Balanced and strong regional development needs reliable, secure and cost-competitive energy supply. It is stated that rural areas have a vital contribution to make to the achievement of balanced regional development. This involves utilising and developing the economic resources of rural areas, particularly in agriculture and food, marine, tourism, forestry, renewable energy, enterprise and local services.

In the case of Donegal along with neighbouring counties it is emphasised that ‘the critical factor is underpinning the sustainable development of strategically placed

medium-sized towns to reinforce dynamic rural economies. These economies will be based on the sustainable use of natural resources such as scenic landscapes for tourism, the sea for fisheries and marine-based aquaculture, the land for agriculture, forestry, inland aquaculture (in rivers and lakes) and renewable energy. Appropriate investment in enterprise and local services will also be required to sustain these economies.'

In respect of energy, prime considerations of spatial policies should, it is stated, include

- developing energy infrastructure on an all-island basis to the practical and mutual benefit of both the Republic and Northern Ireland
- strengthening energy networks in the West, North West, Border and North Eastern areas in particular
- enhancing both the robustness and choice of energy supplies across the regions, through improvements to the national grids for electricity and gas.

8.2 National Energy Policy

- In order to achieve national targets for renewable electricity by 2020 (40%) an estimated 5,500-6,000 MW of wind generation is required

8.3 Border Regional Authority Planning Guidelines 2010-2022

- Energy section 1.11 acknowledges the challenges facing the region in providing **alternative energy** in the region, particularly given the limited gas supply. Donegal has no gas and there is a need to increase supply and interconnect with the UK
- The electricity grid infrastructure requires upgrading if renewable energy targets are to be met.
- Section 5.5.1: **The Border Region is ideally located to make significant contributions through wind energy** to the revised targets for renewable energy generation of 40% with resulting economic benefits. Local authorities will provide landscape sensitivity analysis in support of the regional strategy on renewable energy generation to further refine location suitable for development all wind farms will assess on the full range of criteria in the Wind Energy Guidelines
- Need a more detailed analysis of the Regions potential for producing energy from renewable sources – i.e. a detailed energy strategy.
- Challenge – growing renewable energy while **preserving ecological and environmental assets of region**
- **Tourism is acknowledged as a sector in the region with great potential** - much of which has yet to be realised. 'The region must develop its resources in a sustainable manner'. Much is made of cross border tourism projects (canal way and Marble Arch Geopark) and 'multiplier affect' of such projects which will stimulate development in region with a turbulent history. Cultural heritage, activity and marine based attractions are identified as being a potential growth area in the tourism offer in a cross border context. Tourism is an important employment creator for the region

- **Section 4.4.5.1 refers to tourism and connectivity problems with perception of poor access**
- Local authorities should also consider the use of off-road routes for both walking and cycling such as **disused railway (along Lowermore River)** canals and bridle paths ... connectivity can also be improved in rural areas by the development of walking routes to include **cross border looped walks**)
- Cycling/walking infrastructure is identified as being limited and the rural character presents challenges
- Policy to promote **cycling and walking** for the region
- The **need to develop cross border spatial planning** so that there is a greater understanding of the role and function of ordered settlement which should be developed in a complimentary role rather than an in a competitive way.
- Continued emphasis will be given to enhancing **physical connectivity**
- Objective to protect and enhance the quality of the natural environment
- Objective to co-ordinate and integrate key issues in National and regional spatial planning strategies and in particular the regional Development Strategy for Northern Ireland and associated inter-regional development initiatives that support and promote strategic links
- Objective to provide landscape sensitivity analysis in support of the regional strategy on renewal energy generation to further refine locations suitable for development
- In a manner the planning authority has done this in its assessment by limiting the development to 9 turbines.
- Development Plans should incorporate policies and objectives which protect and manage the landscape of the Region, both within, and outside their jurisdiction. Planning Authorities shall collaborate with adjoining authorities in this regard.

8.4 Wind Energy Guidelines 2006

The guidelines advocate that Development Plans 'Achieve a reasonable balance between (a) responding to overall Government Policy on renewable energy and (b) enabling the wind energy resources of the planning authority area to be harnessed in a manner that is consistent with proper planning and sustainable development' and 'the assessment of individual wind energy development proposals needs to be conducted within the context of a 'plan led approach'.

Section 3.7 states that designation of an area for protection of natural or built heritage or as an amenity area does not automatically preclude wind energy development' and similarly section 3.8 states that 'Visibility of a proposed wind farm from designated views or prospects will not automatically preclude an area from future wind energy development but the inclusion of such objectives in a development plan is a material factor. This will be taken into consideration in the assessment of a planning application.'

Chapter 5 refers to other **Environmental Implications** including natural heritage, geology, archaeology, built heritage, noise, safety, electromagnetic interference and shadow flicker. The guidelines also refer to the relevant national policy documents.

Section 5.2 refers to **Natural Heritage** and states that:

'In coming to a decision, planning authorities should also consider the importance of the development of wind energy projects, including those proposed on designated sites, in view of their strategic importance in contributing significantly to the achievement of targets set out in the National Climate Change Strategy by decreasing dependence on fossil fuels, with subsequent reductions in greenhouse gas emissions.'

Chapter 6 refers to **Aesthetic Considerations in Siting and Design** of wind energy developments including aesthetic considerations, landscape sensitivity, siting and location, design and landscape character types.

Section 6.9.1 refers to **Mountain Moorland** and states that:

'Mountain Moorland may be inappropriate for wind energy development for reasons of natural heritage and the fact that some of these landscapes are of rare scenic quality and/or support some of the last wilderness areas of relatively pristine, unspoilt and remote landscapes.'

In addition 'the open expanse of such landscapes can absorb a number of wind energy developments, depending on their proximity. The cumulative impact will also depend on the actual visual complexity of landform, whether steeply rolling, undulating or gently sweeping. The more varied and undulating an area is topographically, the greater its ability to absorb and screen wind energy developments. The aesthetic effect of wind energy developments in these landscapes is acceptable where each one is discrete, standing in relative isolation.'

[Inspector's Note: The Guidelines are pre the Planning and Development (Amendment) Act 2010, which includes requirements in relation to landscape management pre the Birds Directive (2009/147/EC – codified version of 79/409/EEC). The Guidelines do not mention trans-boundary impact. The Heritage Council in this regard recommends that cross-border studies should be supported under the relevant EU Programmes. Accordingly in order to comply with all current guidance and regulatory requirements I consider it reasonable to have regard to best practice in assessing such issues].

8.5 Donegal County Development Plan

The objective for renewable energy in the county is stated in Section 3.1.2:

"To maximise the appropriate development of the county's renewable energy resources and to support and facilitate the creation of a sustainable local renewable energy market place in Donegal from where local wind and marine energy operators can transport, store, trade and export their local renewable energy product to domestic and non-domestic markets subject to environmental designations and amenity considerations".

The spatial policy promotes clustering (Section 7.2.3) of energy developments and states:

“It is a policy of the Council to support the clustering of wind farms within the vicinity of the existing or proposed grid connections and existing operational and approved wind farms to achieve economies of scale and minimise the spatial extent of environmental impacts”.

The Development Plan wind energy strategy delineates ‘ Areas Open to Consideration’ and ‘Not Favoured Areas’

- Areas open for consideration are defined as being ‘...open to consideration for appropriate wind energy proposals. The areas have been identified having regard to a range of factors, including wind energy potential, existing grid connections, proposed grid connections, natural heritage designations, landscape sensitivity, adequate road infrastructure and natural heritage designations.
- Areas where wind energy proposals will not be favored have been identified due to the significant environmental, heritage and landscape constraints. These include: SAC and SPA (Natura 2000) Sites, NHAs, unspoiled areas of EHSAs, Areas of Fresh Water Pearl Mussel, important views and prospects. It is considered that these areas have little or no capacity for wind energy development.

Policy E-P-11 of the CDP states it is a policy of the Council to (1) Facilitate the development of appropriate wind energy proposals in “Areas Open to Consideration” as identified on Map No. 9, “Wind Energy” of the CPD and (2) not favourably consider wind energy proposals in those area identified “Not Favoured” on the Wind Energy Map No. 9. Also stated in Policy E-P-17, it is the policy of the Council to strengthen and enhance the capacity and critical mass of existing wind farms within the local environmental capacity.

As illustrated in Figure 2.9 of Section 2.5.4.1 of the submitted EIS, and replicated in Figure 3.1, the location of the proposed overground development is outside visually sensitive sites and within an area open for consideration.

Variation no.2 of the Development Plan sought to change the wind energy policy by effectively restricting proximity of turbines to dwellings to 10 rotor diameter distance and also by restricting siting in certain habitats. The Minister determined this variation to directly conflict with the wind Energy Guidelines and accordingly directed its omission. While judicial proceedings were instigated against this Ministerial direction, the current status of the plan is that which was originally adopted. Variation no.2 does not therefore presently apply.

Landscape Character Assessment

The footprint of development falls substantially in the LCA Cashelnavern Border & Uplands which is described as a vast, mountainous, remote and undeveloped upland area bordering Northern Ireland characterized by peat covered hills and the

mountain lakes of Lough Mourne and Lough Carn. The N15, one of the major routes into and through the county travels along the valley floor of Barnesmore Gap alongside the freshwater Lough Mourne which provides water to much of east Donegal. There are isolated areas of semi-improved farmland nestled with single rural dwellings throughout this LCA, contrasting greatly with the many large swathes of geometric commercial forestry plantations on the lower slopes and shoulders of the hills.

9 HISTORY

The planning authority acknowledges the planning history in the EIS but refers in particular, to the following cases:

- PL05.205868 refers to a refusal upheld on appeal for wind farm including four number 2 MW wind turbines, with blade tip height of 102.5 metres, entrance, hard-stands, internal access roads, substation building with transformer and equipment compound and connection pylons and poles, security fencing, septic tank and all associated and ancillary works at Tievecloghoge, Ballybofey, County Donegal for the stated reason:

Having regard to the size of the turbines and to their proximity to a habitable dwelling and to Trusk Lough, it is considered that the proposed development would seriously injure the visual amenities of the area and the amenities of property in the vicinity. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area. (attached)

- PL05.EL2039 refers to approval for Part 8 case for Lough Mourne impoundment, Letterkenny, county Donegal as part of the Lough Mourne and Letterkenny Water Supply Scheme. The proposed development involves the raising of the level of Lough Mourne by approximately 4.5metres by constructing two dams and diverting flows from the Bunadowen River into Lough Mourne in order to facilitate increased abstraction of water for the purpose of that scheme.- Approved 22nd December 2005. (file attached)

The planning authority confirms this is at an advanced stage of preparation in terms of project approval, land acquisition and funding. Works are imminent and realistically could commence prior to the subject proposal which seeks a 10 year permission.

- PL05E.SU.0027 refers to substitute consent for a quarry through which access is proposed for the subject development. (file attached)
- Planning permission for a 110kV electrical substation at Clogher was granted in April 2011 within the Study Area Boundary. This substation will serve as the grid connection point for the proposed wind farm.

10 ASSESSMENT

10.1 Issues Arising

This proposal relates to a substantial wind farm in terms of; site area at over 3400 hectares, scale and height of 49 turbines and capacity of energy output which at 105MW comprises 38% of the County assignment in Gate 3 (target) connections. It has the stated capacity to provide electricity for 55,000 households. (65.5% of households in the county) It is also substantial in terms of associated construction and access works which necessitate the quarrying of up to 9 separate pits from which over 560,000 m³ of material will be extracted for site works in addition to the removal of some 550,000 m³ of peat throughout the site. Prior to this, in the order of 121 hectares of tree felling will be required and this is all proposed in an area where in the order of 52 designated nature conservation sites lie with 15km of the study area boundary. There are also 266 dwellings/properties mainly clustered around the central and eastern end of the side. The site is also sensitive by virtue of the presence of extensive blanket bog habitat, proximity to a major public water supply and its boundary relationship with Northern Ireland. From my review of the documentation submitted with the application and the observations received to date I consider the principal issues can be addressed under the following headings.

- Principle
- Ecology
- Visual
- Residential amenity
- Water
- Peat Management
- Roads and Traffic
- Tourism
- Socio-economic

The Environmental Impact Assessment and Appropriate Assessment are respectively addressed in the subsequent sections of this report.

10.2 Principle

The principle of wind energy at the proposed site is acceptable in terms of meeting national renewable energy targets and localised spatial policy insofar as the turbine sites are outside designated environmentally and amenity sensitive areas. In a regional context the Border Region Planning Guidelines are also supportive insofar as they place considerable emphasis on alternative energy particularly as the region, and specifically Donegal, has no gas.

Section 2.5.4.1 of the submitted EIS provides details of the spatial context of wind farm development in Donegal through the CDP Wind Energy Strategy. The wind turbines are proposed in a part of the county that is 'open for consideration' in accordance with such strategy. However a substantial stretch of the grid connection route is within an area that is not favoured and this is raised in the objections in

addition to the fact that the development would be intrusive to sensitive surroundings. While I accept the proposed development would be in accordance with European and national policy to promote renewable energy, this is predicated on protection of the environment in accordance with proper planning and sustainable development. The assessment in this case rests on consideration of the complex ecology and also the border region context. In the words of the current Wind Energy Guidelines (DoEHLG) ‘Specifically, there is a legal requirement to integrate the conservation and sustainable use of biological diversity, manifest in Ireland’s ratification of the Convention on Biological Diversity and the binding requirements of the EU Directives on Birds and Habitats, into all sectorial guidance, plans and policies’. In a border context I note that the Border Area Regional Planning Guidelines highlight the need for spatial cross border planning and the need to respect border landscapes.

The principle of the scheme is questioned in the context of the validity of the grid connection permits as the consents are not directly held in the name of the applicant, (The applicant, Planree Ltd. claims control of the Gate 3 grid connection DG308) although consents from others have been submitted. There may be an overlap of grid connection permits as referred to in the Finn Valley Action Group submission. The issue of validity of consent accordingly is suggested in third party submissions to undermine the integrity of the overall proposed development which may be worthy of consideration in the context of the judgment in the O’Grianna case. (This case sets a precedent for the requirement of the grid connection to be part of the wind energy proposal so as to avoid project splitting.) I am of the opinion that for the purposes of a strategic planning proposal the development of a wind farm in this instance has been put forward as an integrated project whereby the energy sources, production and distribution points have been spatially and cohesively presented. That said however, the consequent sizeable off-site forestry plantation proposed as mitigation arising from the felling of over 120 hectares of forestry in this site and its omission from the EIS/NIS and EIA/AA process could be reasonably construed as an integral element and therefore the issue of project splitting and the Board having sufficient information to enable full EIA and AA to be carried out, is a salient consideration. This is addressed below.

10.3 Flora and Fauna

Overview

Fifty-two sites of nature conservation interest within a distance of 15Km of the study area are identified in the submitted documentation and these are set out in Table 3.1 of the NIS. (cited in section 12 of this report) They include:

- 14 no. Special Areas of Conservation interest. – 3 of which adjoin the site
- 14 no. ASSI in Northern Ireland – 2 of which border the site,
- 5 no. NHA s 2 of which adjoin the site
- 4 no. Special Protection Areas and
- 14 no. pNHAs

The name, identification code and distance from the study area are provided and the range of species and habitats of interest gives a fair indication of the potential complexity of the site context.

In addition to those identified sites that adjoin or are in close proximity to the development site, there are a number of watercourse tributaries that rise in and/or traverse the site and which feed into the designated sites. The site is also potentially strategically positioned with respect to flight lines of migratory, breeding or predatory bird species. Furthermore, by itself, the site is host to species and habitats of conservation importance under various statutory provisions. Most extensively perhaps is the blanket bog habitat which extends over the upland moorland landscape and accounts for at least 17% (766.5 ha) of the site based on the site survey.

At scoping stage the Department of Arts Heritage and Gaeltacht held the view that the proposed development could potentially have a significant impact on a range of sensitive receptors. The Department accordingly, held the view that the proposed development:

- could significantly damage/destroy freshwater habitat and species in the River Finn/River Foyle catchment, including Atlantic Salmon (*Salmo salar*) and Otter (*Lutra lutra*), both of which are species listed in Annex II of the EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora). Please note that Otter is also listed in Annex IV of the EU Habitats Directive. Any proposal that would be likely to cause an impact on the breeding or resting habitat of this species, would directly contravene Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 and the judgement against Ireland of the European Court of Justice in case C-183/05;
- could significantly damage/destroy areas of heath/bog habitat. Please note that wet heath, dry heaths and blanket bog are all listed in Annex I of the EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora), with active blanket bog listed as priority habitat;
- could significantly interfere with populations of migratory bird species including Greenland White-fronted Goose (*Anser albifrons flavirostris*), Whooper Swan (*Cygnus Cygnus*) and Greylag Goose (*Anser anser*). Please note that Greenland White-fronted Goose and Whooper Swan are listed in Annex I of the EU Birds Directive (Council Directive 79/409/EEC). The proposed development is on possible migratory routes/ bird flightlines;
- could significantly disturb populations of other migratory and breeding bird species including Hen Harrier (*Circus cyaneus*), Merlin (*Falco columbarius*), Golden Eagle (*Aquila chrysaetos*) and Golden Plover (*Pluvialis apricaria*), all of which are species listed in Annex I of the EU Birds Directive (Council Directive 79/409/EEC). Also the peatland habitat within and surrounding the proposed development site would not be untypical of that used by Red Grouse (*Lagopus lagopus hibernicus*) and Curlew (*Numenius arquata*), both of which are species in the Red List of Birds of Conservation Concern in Ireland;
- could significantly damage/disturb populations of terrestrial mammals such as the Irish Hare (*Lepus timidus hibernicus*), Badger (*Meles meles*) and bats species, all of which are species protected under the Wildlife Acts 1976-2010. Please note that all bat species are also listed in Annex IV of the EU Habitats Directive.

The potential impacts were identified as being potentially caused by a range of incidences such as:

- Deterioration of the water quality in the Mourne Beg River and the River Finn resulting from pollution from surface water run-off during site preparation and construction, including road construction and the management of borrow pits;
- Deterioration of the water quality in the Mourne Beg River and the River Finn resulting from pollution from surface water run-off post construction;
- Deterioration of the water in the Mourne Beg River and the River Finn resulting from possible peat erosion and bog burst from the development;
- Direct loss of habitat associated with the development;
- Damage/Destruction to adjacent habitats due to inappropriate site preparation and construction techniques;
- Possible interference with the migratory routes and flightlines of wintering birds due to the development;
- Disturbance to local wildlife, including avifauna, during site preparation and construction, and due to the development;
- Damage to habitats and species, including designated sites, associated with the connection of the proposed development to the National Grid

The Northern Ireland Environment Agency provided very detailed guidance to the applicant in respect of impacts on the natural heritage. It refers to the close proximity of the site to both Moneygal Bog (SAC/ASSI) and the Kinletter Bogs and Lakes in terms of their habitat status but also in terms of particular bird species – raptors and waders which may be within the development site given the habitat behaviour and incidences in nearby lands. Notably it refers to presence of Hen Harriers and the risk of collision in favourable cleared forest areas around the turbines. Also due to the presence of water bodies on and near the site, curlew and snipe may be present. It is also possible that the lakes may be used occasionally by wintering water fowl - Winter Whooper Swan and Greenland White-Fronted Goose – both notably being Annex 1 species. Very particular requirements are given with respect to investigation and survey methods and notably it is recommended that the Scottish Natural Heritage guidance is followed with respect to impact of wind farm on the important bird populations. This is based on the similarities between key at risk species in Northern Ireland and Scotland. Notably it recommends that birds should be surveyed in an area that is 500m (800m if Curlew is identified) diameter from the turbine perimeter.

Having regard to the scale and complexity of the potential environmental impacts, a consultant ecologist was appointed by the Board to advise on ecological aspects of the case. This interim report identifies serious shortcomings with flora and fauna conclusions and accordingly both the EIS and NIS. Such shortcomings may preclude the Board from carrying out its statutory functions as the competent authority. I have reviewed this report in the context of the submissions by the Department of Arts, Heritage and Gaeltacht and the Northern Ireland Environmental Agency at both scoping stage and application stage and with reference to guidance on best practice for establishing baseline data and carrying out appropriate assessment and consider the conclusions to be reasonable. While the NIEA indicates general satisfaction with the development in its more recent observation on the proposal the consultant ecologist points out how this is quite at odds with his assessment having regard to the detailed scoping requirements and is probably explained by the likely limitations

of logistically reviewing the EIS for a site of this size in detail. Notwithstanding the latter view of the NIEA, I note the consultant points out in considerable detail how the EIS methodology simply does not meet with Scottish guidelines. The limitations of the flora and fauna data are also evident in the further comments of the DAHG.

Further to this, the consultant ecologist reviewed the response submission by the applicant which contained significant additional survey work particularly in relation to bird species. He concludes that some of this material addresses some of the shortcomings but that the flora and fauna data remains seriously deficient for the purposes of adequate EIA (and AA given that the NIS relies on the findings of the EIS). The further review comments are underlined in each section of the consultant's report which reviews the substantive flora and fauna issues. This document is attached to this report.

For ease of reference I highlight below the critical issues in respect of flora and fauna and further survey data.

Bird Species

Wind farms potentially pose risks to birds by way of; direct habitat loss at site/access development stage, displacement (otherwise known as indirect habitat loss) if birds for example are to avoid the wind farm due to its construction and operation or if birds foraging routes or roosting ground use are disturbed by a barrier effect and by collision or interaction.

In order to determine the magnitude of risk posed, detailed knowledge of bird distribution and flight activity is necessary in order to predict the potential effects of the wind farm on birds. This requirement is set out in the scoping briefs by both the DAHG the NIEA. However in the opinion of the Board's appointed consultant ecologist, the data does not provide for a robust analysis of the usage of the site by key bird species. While acknowledging the time and effort evident in chapter 6 of the EIS, the consultant concludes that the ecological baseline studies are methodologically inadequate and there is essentially no reliable information of bird flight paths, foraging or breeding areas. In view of the range of species of conservation interest and ecological sensitivity of the study area this has serious implications and while the further data demonstrates an extended duration of survey times it remains to be case that the methodology renders this meaningless. Accordingly the ornithological assessment of the potential impacts on the ornithological resource is insufficient to give a representative and robust determination of the usage of the study area by key target bird species of conservation interest.

There remains, in the opinion of the consultant, to be a serious issue with the methodology undertaken (over the year and in subsequent more recent survey work carried out, on which the avifauna findings in the EIS and NIS are based) due to the visibility ranges from the selected Vantage Points and the coordinated use of these vantage points. Best practice within reason does not appear to have been employed.

By reference to the scoping requirement of the NIEA and NPWS and Scottish guidance the vantage point surveys are critiqued in detail on the basis of survey method and approach to utilising the 16 vantage points. While noting the additional data in Appendix 2-1 the consultant states that the Breeding and Winter compiled data indicates that there is severe deficit in Vantage Point Surveys carried out during the key time of movement for Whooper Swan and Greenland White-Fronted Goose with the vast majority of Vantage Point Surveys carried out well outside of these windows of time. (eg. The Whooper Swan and Greenland White-fronted Geese fly between nocturnal roosting sites and day time foraging site at dawn and dusk at times when visibility of turbines would be poor). Based on the information, it is not possible to calculate observation hours and degree of compliance.

The flight maps should have been submitted originally with the EIS but even the subsequent maps submitted in October are open to question as

There is no indication on individual flight paths within flight-path maps as to date, time or vantage point (beyond for example 2013/2014) from which the birds can be seen, height at which the birds were travelling etc Inadequate information regarding each mapped flight line renders the data virtually meaningless as the visual representation cannot be matched to the data presented in appendix 2-1 of the additional data provided by the applicant:

No view shed analysis appears to have been carried out in order to show that flight paths as indicated can be scientifically validated. Viewsheds from each Vantage Point within different height bands are required in order to scientifically validate that flight lines area accurate and representative. Without viewshed, the flight line data as provided is wholly inadequate. (page 5)

Based on the information submitted it is not possible to calculate the actual hours of observation and compliance with the SNH guidelines.

The scope of the survey work is also lacking having regard to the number of water bodies throughout the site and the potential for waterfowl. The failure to investigate the usage of the water bodies as a habitat for bird species of conservation concern and in particular the Whooper Swan and Greenland White-Fronted Goose is considered by the consultants to further invalidate any conclusions drawn in the EIS regarding collision risk and disturbance for these species. Given the status of these birds and that the Greenland White-Fronted goose is a qualifying interest of two Natura 2000 sites within 15km of the proposed development this is a critical issue.

Taking into account the additional data supplied it does not appear that there was any attempt to scientifically, systematically survey (at appropriate times of the day) the usage by bird species of conservation concern (and in particular Whooper Swan and/or Greenland White-Fronted Goose in any of the multitude of water bodies occurring proximate to the study area, in concert with the failure of the EIS to establish visibility from vantage points utilised through the presentation of viewshed analysis) and hence to identify if any sections of these water bodies or flight paths of birds potentially occurring between water bodies were visible from vantage points) the failure to investigate the usage of these habitats by bird species of conservation concern.... Given that both the Whooper Swan and Greenland White-fronted Goose are listed on Annex I of the EU Birds Directive and that the GWG is qualifying interest

of two Natural sites within 15km of the proposed development this is a critical issue and impacts on the validity of the ornithological assessment as presented.(page 7)

Bird Species

In the final analysis the scope of the survey work in terms of areas surveyed and methodology of data collection in the context of Annex 1 (Birds Directive) Species, particularly, is insufficient. This is of particular concern in the case of the Whooper Swan and Greenland White-Fronted Goose owing to the apparent exclusion of waterbodies surveyed outside the study area but within 15km of the site. There is a high likelihood that these species have been underestimated. In terms of the other birds of conservation interest I note the following conclusion by the consultant.

Merlin, Golden Eagle, Peregrine Falcon, Curlew: based primarily on lack of viewshed data and insufficient data regarding usage, impacts on continued usage and collision risk have not been adequately assessed.

Golden Plover based primarily on lack of viewshed data and insufficient data regarding, usage, in particular nocturnal movements, impacts on continued usage and collision risk have not been adequately assessed.

Hen Harrier: this is of particular importance to the site given the prevalence of coniferous plantation and its provision as a nesting habitat. 65% of the site is a various cycle stage of plantation. However in view of the information contained in section 2.4 of applicant's response, it is recognised that the Hen Harrier Foraging Habitat Mitigation Plan based on 38 turbines is likely to be an adequate form of mitigation

I note that impact on the Red Grouse species is not of serious concern.

Ultimately it is recommended in line with best practice and the range and characteristics of the species involved, that field work in accordance with best practice be conducted over a **further** 2 year time frame to permit a robust analysis appropriate to the sensitivity of the site and region which hosts bird species of conservation concern. It is the opinion of the consultant that key to any further studies is the analysis utilising Geographic Information System of topographical features of the study area through Viewshed analysis. I consider this to be reasonable.

Habitats and Flora

Methodology

In the first instance the scope and evidence of systematic survey work is called into question. Even though 65% of the study area is categorised as WD4 (coniferous plantation), the Flora and Fauna chapter identifies that there are five habitats listed in Annex 1 of the EU Habitats Directive including one priority habitat. Natural Dystrophic Lakes and Ponds, Atlantic Wet Heaths with *Erica tetralix*, European Dry Heaths, Active Blanket Bog (priority habitat) and Blanket Bog. Given the ecological sensitivity and ecological importance of such habitats, quantitative analysis should

have been carried out in order to gain a comprehensive knowledge of the vegetation communities occurring within the habitats present.

The consultant ecologist report also highlights limitations of habitat survey work by reference to date of field work (of the 49 turbine sites less than 40% of botanical surveys were carried out during the optimal window for such vegetative survey) and conflicting evidence with the consultant's field experience and level of detail of botanical and habitat surveys. It is clear to the consultant that not all species present by reference to photographs in Appendix 6-3 were recorded in the presented data sheet. The methodology is called into question by reference to 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al 2011). There is for example no evidence of a systematic assessment of habitats on the site, nor are there maps indicating transect routes taken.

Flora Protection Order species

Nor is there any evidence of species specific survey for species protected under the Flora Protection Order 1999, notwithstanding reference to particular species, namely the Globe Flower (*Trollius europaeus*) and Irish Ladies'- tresses (*Spiranthes romanzoffiano*) by the DAU and the fact that in the opinion of the consultants that there would appear to be a suitable habitat for both species.

Alien Species

With respect to highly invasive alien species as listed in the third Schedule of the EC (Birds and Natural Habitats) Regulation 2011 it is noted that the impacts of identified species such as Rhododendron, Japanese Knotweed, Himalayan Knotweed and Himalayan Balsam are not addressed. It is noted with concern that Appendix 6.2 identifies Himalayan Balsam but this is not referred to in Chapter 6 despite this being a particularly damaging species for ecosystems including those in freshwater environments in which Freshwater Pearl Mussel (FPM) may potentially exist or thrive. Accordingly a comprehensive Invasive Species Management and Control Plan for those invasive species present is needed. This was not addressed in the applicant's response submission.

Peat

The consultant notes the submission by the Irish Peatland Conservation Council in which it is emphasised that the species diversity of the blanket bog and upland habitats is rich containing 15% of the Irish Flora, 49% of Ireland's endangered birds and 26% of Ireland's endangered mammals and that all such species are strongly adapted to the environmental conditions prevailing in peatland habitats and that Ireland's target for reducing habitat loss and increasing biodiversity cannot be achieved for peatland if windfarms are allowed to disrupt the habitat refuge of species. It is considered that the detail of the botanical and habitat surveys is insufficient to inform an EIA as to the quality of the Annex 1 Habitats occurring within the study area and the diversity of species supporting it.

Hen Harrier Habitat

Accordingly taking account of the additional data supplied relevant concerns have not been addressed and there remains to be no additional systematic surveys of vegetation communities, targeted species surveys for Flora Protection Order Species

or an Invasive Species Management and control Plan have been presented. Furthermore while the Hen Harrier Foraging Habitat Mitigation Plan does identify some 'adjacent suitable Hen Harrier foraging habitat' the consultant points out that there has been no significant attempt to map the habitats present outside the study area. (e.g. using remote techniques.)

Aquatic Habitat

The consultant's report raises concern about the increase in water table associated with the removal of a large area of forestry and whether or not this has been adequately addressed in hydrological impacts and peat stability assessment coupled with potential impacts of invasive species. This is of concern having regard to Annex II/IV species notably the Atlantic Salmon and Otter. In the absence of a specific Conservation Objective document for the site, surveys should be undertaken to assess qualifying interests. In respect of FPM, while it was initially considered that given the potential for impacts beyond the boundary of the study area, all suitable habitat within a 15km buffer zone of the site should be surveyed to establish a baseline estimate of the numbers of FPM in the vicinity, it is now considered to be no longer a substantive issue in view of the comprehensive base-line survey undertaken by the applicant.

Bats

By reference to the Bat Conservation Ireland guidance 'Wind Turbine/wind Farm Development Bat Survey Guidelines' (2012) with respect to timing and conditions of surveys and specifically that a minimum of five month across the active bat season area is surveyed, it is considered that the duration of the bat survey is not sufficient to accurately determine bat usage of the study site throughout the bat year. Accordingly impacts cannot be clearly identified.

Conclusion

Having regard to the critical review by the Board appointed consultant ecologist of the ecological aspects of the EIS, it appears that the EIS has failed to comprehensively address issues raised in the scoping responses by the Department of Arts Heritage and Gaeltacht and the Northern Ireland Environment Agency. Most significantly, the survey methodology for bird species has not followed best practice by reference to Scottish Natural Heritage Guidance and fails to adequately inform impact assessment. (In this regard I would draw the Board's attention to the NIEA scoping response which refers to the relevance of such guidelines to the Northern Ireland context.) The current Wind Energy Guidelines (2006) in section 5.2 provide general guidance on natural heritage issues and advise that 'careful consideration' should be given to birds species such as raptors, swans, geese and water fowl among others which are I note relevant in this case. There are no specified bird survey guidelines mentioned in the WEG. However in view of the transboundary nature of the impact, particularly on migratory species and the comments of the NIEA in respect of the relevance of the Scottish Guidance to the landscape and also having regard to the consultant ecologist's assessment I consider the reliance on such guidance to be appropriate.) Similarly, bat surveys have not been carried out in accordance with Best Practice. Nor have habitats been surveyed in line with best practice guidance. There are also concerns about the secondary impacts of the replacement forestry proposals.

Initially the consultant determines that there was a lack of sufficient baseline data and consideration of risks in respect of Freshwater Pearl Mussel population occurring within 15km of the site. This matter however has been addressed.

Having regard to the expert submissions which highlight the substantive issues and inadequacies of the data supporting the conclusions of Impacts on flora and fauna it is apparent that the Board cannot rule out with any degree of certainty an unacceptable risk to the local and wider ecology including priority species in the area and for this reason the proposed development is I consider contrary to the proper planning and sustainable development of the area.

10.4 Visual Impact

General Issues

Chapter 11 of the EIS describes the landscape characteristics of the study area and surrounding area. This is done within the framework of the guidance document 'Landscape and Landscape Assessment – Consultation Draft of Guidelines for Planning Authorities' (Department of the Environment and Local Government, 2000). Regard is also had to best practice guidance in Northern Ireland in the absence of more specific domestic guidance. In a transboundary context this I consider to be appropriate.

Mapping of Zones of Theoretical Visibility in conjunction with photomontages have been used to graphically demonstrate the nature and extent of the visual impact in a range of near, mid and distant views and are based on a worst-case or 'bare ground' scenario. The ZTV maps (ref EIS vol.1 Landscape and ZTV Map in clear pocket and others in section 11) illustrate the impact of the development at hub height and blade height by itself and in terms of its cumulative impact with other existing, permitted and proposed turbines in a 20 km radius from the Study Area boundary. The maps illustrate ranges of visibility in 5km bands in addition to amenity designations. The yellow range is where up to 49 of the proposed turbines may be visible. Within this 20km radius catchment a total of 320 turbines are either existing or permitted and a further 86 are proposed; all of these have been taken into account in the preparation of the ZTV as well as the photomontage preparation.

The EIS accordingly is, I consider, reasonably clear on the extent of visibility of the proposed development by itself and in conjunction with other turbines. There is however disagreement on the capacity of the landscape to absorb the scale of the development and the appropriateness of this impact.

The applicant ultimately concludes that by reference to guidance, the proposed 49 turbines do give rise to an impact rated as being 'acceptable' having regard to the landscape character being predominantly upland moorland and the capacity for turbines in such a landscape typology. On the other hand the planning authorities in both Donegal and Northern Ireland raise concerns about the excessive nature of intrusion and such concerns also form the basis of the vast majority of objections.

The planning authority has expressed concerns about the visual impact of the proposed wind farm having regard to:

- The impact of Carrickaduff Hill turbines on a designated view and on an Area of Extreme High Amenity due to excessive numbers, scale and height of turbines in close proximity to **Barnesmore Gap**, and impact on view and prospect over Lough Mourne due to blade sets cutting horizon.
- Impact on eastern end and inadequacy of assessment in addressing **transitional marginal character** and in an area where there is, I note, a denser field pattern and associated settlement. There is therefore, also the matter of more localised visual amenity and impact on **residential amenity** by way of scale in addition to potential for excessive shadow flicker.

The Strategic Policy Division of the Department of Environment and the Northern Ireland Environment Agency – Landscape Architects both state that they have serious concerns regarding the **adverse landscape and visual impacts on Northern Ireland** given the height and number of turbines across the considerable area of the **border landscape**. The Strategic Policy Division elaborates on this by reference to Wind Farm Guidance for Northern Ireland and the sensitivity of the upland bordering area. Specific dwellings along the border are also identified as being vulnerable to the visual intrusion. There is however no particular issue with the viewpoints or quality of photographs but it is pointed out that the ‘flattening impact minimises true impacts.’ No further information is requested in this regard.

In the applicant’s response alternative options are presented which include the omission of 11 turbines. Photomontages illustrate this alternative in addition to the lowering of height to 140m in the case of the western end. It is argued that while the 49 are deemed acceptable the omission of turbines will increase separation from sensitive locations such as Barnesmore and dwellings. These alternatives have not been examined by the observing or other third parties although in light of the nature of the objections wherein the planning authority recommends substantially larger alterations, such amended proposals may not fully address such concerns.

Conflict with Development Plan Amenity policy and objectives - Barnesmore Gap

Barnesmore Gap is a dramatic mountain pass on the south eastern end of the Blue Stack Mountains which comes into view at a point just north east of Lough Mourne when travelling south west on the N15. (The N15 provides the main vehicular route though this area between Ballybofey to Ballyshannon). As delineated in Map 9 of the CDP, south western views are protected along the N15 in the direction of the Gap and to the south of the route in the direction of the wind farm site.

The proposed western cluster of 20 turbines in terms of scale and height is considered by the planning authority to constitute a discordant feature in the landscape by reason of the intermittent blade tips breaking the skyline and the potential for detracting from composite views notably those of Barnesmore Gap and the wider landscape which includes an Area of Extreme High Amenity. The planning authority goes as far to recommend that the blade tip height be lowered by some 30m at the western end of the site in order to preserve the existing views. I note the

turbines are proposed in the western area at ground level ranging from 190m to 270m OAD where the local high points are just above 300m. e.g Carrickaduff Hill is at 329m to the south west moving east peaks are at 308 down to 266m (Meenbog Hill at 271m OAD is the local high point in Killeter Uplands landscape region to the south in Tyrone.)

From my examination of the photomontages it is evident that from view point 4, the blades will cut the horizon and be visible in southern and south eastern views from the N15 across Lough Mourne. Moving south west along the N15 in the direction of the Gap the views of the proposed turbines become more apparent in more eastern views (View point 3). This I accept could be peripheral and indeed the applicant makes such a case that the turbines are peripheral and not detracting from the core view. In the response submission additional views are shown from a number of vantage points along the N15 to illustrate how the view will not be directly impeded when sequentially assessed from a typical view shed. This is of course diminished by the voluntary omission of Turbines 4, 9, 14, 15 and 18 being the nearest of the 49 turbines to the N15.

The protected view sheds are not precisely delineated for each view and prospect in the CDP and there is a degree of interpretation to the required level of preservation of the landscape. The extent of such protection also has to be measured in the context of other policies and in this case it is relevant that the site falls within a landscape region where it is acknowledged that wind energy projects are both accepted as being open for consideration and are also part of its emerging character in Draft Landscape Character classification of 'Cashelnavern Border & Uplands' where renewable energy projects are envisaged as a land use in this area. I also note that the applicant acknowledges this written description was only available since June 2015 but that such descriptions do not necessitate any changes to the landscape and visual impact appraisal as carried out in Chapter 11 in the EIS.

I note that the existing view of the Gap includes blade tips on the skyline of the southern mountain peak which frames the Gap. There are also additional turbines further east. These were apparent during my site inspection in April during clearer weather and intermittently in more overcast conditions during November and they are also depicted in the montages. The views across the Lough on southern approach to the Gap are dramatic and quite free of visual clutter, providing an appropriate remote context to the Gap. The N15 corridor, while flanked on both sides by a designated area of scenic amenity, is afforded quite stunning vantage points to the south east. The eye is directed to the more open aspect of the Lough terrain and hinterland and this is all the more appreciated by virtue of the visual clutter of utilities poles/pylons on the opposite more elevated northern side of the N15.

While I accept there is an argument that the visual impact may be acceptable in the context of the Wind Energy Strategy of the CDP and that the turbines are outside the more sensitive designated amenity area, I am of the opinion that when taken in conjunction with the existing turbines on the horizon at Barnesmore Gap and to the south east that a further continuation of turbines on the horizon and in the foreground would lead to a proliferation of wind turbines in the area and contribute significantly to visual clutter in the vicinity of Barnesmore Gap and would accordingly detract from

the visual amenity of the area. While view point 3 shows that on nearing the Gap, the cluster is more removed from the direct view along the road towards the Gap, the turbine cluster band (19 of the reduced 38 turbines) is more to the fore and potentially holds the view of the observer. The proposed cluster in effect competes with the Gap and thereby detracts from its setting and integrity. I concur with the planning authority in its summation that the development represents a 'visual counterbalance to the physical landform in the vicinity of Barnesmore Gap' and consider this to conflict with the protection of the view of Barnesmore Gap and in a wider context, to permit this extent of development in this setting would not accord with the CDP policy 'to safeguard the natural landscape qualities and environmental habitats of the County.' (TOU P-1)

If the Board determines the visual impact to be acceptable and intends giving further consideration to a grant of permission I consider in the interest of fairness that the planning authority, Northern Ireland authorities and third parties be provided with the opportunity for further comments on the response submission which includes additional visual impact assessment of a revised layout.

Conflict with Development Plan amenity policy and objectives - Walking/cycling routes

The amenity routes in the region are identified in Fig 11.2. In this map one trail traverses the study area in the North West. This is the North West Cycle Trail. There is also one referred to in the text - in Trusk lough – it is not delineated but is protected by policy PNH P-9. Photomontage V18 shows some visibility from Trusk Lough.

As I understand it, the character and experience for users of the North West Cycle Trail will be permanently altered by virtue of road works along the route and the views experienced. In the more immediate views for example the grid connection laying will result in the 500m stretch of bog road (part trail route) between N15 and Tieveclogher being dug up and laid with drains etc. Such works are most likely to require extensive removal of mature hedgerow and possibly some old stone walls/structures which define its character by providing relief in contrast to the otherwise flat and visually homogeneous bogland.

In terms of the more mid-distant views the turbines will be most prominent in the open settings, e.g. nearer Meenbog but will, I accept be obscured by forestry for extensive stretches north of this area. Cumulatively there is also an issue. It is evident from the ZTV maps that the trail intermittently falls within catchments from where turbines are and will be highly visible. For example, moving down towards the Finn valley in a northerly direction there are already intermittent prominent views of the existing turbines north of the N15. During my site inspections, I visited stretches of this North West trail route at Meenglass and Carrickmagrath that lie in the fairly prominent pockets of Zones of Theoretical Visibility for the proposed development (i.e. green and red pockets) and from here there were quite prominent views of the existing turbines which indicates that while intermittent, there will be a notable increase in visible turbines as viewed from both directions of the designated cycle trail.

Aside from the designated routes many of the public submissions refer to local walking routes. The submitted EIS appears to map only the public Rights of Way as for example those delineated in the Development Plan and signposted on the ground. There would appear to be many (possibly permissive) routes such as through Coillte lands and private lands. Many submissions have attempted to describe local routes by reference to local landmarks. While plotting all such trails may be somewhat onerous it would be helpful if the applicant could take cognisance and map the more significant routes relative to the proposed development and differentiate between the status of such routes e.g. Permissive Trails (eg. specifying, where applicable, if a part of the National Way marked Way network), public rights of way as covered by Section 14 of the Planning and Development (Amendment) Act 2000 or other categories of routes. In the context of the recent Department Circular I consider it appropriate in the event of consideration of permission to seek this information. (Ref. Circular Letter PL 5/2015 regarding Matters Relating to National Way Marked Ways – clarification between permissive trails as distinct from public rights of way.) In view of the extensive visibility range it is difficult to conclude that the natural setting and character of these local trekking routes would not be altered. While this may be acceptable in view of the energy policies, I am however of the opinion that in the event of a grant of permission further clarification of this matter would allow for a more informed appraisal of the impact on local amenity and reasonable protection of same.

Eastern End - Lismullyduff

The planning authority is also concerned about the localised impacts of the turbines in the eastern end of the site and the absence of due regard to its visibility from an area that is of a different landscape character, i.e. Transitional Marginal Landscape. The planning authority is critical of overly contextual reliance on the mountain moorland landscape which I note typically has a high level of flexibility and capacity for scale, height and layout. The planning authority is also critical of the sensitivity of the site in terms of rural housing and recommends at the very least removal and scaling back of turbines. The planning authority concludes that a revised EIS and Landscape Impact Assessment are necessary and requires, as part of further information, demonstration that the development will not result in spatial or visual dominance of small enclosed landscapes or rural dwellings. I consider it fair criticism that more localised photomontages from more localised vantage point would facilitate a clearer visual appraisal of such impacts for all parties. However, I am reasonably satisfied that the Board can make a judgement on the visual impact based on the submitted information. Although if the Board were to proceed with further consideration of a grant of permission the observing parties should be afforded the opportunity to comment further on the response submission.

It is argued in the response submission that the open and extensive scale of the majority of the landscape, including the east of the site, is evidenced in the majority of the photomontages and that this is also acknowledged by the planning authority in its comments 'in the main, the landscape to the east of the site is visually extensive and unenclosed, therefore in this context the concerns of scale and spatial layout are tempered somewhat'. The additional photomontages in the areas around Viewpoint 15 and the additional assessment carried out in Tables 1.12 to 1.14 conclude that

this landscape is considered large scale and extensive and the proposed development is considered to achieve spatial and visual balance.

In my view the eastern end context is more transitional and agrarian in character and cannot be compared with the more remote and expansive moorland to the middle and western end of this extensive site. This is evident in the finer grain of field boundaries and more enclosed character. The scale of 156.5m high turbines in this context will I consider be quite overwhelming. In addition to the photomontages, by way of comparison and context, while on my site inspection I viewed the existing slender mast near the T26 site from a number of residences to the north and it is clear that the proposed turbines will be most prominent in the immediate environs which include a number of properties. This is supported in the additional montages. In the response the applicant submits that the omission of turbines 26, 27, 28 and 39 from the eastern cluster will reduce the potential for shadow flicker to occur and reduce the required turbine mitigation controls/interventions required. The omission of these turbines will also reduce the geographic extent of the wind farm and increase the separation between the turbines and the more transitional marginal landscape area and residential dwellings, thereby resulting in a more remote context for the turbines. There are also further benefits in terms of the potential for reduced noise emissions. The omission of Turbines no. 43 and 46 (primarily in response to required 0.25 Nautical Mile separation distance from the Northern Ireland Border as requested by the IAC) would also increase the separation distances between the proposed wind farm and dwellings.

Due to the forestry and undulating terrain, the site is intermittently visible from the immediate environs within and close to the site. Viewpoint 15 (and viewpoint 34 in response gives a different angle of view from same point) illustrates the scale and view of a turbine at a distance of 1km. While improved with the omission of T43, 46 and 48 it is clear in the images that the turbines, by virtue of height and number, will be a dominant feature in the immediate local environs for properties at this distance and in the same terrain. While there are few properties along this stretch of road, there are other comparable contexts for properties in Tyrone in Pullyernan just south of the most eastern cluster (2d) (and referred to in the NI SPD submission) and similarly for properties between T24 and T29 (although these are consenting landowners.) There is a sense of being surrounded by turbines in relatively close proximity. While the properties north of areas 2b and 2c have similar separation to the south, the more undulating terrain is different and obscures some views. The omission of T28, 27, 26 and 39 would improve the localised views from Meenahinnis, Sallywood and Lismullyduff to the north of the site but the localised views from the south in the Meenloskybane/Cronalaghy area would still be dominated by turbines for extensive parts of the horizon. In the response submission, photomontages from viewpoints 28 and 31 further illustrate the views from Pullyernan in Tyrone and confirms my initial opinion.

On the one hand it might be argued that at distances greater than 500m and in many cases in the order of 1km the turbines are within acceptable limits within the context of the guidelines and in the context of the land use and settlement policy whereby the area is rural and open to renewable energy and is not a designated settlement area. I also accept that the site is located in the residual pockets of lands

substantially outside of delineated areas of environmental and visual significance and that the site is also in a landscape that has been highly managed in terms of commercial forestry but that does not mean that protection of its visual amenities should be disregarded. I consider the scale and extent of the proposed turbines to be overbearing from an extensive range of vantage point in the area. Moreover, the impact is more far reaching in terms of altering extensive stretches of skyline in the 2-5km view range and would detract from the visual amenities of the area as experienced in mid-distant views.

Wider Views in a sub-county and border region context

The proposed wind farm would extend in two clusters over a collective distance of some 16 kilometres of upland terrain in the border region with turbines and associated infrastructural work being sited in close proximity to Northern Ireland. The landscape character area immediately adjacent to the site at its southern boundary and southern environs is 'Kinletter Uplands' in Northern Ireland and while this has capacity for large windfarms it is in the context of appropriate spacing and clustering in addition to other localised impacts. By reference to the Northern Ireland guidance (Wind Energy Development In Northern Ireland's Landscapes Supplementary Planning Guidance To Accompany Planning Policy Statement 18 'Renewable Energy' – 2008 Draft and 2010 versions) this proposal is of an exceptional scale – exceeding 2008 draft guidance ranges (although I note specific number and heights were omitted in the 2010 edition) for larger and very large scaled windfarms; Where large commercial scaled is typically 10-20 turbines and max height at 125m is 'large', this is best described in an Northern Ireland context as being a very large windfarm of industrial scale and proportion.

Eighteen of the proposed turbines are within 1km of the border and many of these are only a few hundred metres away. On the basis of my site inspection and also having regard to the Northern Ireland Guidance I consider the comments on spacing are relevant and helpful to appreciating the border context.

'The experience of the consultancy firms who carried out initial work associated with this guidance suggest that separation distances ranging from 6km (for smaller sites in landscapes with some enclosure) to 12km (for larger sites in open exposed landscapes) are desirable to prevent the landscape becoming dominated by wind farms and to reduce intervisibility. Conversely, their experience suggest that if some wind farm developments are located less than 3-5km apart (to the outermost turbines of each site), they may be seen as a cluster or single coherent group.'

I note from examination of the ZTV maps that in the closer 5 kilometre range of the study area, areas with high incidences of theoretical visibility are more concentrated to south of the study area. Some of these areas include forested areas where visibility is limited. Areas to the west have more limited theoretical visibility, and these include the sensitive scenic areas of the Blue Stack Mountains and Lough Eske. Of particular concern however are the yellow and orange bands along the border region in County Tyrone. There is a strong prevalence of maximum visibility of turbine numbers in the 5km band to the south of the site i.e. in Northern Ireland. Cumulatively parts of Tyrone are exposed to turbine numbers in the 250-455 range. The proposed development would appear to have a considerable bearing on this as

is evident in photomontages such as no.11.16 from viewpoint 16 from Deevog Bridge south of the Mourne Beg and photomontage no.11.13 from view point 13 outside Castlederg. I note comments in NI guidance about the benefits of the Kinletter type landscape – eg the wider landscape and setting in forestry lands with tracks and that from this perspective there is merit in the strategic location. However the scale and height in this proposal is wholly inappropriate. The scenic quality of this upland area that is derived from its open and remote context would I consider be compromised by the siting of an extensive industrially scaled cluster of turbines and the consequent visual intrusion, even taking account of a possible omission of 3 of the nearest 18 turbines to NI and 11 of the 49 turbines in total. The proposed development would I consider by reason of its scale and extent be a visually prominent and discordant feature in the wider landscape as evident from the terrain, levels, site inspection and the submitted ZTV maps

Furthermore, when taken in conjunction with existing turbines to the south west, the proposed development would contribute to an approximate 20 Kilometre stretch of turbines on the Donegal side of the border. The scale and extent of the proposed development in this region would be excessive in my judgement.

The resultant belt of turbines at this location in a cross border region would have a visually overbearing impact and in this regard I concur with the analysis of the Northern Ireland Strategic Policy Division. I consider the concerns expressed by SPD to be understandable and reasonable in the context of their wind energy policy guidance. In these circumstances the proposed development would have a significant adverse impact on the local cross border regional landscape. In this regard I refer to the Border Area Regional Guidelines and the need to respect border landscapes and the need for spatial cross border planning. To permit a development of this scale would not comply with this regional policy.

Furthermore, I do not consider it entirely unrelated to raise the matter of a community barrier effect. It is apparent in the submissions and from historic maps that connectivity between communities has been recently rebuilt after division and associated hardship as described in some submissions – cross border routes have been reinstated for example by repairing bridges and enhancing the cross border community. This issue is raised in the objections that the scale of proposed development at this location is seen as potentially detracting from the area. I consider such comments to have some basis.

In an even wider context the proposed development would result in up to a potential 406 turbines in a 20km catchment which includes extensive parts of Tyrone. It is clear from the maps and montages and from visiting the locality that that there is a prevalence of multiple horizon views of turbines at single vantage points. Of note there are in excess of 60 turbines to the north of Balleybofey which are within a 4.5-15km range from the town. They are presently intermittently visible from Main Street in Ballybofey and at points where there are also potential views of the proposed turbines. While it is intermittent and buffered by the built environment of the town it will nevertheless alter the setting and character of the landscape from many properties in the town.

The distant views are more apparent from elevated points to the south of Ballybofey in the direction of the site. I took some photographs for example from various locations in the purple zone (from where a range of 26-41 turbines may be visible) along the cycle route near Ballybofey/Stranorlar and at these points it is clear that the wind farms as viewed to the north are presently an obvious element in the landscape.

I viewed the existing turbines from closer points also. To the north prominent views of the northern turbines (north of Ballybofey) are for example located in accessible areas (on road ways) that highlight purple areas. This is evident in viewpoint 5. In viewpoint 1 however the views of the northern turbines are experienced on a different point in the mountain than the viewpoint for the proposed development.

The Northern Ireland bodies refer to the impact of forestry removal on visual impact particularly from viewpoint 14. It is pointed out that turbines 21-37 are heavily mitigated by extensive forestry and that showing the felling programme would be useful in determining the occurrence of increased visual impacts. In the response submission the forestry felling is not apparent in the photomontages. The wire frame views however address the worst case scenario.

The planning authority ultimately recommends a substantial variation to the plans, for example, by way of reduction in height and/or omission of up to 38 turbines. (This is in addition to recommended conditions for a range of mitigation measures and financial contributions.) Where these revisions to the scheme are not achievable, refusal of permission is recommended.

Photomontages

I note that the EIS has been presented having regard to the current Draft DoEHG Guidelines in addition to Scottish guidance. (See Pages 11-1, 2.) In this context a range of viewpoints have been selected based on designated views and landscapes as well as views from local settlements, populated areas and out at a range of distances and aspects as well as at a variety of elevations and showing from where development will be completely visible and partially visible as well as sequential views. Degrees of vertical visibility of the turbines have also been differentiated in mapped zones.

In respect of accuracy of representation the Landscape Institute advice note, 'Visual Representation of Wind Farms' is used. I note the EIS refers to the Scottish standards and I have read these. The photos have been taken with a 35mm prime lens with an equivalent zoom range 52.5mm. This I consider to be a reasonable approximation of the human eye view. The standards in the Scottish Natural Heritage, Visual Representation of Wind Farms (July 2014) is that all photographs should be taken with a 50mm fixed focal length lens on a full frame sensor camera which is equivalent to the human eye but it is still not going to be absolutely perfect. The lens/cropping used by the applicant should give the same perspective and I am satisfied that the best practice has been adhered to in representation of views. Additional photographs of the same vantage points are unnecessary in my opinion. I consider the range of photomontages to be adequate to enable the visual impact of the proposed development to be adequately assessed.

I also note that notwithstanding the limitation of the current guidelines with respect to transboundary information the information submitted is quite comprehensive in this regard (The NIEA states that no further information required.) and that transboundary information has been provided in the visual impact information. The landscape and ZTV maps include data on the area within a 20km radius of the site, over a third of which lies within Northern Ireland. These maps depict all turbines differentiating between each wind farm and its planning status. The visibility of the proposed development is also mapped on the basis of varying bands of turbine numbers visible at particular points in this 20km catchment.

Grid connection laying

I do not consider the grid connection along the N15 will have a material effect on the intrinsic visual character intended for protection in the visual amenity policies and objective of the development. It will be underground and substantially in the hardshoulder/disturbed ground of a transport corridor (road and rail). This is based on the assumption that the river embankment stability is addressed. I have already discussed the impact on the narrow Bog Roads.

Conclusion

In conclusion I consider the proposed development by reason of scale and extent and dominance on the horizon and in the landscape would alter the character of the landscape, in a manner that would be visually obtrusive, incongruous and overbearing in local, mid and distant views in the area and would therefore detract from the visual amenities of a border region in counties Donegal and Tyrone in Northern Ireland. Furthermore I do not consider that the revised proposal submitted with reduced numbers of turbines would satisfactorily address these fundamental concerns. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area. For this reason permission should be refused.

10.5 Health

10.5.1 General

The issue of health is raised in the vast majority of submissions and is a real concern for the local residents in the area. The issues centre on noise and vibration, infrasound and shadow flicker and the direct and indirect effects.

10.5.2 Noise and Vibration

Noise Impact

Chapter 10 of the EIS considers the impact on 266 receptors and includes extensive baseline and projected data for both operational and construction stages of the proposed development. Eleven noise-sensitive locations have been measured for typical background noise levels for day and night periods at various wind speeds. Based on detailed information on the site layout and turbine type, noise levels have

been predicted at the relevant noise-sensitive locations over a range of operational wind speeds. These predicted levels have been compared against the derived day and night time noise criteria. Cumulative impacts with existing wind farms in a 10km radius, traffic and quarry works have all been assessed. Predicted noise levels are stated to comply with the adopted criteria in all cases.

Notwithstanding the conclusions of chapter 10, Northern Ireland Environmental Health Service is concerned about less conservative noise limits and impact on dwellings in Northern Ireland. It is submitted that a noise survey is required that is compliant with ETSU-R-97 and the Institute of Acoustics Good Practice Guide. In the absence of such, refusal of permission is recommended. The Environmental Health Service also requires that the applicant provides further information in respect of coordinates of nearby windfarm turbines, proposed control measures and night-time noise predictions.

It is my understanding that the ETSU-R-97 limit values are more onerous than the DoEHLG limit values of 45dB. While the EIS states that it is informed by the ETSU-R-07 guidelines it is not exactly clear to what extent they are adhered to. The EIS is unclear in this regard.

Appendix 10-3 to Chapter 10 of the EIS provides noise contour maps illustrating the catchment of properties based on a rotor diameter of up to 117m. Figure 10.2 maps the noise monitoring locations of which there are ten. A 35dB(A) contour map was used to filter out more noise tolerant locations. From my examination of fig 10.2, Houses 179 and 180 in Northern Ireland appear to be less than 1km from turbines and have been filtered out for noise monitoring most likely due to methodology in establishing baseline data. NI Environment Health Service flags these houses among a cluster of houses as being exposed to higher noise levels

The submission by Peter Crossan on behalf of the Finn Valley Action Group is appended (appendix 3) by a critique of the noise section of the EIS by Mr. Dick Bowlder, Acoustic Consultant. Essentially Mr Bowlder questions the validity of the upper limit of 45dBA and suggests that the range level above background noise is more appropriate than an absolute upper limit. He points out that the magnitude of increase will be quite considerable where the background noise of less than 35dBA is apparent and in this case the catchment extends to some 200 properties in this range. He concedes there may be room for discretion in interpreting the DoEHG guidance but is not satisfied that the DoE standard is being appropriately adhered to for residents of Northern Ireland.

I note the Planning Authority is largely satisfied with the level of information provided on noise impact. There would however, I agree, appear to be some shortcomings in the evidence of compliance with Northern Ireland standards from the perspective of the Northern Ireland Environmental Health Service by reference to its particular guidance. In the response submission it is simply stated that 'relevant Irish and UK guidance was considered and adopted in order to establish appropriate noise criteria curves as part of the EIS assessment.'

In the applicant's response submission the noise limit criterion are reiterated by reference to Irish guidances.

- 35 to 40dB $L_{A90,10min}$ for quiet daytime environments of less than 30dB $L_{A90,10min}$;
- 45dB $L_{A90,10min}$ for daytime environments greater than 30dB $L_{A90,10min}$ or a maximum increase of 5dB(A) above background noise (whichever is higher), and;
- 43dB $L_{A90,10min}$ for night time periods.

I note that this in accordance with the Marshall Day Acoustics document "Examination of the Significance of Noise in Relation to Onshore Wind Farms" as commissioned by the Department of Environment, Community & Local Government (2013).

The applicant also relies on the fact that the proposed turbines are more than 500m from the residences in the area and that this accords with the DoEHG guidance whereby "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".

A review of 38 noise sensitive locations within Northern Ireland that were assessed in EIS confirms that the predicted noise levels at 23 of the locations (i.e. R164 to R168, R187 to R200 and R249 to R253) are below 35dB $L_{A90,10mins}$ in all instances and all other locations (i.e. R169 to R176 and R178 to R182) are within the range of 35 to 40dB(A) quoted in the ETSU document.

In the response submission the applicant confirms adherence to best practice. (DoEHLG, DoE and review documentation) With reference to the WHO 'Night Noise Guidelines for Europe' (which specify a 40bBA night limit but more relaxed limit where this cannot be achieved) it is stated that In relation to L_{night} levels it should be noted this is a long term acoustic parameter and in terms of the Environmental Noise Directive is based on average of night time noise levels over a year long period. Based on this knowledge and a review of the revised predicted noise levels presented in Section 5.5 [and which relates to 38 turbines], the noise impact associated with the proposed wind farm is expected to be compliant with the 40dB L_{night} , outside criterion espoused in this document at all receiver locations with the exception of some landowner properties.

Tables 5.1 to 5.4 in the response submission give details of the coordinates as requested for wind turbines at the other wind farm sites which have been included in the cumulative assessment. The co-ordinates of the various sites presented in Table 5.1 to 5.4 have been obtained from a review of planning / files submissions lodged with the relevant planning authority in relation to the particular projects.

Of more significance, a noise impact assessment of the revised layout of 38 turbines (which include one moderately relocated turbine in response to the Air Aviation authorities) in accordance with the ETSU-R-97 criteria using a lower fixed limit of 37.5dB LA90 has been carried out for the receiver properties in Northern Ireland and the results of this assessment is discussed in Section 5.6.2 of the response

submission. Appendix 5-2 presents the result of the revised noise impact assessment for receivers located in Northern Ireland, the following points are highlighted:

- The predicted noise levels presented in Tables B.1 and B.3 (Appendix 5-2) do not take into account the uncertainty of turbine noise emissions so that a direct comparison can be made with the predicted noise levels presented in the EIS.[This practice is rationalised on the basis of proven track record of consultant in reviews]
- Typically the revised layout results in slightly reduced predicted noise levels when compared against those presented in the EIS.
- The predicted noise levels presented in Tables B.2 and B.4 (Appendix 5-2) do take into account the uncertainty of turbine noise emissions for all wind farm sites considered in the cumulative noise impact assessment.
- The cumulative noise impact assessment has been completed assuming all noise locations are downwind of all turbines at the same time. This will not be the case in practice.
- Review of exceedances based on a lower daytime fixed limit of 35dB LA90,10min shows an exceedance at just one of the thirty-eight properties, taking the +2dB correction into consideration for uncertainty the number of properties where an exceedance is noted is ten.
- Review of exceedances based on a lower daytime fixed limit of 37.5dB LA90,10min shows no exceedances at any of the thirty-eight properties, taking the +2dB correction into consideration for uncertainty the number of properties where an exceedance is noted is one.

The response further clarifies that assessment to the fixed daytime lower criteria of 35dB LA90 shows that exceedances are noted at a limited of number of locations typically at 6m/s. It is also clarified that the predictions presented in Table 5.6 are omni directional and will be reduced in most wind directions once consideration is given to directivity. Assessment to the fixed daytime lower criteria of 37.5dB LA90 shows an exceedance at just one location at 6m/s and 7m/s wind speeds.(r176). With control by way of SCADA this can be addressed. It is concluded that the contention that the development has the potential to have a significant impact on properties in the Northern Ireland jurisdiction is not borne out by the predictive noise models with the application of the ETSU guidance that is applicable in that jurisdiction.

While this revised assessment appears to address the concerns of Northern Ireland authorities and residents and noise levels are likely to be within acceptable levels, in the interest of transparency these should be referred to Northern Ireland Environmental Health Services to assist in its appraisal as part of the consultation process should the Board be minded to grant permission.

As a final comment on operational noise impact I note that section 10.4.2.3 refers to eleven turbines - The proposal in question considers the construction of eleven turbine units on the site as detailed in Section 3 of this EIS and I assume 'eleven turbines' to be an error given the data set out in the pursuant tables.

Infrasound/low-frequency sound

There is particular concern with respect to infra-sound and low frequency sound and possible health impacts. This is supported by reference to a number of international studies. However this is not supported by the World Health Organisation which states with respect to infrasonic noise levels below the hearing threshold that: ‘ There is no reliable evidence that infrasound below the hearing threshold produce physiological or psychological effects.’

I note the EPA document Guidance Note for Noise Assessment of Wind Turbine Operations at EPA Licensed sites (NG3) states that there is similarly no significant infrasound from wind turbines. Infrasound is high level sound at frequencies below 20Hz. This was a prominent feature of passive yaw ‘downwind’ turbines where the blades were positioned downwind of the tower which resulted in a characteristic thump as each blade passed through the wake caused by the turbine tower. With modern active yaw turbines (i.e. the blades are upwind of the tower and the turbine and the turbine is turned to face into the wind by a wind direction sensor on the nacelle activating a yaw motor) this is no longer a significant feature.

I consider the applicant’s submission to be reasonable in this regard in light of public policy and am of the opinion that the impact on infrasound/low-frequency sound is not a basis for refusal of permission.

Vibration – Ecology

There is, I consider a possible issue in relation to vibration impact arising from construction activities particularly within the buffer zones of tributaries/rising streams in river catchments known for salmon, trout, sea/brook lamprey and eel such as in the Mourne Beg River and its many tributaries in the site. There is an issue regarding spawning beds for vulnerable species and the vulnerability of such habitats to vibration possibly arising from the proposed excavation of borrow pits and any piling that may be required. The extent of borrow pit excavation may be undetermined due to unknown levels of road reconstruction arising from survey work that is required by the council. This matter needs clarification. I note however that FreshWater Mussel Pearl recent surveys have revealed no evidence of habitats within the site, although this has not been commented on by third parties and notably relevant statutory bodies.

10.5.3 Shadow Flicker

Chapter 5 of the EIS addresses shadow flicker by conducting a quantitative assessment using the software package Wind Farm Version 4.1.2.3 (Copyright 1997 – 2014, ReSoft Ltd.) to predict the level of shadow flicker associated with the proposed wind farm development at individual houses.

The DoEHLG (and DoE) guidelines recommend that shadow flicker at dwellings within 500 metres of a proposed turbine location should not exceed a total of 30 hours per year. The applicant has applied more onerous criteria by assessing all houses mapped within 10 No rotor diameters of any turbine. In view of the height of turbines this I consider to be appropriate.

Of the 106 no houses assessed in Table 5.10, some level of shadow flicker is predicted to potentially occur at 93 houses, with 13 of these experiencing no shadow flicker as a result of the proposed 49 turbines. However, of the 93 properties that may experience some shadow flicker in the worst-case scenario, only 54 of those may (without any mitigation measures) experience daily shadow flicker in excess of the DoEHLG guideline threshold of 30 minutes per day. Of these 54 properties 15 either belong to landowners who are involved in the proposed development or have provided the relevant consent and therefore mitigation may be required at only 39 houses.

The planning authority is critical of the level of exceedance of shadow flicker at 41 particular dwellings and seeks a revised proposal in terms of height, relocation, omission or control and comparison of each measure. Strabane District Council raises general concerns about shadow flicker but does not seek further information.

Most of the objections raise concerns regarding the potential for shadow flicker to occur at levels above thresholds outlined in the relevant Guidance documents and that the mitigation proposals may not be sufficient to achieve those thresholds. This is I note is relevant in the case of one house (no.33) at a distance of 1km away and where 29.7hours of shadow flicker is predicted to occur.

In the applicant's response wherein a 38 turbine layout is illustrated, 68 no. properties (as opposed to 106) are identified as falling within 1.17km of any turbine. These properties are assessed and the total annual guideline limit of 30 hours is predicted to be exceeded at 23 No. properties. Taking account of regional sunshine average of 30% only 3 no. properties are predicted to exceed the 30-hour annual guideline limit. The applicant makes the case that as these properties either belong to landowners who are involved in or consented to the proposed development mitigation is not required. I do not accept that the protection of amenity should be dismissed as an issue in such circumstances and consider the matter of shadow flicker to be of some consideration.

I note that even if the Board were to consider only 38 turbines, 34 residences out of a possible 54 properties would be in excess of the 30 min threshold in the worst case scenario assuming full sunshine. While a high proportion (stated to be 20) of these properties are owned by consenting parties the level of exceedance is significant in some instances. This is set out in table 4.1 in the response submission. (Duration is expressed in units of hours as opposed to minutes which would be clearer for comparison against guidance limits.) In the extreme, house no. 262 would experience 2.3 hours of shadow flicker for a total of 163 days as a consequence of turbine nos. 44, 45, 47-49. Of lesser magnitude, house no.177 would experience over an hour (daily) of shadow flicker for a total of 66 days in the year. This would arise from the operation of turbine nos. 41, 42 and 45. However in view of the occupants' agreement no mitigation measures are considered necessary by the applicant for these properties. Similarly in the cases of property nos. 217-222 inclusive, flickering is predicted to range from 0.71 hrs to 0.93 hrs and this would be possible for up to a total number of days of anywhere between 68 to 111 in the year for the respective properties. This would be caused by turbine nos. 23, 24 and 29 in

all 6 of the cases and turbine no 32 in 3 cases. Similarly these properties are dismissed as requiring mitigation due to consenting interests. In the next tranche of houses the situation is more marginal whereby at a worst case scenario the 30 min limit is just about exceeded at a range of 0.56 to 0.66 hours for a period of 27 to 36 days for 10 properties. As only one of these is in agreement, mitigation is proposed for the others. This would involve turbine nos. 42, 44 and 45. Levels at house no 152 would also be marginally breached at 0.6hrs for 33 days by virtue of turbine nos. 42 and 44.

The applicant proposes to control flicker at source as the key mitigation measure. At best, out of a residual 38 turbines, turbine nos. 36, 42, 44, 45, 49 would be controlled in respect of impact on 19 properties. It is not entirely clear that if by reducing operation of 42, 44 and 45 house nos. 262 and 177 would significantly benefit although there would logically be some improvement. Turbine nos. 1, 2, 23, 24, 29, 31, 32 and 35 also contribute to exceedances but no mitigation is considered necessary by the applicant due to consents.

The control involves turning off turbines automatically where the conditions for shadow flicker exist on any individual house. All predicted incidents of shadow flicker in excess of the daily or annual guidelines thresholds are proposed to be preprogrammed into the wind farm's control software along with the grid coordinates for individual houses. The control system will be programmed to shut down any particular turbine at any particular time on any given day to ensure the daily or annual guidelines thresholds are not exceeded.

Ultimately the applicant makes the case that, notwithstanding the occurrence of shadow flicker, there will be no exceedances of the recommended maximum guideline thresholds of 30 hours per year or 30 minutes per day at any relevant household (i.e. I presume to be non-consenting) arising from the proposed wind farm whether that is a 49 or 38 turbine layout. This is based on regulation by SCADA technology and attachment of conditions to require such measures. It is stated that conditions are regularly attached to planning permission for wind farm projects requiring adherence to the guideline limits of 30 minutes per day or 30 hours per year and therefore such mitigation measures have been widely adopted through the wind energy industry and are readily enforceable.

I note in conclusion in this matter that only one dwelling is within the recommended current DoEHLG Guideline distance of 500m but that having regard to the height that mitigation is appropriate for additional properties within a 10 x rotor diameter distance. I accept that reliance and moreover the requirement on internal arrangements of private properties as a form of mitigation is unreliable as a sole form of mitigation in the event of excessive shadow flicker. I do however consider that the availability and use of SCADA technology will substantially remove this as a significant source of nuisance and is achievable without unduly compromising the output - although further clarification on this matter would be needed. Accordingly, I am of the opinion that shadow flicker is excessive in the absence of mitigation but as this can be regulated I am therefore of the view that shadow flicker is not a substantive grounds for refusal.

I am however conscious of the further information submitted in this regard illustrating the effects of a possible 38 turbine layout included for example the mapped information in Appendix 4-1 and that the observing parties have not had a further opportunity to comment on this. There appears to be a slight revision in number of interested parties. Accordingly in the event of the Board advancing this proposal for further consideration of a grant of permission I am of the opinion that in the interest of justice, the observers would be afforded the opportunity for further comment.

10.6 Water

General

Chapter 8 describes the main impacts of the development on water. Surface water is identified as the main hydrological receptor and is likely to be most vulnerable to pollution particularly at site preparation and construction stages and to a lesser extent at operational stage. A total of 41 of the proposed 49 turbines are located within the Mourne River catchment which is substantially within Northern Ireland. The other 8 turbines are proposed in the River Finn catchment. A section of the grid connection cable route is also located within the Lough Eske catchment. The EIS acknowledges the worst case scenario such as contamination of surface water during construction and operational phases and impact on ecology, such as on downstream water bodies such as Rivers Finn, Lowreymore, Mourne Beg and Derg and local groundwater contamination.

Mitigation is essentially by design and avoidance and a comprehensive range of measures are set out in section 8-47 of the EIS. In addition to working outside a 50m buffer zone except at crossings which are all identified for natural watercourses, the drainage scheme incorporates strategically sited interceptors, collector sumps, ponds, check dams and filtration systems. The run-off is intended to be highly managed in its course, volume and quality in a manner that intends to avoid water quality impacts in downstream water bodies. Appendix 4 includes 6 sets of details in relation to the overall drainage layout and management approach. Appendix 4-6 includes details of a culvert survey. I note that 7 of the 24 identified are in need of upgrading due to hydraulic capacity based on 100 year flow rates. The hydraulic status is undetermined in 3 of the cases. Notably EC24- Bridge on public road along western grid connection route is undetermined. Accordingly further survey work is needed and 100 year flow level are possibly limited.

Proposed Mitigation

Two methods will be employed to control drainage water within the site during construction, thereby protecting downstream surface water quality and aquatic habitats. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations and construction areas. The second method involves collecting any drainage waters from works areas within the site that might carry silt, to allow settlement and cleaning prior to its release. During the construction phase all runoff will be treated to a high quality prior to being released. There will be no risk of increased flooding down gradient of the site as a result of the proposed development due to these drainage measures. Impacts on water quality during the construction phase of the wind farm

will be imperceptible to none. A surface water monitoring programme will be put in place during the construction phase. During the operational phase drainage control measures will ensure that surface runoff from the developed areas of the site will continue to be of good quality and will therefore not impact on the quality of downstream rivers and streams. The present drainage regime of the site will not be altered in any way. No impacts on surface water quality are anticipated during the operational phase. In terms of cumulative impacts on regional rivers arising from other wind farm developments, the regional surface water catchment with the potentially highest turbine density is the Mourne River catchment. With a potential turbine density of only one turbine for approximately every $\sim 3.2\text{km}^2$, no significant cumulative impacts are anticipated. The potential maximum turbine density in the River Finn is 1 turbine for approximately every 8.5km^2 , and therefore cumulative impacts are also not anticipated. There are no proposals for turbine development within the Lough Eske catchment relating to the Carrickaduff wind farm development and therefore no cumulative impacts are anticipated. Overall no significant impacts on the surface water or groundwater environments have been identified by the assessment

Groundwater

It is pointed out that the bedrock underlying the site is predominantly classified as poor in terms of well water yield potential, as the bedrock has little or no open cracks which means groundwater movement within the aquifer is stated to be very localised. Groundwater at the site can be classed as sensitive in terms of potential impacts from the proposed development. However, the majority of the bedrock is covered in peat which acts as a protective cover to groundwater quality.

The planning authority is satisfied that there will be no impact on groundwater in the vicinity of the development site. Northern Ireland Water is concerned about the lack of detail in respect of the long term impact on groundwater and water supply for the Derg Water Treatment Works as a significant public water supply for the county.

Groundwater is stated not to be at risk and the concerns of Northern Ireland bodies and group water schemes are considered by the applicant in the response submission, to be not founded. It is submitted that as there will be no impact on groundwater no pathway is identified. However the underlying methodology is critiqued in the Finn Valley Action Group submission: In one of the appended reports, Prof Johnston queries the robustness of the data and the ability to fully ascertain the hydrological regime which is based on peat probes.

Private wells

In terms of private wells, 3 are identified as being down gradient. Ref table 8.10 and Fig 8.12 and 8.14. T26 is identified in the objections as requiring extensive excavation and potential impact on a well about 660m away, but this turbine is selected for omission on visual grounds. It is stated there will be no impact on private wells as a result of the development. In view of the separation distances generally, I consider it reasonable to conclude that risk of pollution or supply to private wells is limited. A condition of permission could address this matter should the Board be minded to grant permission,

While further ground investigation would help verify the hydrogeological regime it would appear that ground water pollution is unlikely and can be managed given the likely containment of the diffusion due to bedrock and soil characteristics. However I would consider it more thorough to have further responses from the relevant authorities on this matter.

Risks

Public Water Supplies: Lough Mourne

Lough Mourne is a significant regional source of public water supply. It is identified as a low point in the valley and that it is not hydrologically connected to the development site. However this status disregards a major change to the hydrological regime as provided for in the approval of Part 8 Lough Mourne and Letterkenny Water Supply Scheme. The planning authority, in its submission, has highlighted insufficient scope of the EIS in respect of the cumulative impacts. Critically, the EIS has failed to take account of the Scheme which is located to the north west of the site and which involves augmentation of the Lough as a reservoir by abstraction from the Bunadownen River at a point that lies within the development site thereby providing a direct pathway from the site to a major water supply. The planning authority states that

‘having regard to the fact that the Bunadownen River Intake project is active and progressing, the unknowns in relation to the timelines governing the assessment and determination of the subject application and the likely 10 year duration of any permission which may be forthcoming for the proposed wind farm development it is considered that the applicant is not in a position to simply state that the wind farm will be completed prior to the intake and to state that no issues will arise as a result. This is considered as inadequate and as failing to have due, proper and appropriate regard to the public water infrastructure project proposed. It is the case that Lough Mourne is a significant public water resource currently supplying 17,000 people [35,000 when augmented]. The project is proposing works and development within the proposed extended catchment of the facility and it is not considered acceptable to arrive at a determination in respect of potential impacts without proper consideration and competent assessments of the potential development scenarios which may occur...it is the case that Intake works may commence first.’

It would appear therefore that the potential for contamination and a potential public health hazard has not been adequately considered in the EIS. I consider this to be a significant deficiency in the EIS.

The EIS states that T9 is the only turbine within the Bunadownen catchment upstream of proposed intake for the Lough Mourne augmentation. The omission of other turbines (T4, 14, 15 and 18) as suggested by the applicant for visual reasons in this area would also remove the requirement for compound no. 1 and Borrow Pit No.2. It is further submitted that even if there was a risk of contamination a series of measures is proposed.

However, as can be seen in Drawing No: P1249-1114-A3-815-00A, there is a network of tributaries that are upstream of the intake point and in effect surround it. The planning authority refers to Turbine nos. 4, 5, 6, 10 and 11 being in close proximity in addition to T9 which is less than 200m away. (Refer to memo from B. Cannon SEE

Water Services Capital Office Donegal County Council – appended to DCC submission). From my examination of the drawings I note that the main haul route from the Pit no 1 (which would remain even in the reduced 38 turbine scheme) crosses the Bunadown River and its tributaries multiple times en route to 19 of the 20 turbine sites (T4 is the only site along with one compound to be on the west side and not require crossing upstream of the Bunadown River). An alternative forestry access is shown from the local bog road to the north but this road is not shown as part of the haul route and its use would be contrary to the access proposals, (and could also be an issue as it traverses a known hen harrier foraging site). Without the omissions, Borrow pit (no.2) is in the range of 100-150 metres south and up gradient of one of these tributaries at Pollowaddy on the north western slope of Carrickaduff Hill. T14 and T15 would also be up gradient, although at a greater distance. Due to the gradient however the access routes may provide a conduit for run-off into the upstream tributaries.

Notwithstanding the omission of T9, T14, T15 and to a lesser extent T18 and the Borrow Pit at this location, and having regard to the concerns of the planning authority that the construction activities associated with a main distributor haul route as construction site by its itself, for upgrading, (the exact extent of which is unknown) and as a passage for construction works for 14 turbines and its use for the transport of considerable volumes of fine material and heavy loads, the haul route would remain potentially as a significant source of pollution and risk to these waters.

I note Irish Water comments about significance of supply and need to protect quality and I also note the more detailed comments of the planning authority and its involvement. I consider a precautionary approach to be reasonable. In this context I consider the planning authority to be reasonable in its request for further assessment of

- The potential impacts of wind farm construction works and operational wind farm on raw water quality at the proposed Lough Mourne Intake from the Bunadown River in the event that (i) any permitted wind farm commences first, or (ii) the Lough Mourne intake works commence first or (iii) works on both projects are ongoing simultaneously.
- The potential of the proposed wind farm, both, during and post construction to impact on the viability of the proposed Lough Mourne Intake from the Bunadown River as a result of material interference or impact on the catchment and the available water resource as a result of drainage regimes or other.

Noting this requirement, the applicant remains of the view in the response submission that the proposed development will have no impact and any risk would be omitted by reason of the reduced scale of development and in particular the omission of T9 being the nearest Turbine to water upstream of the Intake point (which is illustrated as part of approach to reduce visual impact). Accordingly it is submitted, the only works within the vicinity of the relevant catchment would be in relation to roads and met mast. On this matter, the method statement is reiterated with an emphasis on the consultant's experience with wind farm drainage at design and post construction stage.

I do not consider the information submitted to satisfactorily address the issue.

It is reasonable in my view that the planning authority needs absolute certainty that the proposed development will not impact on the viability of the Intake Scheme. Lough Mourne and its tributaries including the Bunadownen Intake Scheme have not been identified as a sensitive receptor (i.e. a significant public water supply) at design stage. This is evident in that the design incorporated T9 among other structures up-gradient and within the buffer zone of tributaries upstream of intake. The omission of T9 does not address matters of quality or quantity within the parameters raised by the planning authority which I consider to be reasonable. There is no identification of the risks to quantity or quality of water in the scenario whereby the drainage regime or hydrological regime are altered as a consequence of extensive tree felling, road construction or other activities. It is not demonstrated that mitigation by buffering is adequate in high risk scenarios. In some incidences the haul route which is proposed to be upgraded and used intensively runs alongside a tributary stream.

While there are extensive mitigation approaches they are not necessarily site specific – this is based on the lack of detail on the drawings which are somewhat schematic in this context. The drawings do not have dimensions despite the Drawing Notes advising '*not to scale*'. There are also some conflicts in information E,g 20m distance is specified as set back from watercourse yet the drawings indicate a buffer which based on text in the EIS is 50m. There are no verifiable points of reference. While the drawings show an indicative drainage and treatment system it is not clear if it is site specifically designed to suit the topography and if it is feasible prior to approval. It is reasonable to seek clarity as to whether there are specific measures to protect the source of intake, what type of events is the reservoir and its catchment protected for and what is the capacity for lagoons and what level of protection do they provide in terms of particular (extreme) rainfall events. I also note there is some discrepancy between the drawing notes and disclaimers with the aims of the mitigation methods. Essentially this needs to be designed to reflect the particular site condition and is to the satisfaction of the planning authority/water authority who directly manage the public water supply.

Similarly in the case of the Derg WTW, Northern Ireland Water raises concerns about the siting of 41 of the 49 turbines feeding into the Derg River Catchment and the potential impact of the development on water quality and water quantity on its raw water abstraction for the Derg WTW. In addition to groundwater impacts there are concerns about water quality and pollution.

For particularly sensitive areas such as direct sources for public water supply, these matters should be further clarified to the satisfaction of the relevant water authorities and An Bord Pleanala in the interest of public health and to ensure the economical and efficient use of public resources.

Fisheries

Inland Fisheries is concerned about the cabling along the N15 (which I note is about 8.5km) and about the impacts primarily on the adjacent Lowerymore River a

salmonid tributary. There are also concerns about the stability of the riverbank which has undergone extensive works and is highly vulnerable to erosion and to flash floods. The planning authority similarly expresses this concern.

The applicant clarifies that no pumping is to be carried out as the works do not involve the riverbed/channel and that directional drilling will be used. Also during construction, interceptor drains and further use of double silt fences will protect water. Silt busters are a contingency plan.

I note that the hard shoulder is quite generous and there would appear to be sufficient scope to carry out these trench works subject to an acceptable detailed methodology and works programme to the satisfaction of the Inland Fisheries Authority.

To assist the Loughs Agency in its assessment of impacts, further details of proposed pipe and box culverts are required in respect road/track crossings and any works on site drainage. A silt management plan and fuel oil management protocol in addition to further details and assurances on the management of released acidified water from peat bogs are also required for further assessment. The Agency would not recommend approval in the absence of all further details being sought and agreed.

If the Board is of mind to consider a grant of permission this matter should be further clarified.

Transboundary

T 19, T16, T17 and T20 and some access tracks are upstream of Glendergan River and its tributaries. The access for T17 and T20 will cross over this river catchment. Three of these turbines are in the order of 300-350m from the border with Northern Ireland but are even closer to the tributaries of the River which flows south into Tyrone. T16 is at the edge of the buffer i.e. 50m from one of the tributaries and accordingly offers limited protection within the site confines at a point where it borders another jurisdiction. One of the proposed borrow pits is just north of Carrickaduff Lough (in the order of 100m and although down gradient this may pose an unacceptable risk to the body of water that is hydrologically connected to Glendergan River.

In view of the objection raised by the authorities in Northern Ireland in respect of water quality notwithstanding the mitigation measures proposed I am not satisfied that there is sufficient details or agreement between the jurisdiction to ensure the level of maintenance required to ensure the ongoing safeguarding of the water resource. T8 and 13 are also close to the buffer for Shruhanganve Stream about 600m upstream of the border point.

A cluster of turbines is also close to the buffer for Garvagh Burn and its tributaries about 1.km upstream of the border. T43 is close to Dreenagh Burn and I note this turbine considered for omission by the applicant. T nos.43,45 48 and 49 are also in close proximity to the border but their proximities to direct watercourses feeding into Northern Ireland at close proximity are not as prevalent.

On balance, the risk of pollution to the Northern Ireland river catchments, notably the Derg catchment cannot be ruled out with a sufficient level of certainty.

Aquatic Ecology

Designated sites that receive surface water runoff from the proposed wind farm development or grid connection route include River Finn SAC, Lough Eske and Ardnamona Wood SAC and the River Foyle and Tributaries ASSI and SAC. These designated sites can be considered very sensitive in terms of potential impacts. E.g. at construction stage the use of cement based products with potential raised pH levels poses a risk to fish (by way of burning) and also the peat ecosystem relies on a low pH. The batching mix process potentially poses a serious risk but I note it is proposed to use ready mixed concrete and then wash the chutes in a controlled manner whereby the wastewater will be tankered off-site

Comprehensive surface water mitigation and controls are proposed to ensure protection of all downstream receiving waters. Any introduced drainage works at the site are proposed to mimic the existing drainage regime thereby avoiding changes to flow volumes leaving the site.

The catchments are identified and classed in terms of quality. Hydrochemistry is generally good. (Although I accept that the sampling is limited by duration and extent of location and possible heavy rainfall and may not give a full and accurate picture.) Extreme weather events may pose a risk. For example, drier events taken in conjunction with the Intake Scheme would also alter the hydrological regime down gradient of the development and may have implications for the hydro chemical character of the water which may have implications for its capacity of increased loading of potential pollutants such as those associated with tree felling or peat. This has not been considered. This presents wider potential environmental impacts to the aquatic habitat and species.

Forestry

Forestry felling is identified as the biggest source of risk to water. Of the 121.3 ha of forestry to be felled, 102.13 ha are in the Mourne River catchment. I note the EIS is informed by a range of statutory bodies both North and South (Coillte, The Forestry Services, Dep of Agriculture and Forestry, The Forestry Commission). Recommended measures such as mitigation by design and management have been incorporated. E.g. Buffer zone of 50m has been provided in excess of recommended 25m. Although it is not clear to what extent, if any, the existing forestry to be felled lies within this zone. The design however allows for attenuation and management of run-off from felling areas. It is proposed that there will be no direct discharge of these surface water drains to natural water courses. The drains for the felling area will be blocked and temporary silt traps will be set up too. While the measures are comprehensive it is questionable if these measures are feasible in all areas given the steepness of parts of the site and space needed for triple layered sediment traps.

There is also a wider issue of impact of felling on the water table and its cumulative impact with the Bunadownen River diversion and impacts arising.

Flood Risk

The EIS refers to the River Finn being subject to fluvial flooding and the sensitivity of the catchment to surface water run-off. Potentially there is an increase in run-off of 0.08%-0.12% in average daily/month volumes. This is described as low given the size of the site and peat characteristics and is not considered to pose a risk of exacerbated flooding down gradient of the site even without mitigation measures. Buffering of forestry drains is not anticipated as a requirement. I note it is proposed to integrate the existing drainage system so as to control pollution e.g. by use of silt-sedimentation collection and settlement ponds and to effectively segregate natural watercourses (Appendix 4 includes drainage layout drawings). However, these could possibly be compromised in extreme pluvial flooding event (or by site works/management.) While the figures are low, I consider that in the context of extreme weather events, notwithstanding the general 50 metre buffer from natural watercourses, there is considerable room for error and uncertainty with respect to the extent of impact and associated risks. In view of the extreme weather event in recent years and most recently in November/December 2015 and the potential for saturation and run-off contamination I consider the potential risk to water should be revisited in the context of extreme rainfall events and climate change factors.

Logistics

I am of the view that the scale, extent and nature of the site which include a dense network of natural watercourses and manmade drains in multiple catchments and which is served by an extensive network of public and private roads extending almost 90km, that accessibility and management of a water network in time of emergency would present a considerable logistical challenge. This may be critical at tree felling stages, site preparation and construction stages e.g. peat clearance and stockpiling, quarrying, road construction, culvert works, turbine foundation and importation of concrete, and turbine delivery stages. By virtue of the complications associated with bog slide/burst, damaged road and flooding the development potentially poses a significant risk of water pollution. I accept that this is a management issue that can ultimately be regulated.

Notwithstanding the complex range of preventative measures by layout and control the question has to be asked - given the scale of the works area and multiple sources of sedimentation release into the water network by a single project - is the risk to a public water supply warranted? In view of the submitted information I would say that it is not.

Cumulatively it is stated that there will be a total of 42 turbines to be constructed in Lough Finn catchment, 29 in Lough Eske and 130 turbines in the Mourne River and Derg River catchments. It is submitted in this context whereby the average of 1 per 8.5km² and 1.3.2km², the proposal is imperceptible. This raises an issue about the co-ordination of construction for some 120 turbines in the wider area at the same time. This could perhaps be co-ordinated. Although the applicant states that it is unlikely that they will be constructed at the same and while this can be co-ordinated by the planning authority there is no system evident to ensure this is regulated in a transboundary context.

Conclusion

In order to fully determine the risks, outstanding matters of concern to the planning authority need to be fully addressed in respect of public water supplies within the same catchment of the proposed development site. At the very least, further information is required to address this matter.

10.7 Peat slides

The EIS identifies that peat is a prevalent feature throughout this moorland landscape. Peat thicknesses were recorded during the site walkovers from over 1,250 probes and ranged from 0 to 5.8m with an average depth of 1.2m. Peat depth maps for the site are included within Section 7, Soils & Geology. (Refer to Figures 7.2 to 7.4) The data also displays varying gradients of steepness with many incidences exceeding a 5% gradient.

A stability assessment of the proposed development found that the site has a low to medium risk of slope failure/peat slide. This risk has been assessed by the consulting engineers who have experience of some 90 wind farm sites. They have used Scottish Guidance by way of a methodological approach to risk assessment. The EIS concludes that 'The risk rating for each infrastructure element at the Carrickaduff wind farm is designated trivial and tolerable following some mitigation/control measures being implemented.' Sections of access roads to the nearest infrastructure element will be subject to the same mitigation/control measures that apply to the nearest infrastructure element. A number of control measures are given in the AGECLtd peat stability assessment to manage all risks associated with peat instability. Notwithstanding the EIS conclusions, the IPCC has objected to the development of wind turbines in an upland Blanket Bog area for reasons relating to peat slide and bog burst in addition to ecological reasons associated with habitat loss.

The Finn Valley submission includes a report from a Dr. Pádraig O Cathain a mathematician who critiques the methodology. Prof. Paul Johnston's report also raises the matter of assumptions in understanding the hydrological regime and this is most relevant I consider to the risk assessment. I note that the higher levels of risk (e.g. where FOS is near the 1.30 level) occur in Area 1 in the Western area near the public water supply.

In the Scottish guidance which is referred to by the applicant I note that peat slides and or bog burst can be caused by either natural or human induced triggers such as:

- (i) Intense rainfall causing development of transient high pore-water pressures along pre-existing or potential rupture surfaces (e.g. at the discontinuity between peat and substrate);
- (ii) Snow melt causing development of high pore-water pressures, as above;
- (iii) Rapid ground accelerations (earthquakes) causing a decrease in shear strength;
- (iv) Unloading of the peat mass by fluvial incision of a peat slope at its toe, reducing support to the upslope material; and
- (v) Loading of the peat mass by landslide debris causing an increase in shear stress.

Anthropogenic (i.e. human induced) triggers include some of the following:

- (i) Alteration to drainage pattern focusing drainage and generating high pore-water pressures along pre-existing or potential rupture surfaces (e.g. at the discontinuity between peat and substrate);
- (ii) Rapid ground accelerations (blasting or mechanical vibrations) causing an increase in shear stresses;
- (iii) Unloading of the peat mass by cutting of peat at the toe of a slope reducing support to the upslope material;
- (iv) Loading of the peat mass by heavy plant, structures or overburden causing an increase in shear stress;
- (v) Digging and tipping, which may undermine or load the peat mass respectively, and may occur during building, engineering, farming or mining (including subsidence);
- (vi) Afforestation of peat areas, reducing water held in the peat body, and increasing potential for formation of desiccation cracks which are exploited by rainfall on forest harvesting; and
- (vii) Changes in vegetation cover caused by burning, heaving grazing or stripping of the surface peat cover, reducing tensile strength in the upper layers of the peat body.

Notably the guidance advises that 'Natural factors are difficult to control, and while some anthropogenic factors can be mitigated, some cannot. For these reasons it is essential to identify and select a location for the development and associated infrastructure that avoids or minimises the impact of the development'

Peat slides or bog bursts are dependent upon peat characteristics and topography at a particular site. It is however important that the characteristics are fully described and understood. I note the risk appraisal considers a drained and undrained situation. I also note the multi-faceted approach to assessing risk which is accordance with best practice and the consultant experience with wind farm construction and post construction.

However, even if there are no pre-failure indicators presently, it has to be asked as to whether this will be the same with loading giving rise to tension and compression with added water and intensification of drains as a consequence of tree felling, extreme weather events and or changes in flow/flow paths. In view of the planning authority concerns, it is reasonable to query can this be clarified taking into account that the structural capacity of the road network, comprising essentially bog ramparts which may be deficient for the particular traffic loads. There is also the matter of changes in water table as a consequence of the tree felling and this impact on peat stability.

In summary, while the findings of the peat assessment report, which involved analysis of over 500 locations, show that the proposed Carrickaduff wind farm site has an acceptable margin of safety and is suitable for the proposed wind farm development and include recommendations and control measures for construction work in peatlands to ensure that all works adhere to an acceptable standard of safety, I have some reservations about the underlying ground conditions and interplay with hydrology.

While I note that the data informing the peat stability report indicates a factor of safety in exceedance of 1.30 I note that a few locations within the site development area come close to this figure. I also note that the development area is on a slope descending from around 300m to 180m AOD in a north west slope down towards Lough Mourne. I note the slopes based on appendix 4-2 Peat Management Plan drawings and that slopes in the vicinity of the Borrow pits range from fairly flat to around 8% and 12 % in the vicinity of borrow pits no.3 and no.2.

In the event of a bog burst/bog slide, possibly consequent on plant, road construction/collapse or drainage works and re-coursing it would have the serious consequence of damaging a public water supply by polluting the tributary waters (e.g. Upstream of intake point to Lough) or directly into lough – a public water supply. I also note that the impacts on the hydrological regime consequent on the Bunadownen Intake Scheme and possibly arising from the extensive tree felling have not been factored into the scenarios and accordingly the veracity of the conclusions are open to further question.

On balance, in view of the potential risk to a significant public water supply by reason of its intake being partly within the development site and adjacent to a key access route and also by reason of the reservoir being down gradient of considerable works, I consider that the approach should be more risk sensitive and evidence based. For example an assessment should demonstrate consideration of the scenario with large fluctuations in rainfall which may increase the rate of groundwater discharges due to springs, given that, if this occurs following a period of drought there is an increased risk that peat landslides may be induced. I am not satisfied that implications for intense rainfall and extreme dry events have been fully ascertained in a range of scenarios.

While the further information indicates how turbines, a pit and a compound could be omitted near the watercourse upstream of the intake point and it is acknowledged that disturbance would be reduced, there remain works associated with other turbines and road works that are up gradient of the Lough and the Bunadownen River. There is also risk to the Derg WTW catchment.

In the event that the Board is minded to grant permission I consider that more verifiable data should be sought on the matter to the satisfaction of the relevant water authorities and the Board.

Material Assets

10.8 Tourism

The EIS concludes that there will be no negative impact on tourism. Based on independent research on tourists perceptions, the case is made that turbines are not negatively perceived in the landscape by tourists and this is supported generally by Failte Ireland. However, many of the objections raise concerns about the negative impact on the tourism sector in this region, for example as expressed in the Northern Ireland submission. The arguments in this respect are strongly presented by Dr. Aine Conaghan, a private third party who has academic background in this field. I

consider it a fair criticism that 2007 research on which the EIS is based in respect of tourism lacks relevance having regard to the quantity and scale of such development. In 2007 there were only 67 wind farms in Ireland whereas in Donegal alone there were some 32 wind farms in 2014. The wind turbines were also much smaller in scale in 2007. For example the current Wind Energy Guidelines refer to a typical height range in 2005 at less than 60m to blade tip as short, 75-100m as medium and over 100m as tall. In NI draft guidance (2008) 125m is the highest whereas the subject proposal is for a blade tip height of 156m. It is quite plausible that turbines of this height would draw different and possibly more negative reaction in certain settings.

I accept that the tourism sector is more limited in this area as compared to the more traditional scenic and coastal areas and the marketed areas e.g. Wild Atlantic Way. However the Border Area Regional Planning Guidelines acknowledge the high level of landscape beauty in the region and the untapped tourism product and that there is a need to protect and enhance amenities such as cycling and trail walking routes.

I accept that the site is part of a natural resource which is characterised by its upland and relatively remote setting and which contributes to the amenity and enjoyment of the area and that there are many local activities such as trekking, walking, cycling, horse riding, and bird watching which are enhanced by this resource. Many of the submissions raise concerns about the impacts on such amenities. These are based primarily on the anticipated detracting from the landscape and visual amenity and consequent enjoyment of many outdoor pursuits in both designated and undesignated but popular areas. There is also the issue of altering and potentially obstructing access. I have already discussed the impact on the existing designated North West Cycle Trail through the site at the western end which will be affected by grid connection laying and associated works (e.g. widening of road - the extent of which I have noted is not fully clear). An activity such as bird watching is also anticipated to be indirectly hindered by the impact of the development on species.

The applicant proposes a community contribution of in excess of €3.2 which would fund community projects benefiting the locality in a socio-economic way. I agree that this would potentially have a positive impact on the tourism sector as well as enhancing local amenities for the community.

The proposed development will also provide upgraded infrastructure by the improvement in access, strengthening of roads and the direct investment opportunities from the Community fund, all of which provide positive impacts by enhancing the facilities in the region. In this regard I note the BARGs recognise the importance of long-distance routes through the region and that 'These long-distance walks, together with local walks, provide important access networks, which are an important recreational resource and should be protected... Development plans should include policies to protect the integrity of these routes, and should take the impact of any proposed development on these routes into account, when considering applications for permission for developments in their vicinity'.

If managed correctly the proposal development could have many positive enhancements of the tourism product offer in the area. It may even be feasible to partly implement the Railway Reinstatement project along the Lowerymore as

envisaged in the BARPgs. There is the potential to develop an off-road trail in these extensive lands which link into the Kinletter Uplands in a regional approach. However the intrinsic value of the area is essentially derived from its naturalistic setting and further to my assessment on visual impact I am of the opinion that the presence of the scale and extent of turbines proposed would be excessive in visual terms and contribute to a proliferation of turbines in the area and thereby seriously detract from the intrinsic character of the area. As a consequence the trails and routes and scenic view and setting of Barnesmore Gap would also be impinged upon in the area. For these reasons I consider the proposed development more likely to have a negative impact on the tourism sector. However in view of the relatively undeveloped status of the sector in the locality I do not consider a direct negative impact on the tourism sector to constitute entirely reasonable grounds for refusal.

10.9 Traffic and Roads

Traffic

Section 13 states the number of trips generated by the development on the N15 and R235 and demonstrates adequate capacity of these roads in terms of traffic volumes at key construction stages and geometric requirements.

Traffic volumes for the N15 are 6724pcu (2015) and are projected to increase in 2016 to 6925 pcu (HGV=2.4pcu, Extended load =10pcu). Volumes for the R235 south of Castlefinn are presently 1570pcu and are projected to increase to 1617 in 2016. HGVs account for 5.4% e.g. 374 on the N15 and 87 on the R235. In terms of traffic volumes the traffic generation data for national routes is within acceptable limits although the traffic data, while indicating an average capacity, does not indicate potential peaks. Traffic impact is described as moderate but temporary. The most disruptive element is stated to be the artic trucks but these deliveries will be done at night to avoid disruption to other traffic.

Aside from the management of the artic truck deliveries which is set out in some detail and which amounts to one day of deliveries per turbine, I note that the applicant makes it clear that many issues particularly the large deliveries will be managed by way of traffic management plan to be agreed with interested parties – principally the local authority.

Traffic generation to the overall site at construction stage is broken down by type of material to be delivered from outside the site at large. E.g. concrete, steel, cabling but excludes traffic associated within the peat and rock extraction and management - peat storage etc. Deliveries are classified and quantified in truck loads.

Delivery type	Two-way truck loads
Concrete	3675
Steel	98
Sand/binding	0
Ducting	20
Cable	29
Comms	29

Staffing during site works will be in the order of 65 persons at construction stage and reduce to 3 at operation stage.

In terms of internal movements there is little or no information other than the assignment of pits to turbine sites and respective volumes per pit. The total volume of material to be excavated including construction material from the pits and peat stripping and storage as part of site preparation is in the order of 1,000,000m³ which amounts to a considerable volume of truckloads at construction stage. The issue of conflict with local traffic on routes that partly overlap haul routes has not been addressed. Details of existing or proposed local traffic have not been provided. The construction phasing and associated likely traffic patterns are not fully clear and this is largely owing to the fact that the construction management plan relies on post decision agreement. While much of this is best handled in conjunction with the Engineering Departments of the local authority I consider a more detailed description of traffic scenarios would allow for a more transparent and informed appraisal.

The submitted details set out a haul route (Figure 3.38 of the submitted EIS) which is confirmed to be the access route for all construction material deliveries. This route weaves across the site which is traversed by numerous public roads serving the local and wider community in both Ireland and Northern Ireland. In total in the order of 30km of road is to be improved and this relates substantially to existing forestry tracks/roads. In addition a total of 24km of new roads are to be constructed and these primarily link the individual turbine, compound, pit and substation sites to the main haul route. While the new roads are contained within private lands in the applicant's interest, the extent of road work on the public road network is not fully quantified. The issues in this regard relate to:

- Safety in context of alignment, structural capacity and interference with local traffic and clarity of information.

Road alignment

In terms of alignment the submitted drawings illustrate the location of existing and proposed new junctions and provision of sightlines. In the response submission the provision of improved sightlines, generally in the order of 3 x 160m is demonstrated in order to address concerns primarily raised by the planning authority. All accesses, junctions and routes have also been tested for safe access by using *Autotrack*. While this appears to address the geometric capacity the information submitted is not entirely clear on the impact due to the lack of topographical detail and vertical sections/alignment. While it is stated that the roads will be widened to 6m and on one side only there are no detailed drawings (e.g. sufficiently scaled drawings with topographical survey data) of the particular stretches of road to which this applies. While I note the layout drawings and more detailed drawings in Appendices regarding accesses and Route Assessment, I agree with the planning authority assessment that the description that 'some sort of intervention with the public highway network' is insufficient. This matter needs further clarification.

While the planning authority has no substantive issue with the national road N15 in terms of traffic impact there is some concern about junction visibility (notably the vertical alignment) and the requirement for upgrading. I also note the NRA concerns in this regard. While the applicant has submitted further details addressing this matter in plan (appendix 11-3 of response submission) there are no vertical alignment drawings which I consider would be appropriate in view of the alignment, restricted visibility and proximity of a culvert in the Lowerymore River (L Eske catchment) to the quarry access junction. While this is an existing authorised quarry entrance, as argued by the applicant, the proposed development will involve a significant intensification of use at a point where there can, I note, be high volumes of traffic and where visibility is restricted and accordingly the applicant should demonstrate compliance with road safety design by way of documentary evidence of compliance with NRA standards. While this is not likely to be insurmountable, the planning authority among others should ideally be afforded the opportunity to consider the response submission and further information. If the Board is considering a grant of permission these matters should be addressed.

Drainage

In the absence of precise locations and detailed nature and extent of road works, it is not clear how much of the road will be widened. As the roads are essentially bog ramparts there are many incidences of drains on both sides hence it is not clear how this reconciles with the proposal to widen the road on the opposite side to the drain. For example the Carn Road and the eastern access approach along L6384 among others have ditches on both sides yet the methods for managing run-off are not clear. The road widening does not appear to have been worked to reflect up to date topographical data or specific ground conditions.

Structural capacity of road network

There is no structural survey of roads and structures. The planning authority highlights a range of issues of inadequate information in relation to structural capacity of the road network. It is estimated that about 40km of public roads that may be used will need strengthening at a cost in the order of €5 million assuming a 4m wide surface for most of the roads. There is, I consider a lack of evidence that the associated traffic can be accommodated, both in terms of, the demands on the roads and their structural capacity. The information submitted in terms of upgrading the roads particularly in the case of local road L6384 (3km) and L2484 (.5km) is too generalist and the planning authority disputes many of the assumptions and proposed nature of road works. It is of the opinion that 'None of the local roads have the structural capacity to carry the type and volume of the loads proposed. A full and detailed structural analysis of all the existing roads in question is needed to determine the depth of structural construction /overlay required'. In this context the planning authority also seeks details of delivery routes for all typical construction materials. This, in my view raises issues of accuracy of volumes of material to be extracted and transported to and from the borrow pits and consequent interactive impacts.

In response, the applicant suggests that prior to the commencement of deliveries, the proposed delivery routes would be subject to a condition survey by the developer in consultation with the relevant Area Engineer(s). Following the survey the developer proposes to carry out any maintenance works required to the roads prior to the commencement of construction (with the agreement of the Council).

I do not consider that the applicant has submitted satisfactory detail in this regard. Ultimately however a financial levy condition could be imposed on the developer to address this matter and it is more likely not to constitute substantive grounds for refusal of permission, although, further clarification of nature and extent of works would be required prior to a grant of permission.

Transport NI (Northern Ireland) raises the matters of logistics in so far as it seeks assurances and consultation regarding the use of public roads in Northern Ireland. The data is limited in terms of usage and in view of this and having regard to the scale of development and potential transboundary traffic this body is concerned about road condition and remedial works where necessary and ultimately the limitations regarding enforcement of mitigation measures in Northern Ireland. These are I consider reasonable concerns. While there is insufficient information to fully determine the effect, as for example expressed in more detail by Donegal County Council, it is quite probable that this matter is likely to be resolved by agreement and may not be a substantive reason for refusal of permission. I do however consider this matter requires further information and consideration.

Castlefinn Bridge

The planning authority highlights that the applicant bases the capacity of this bridge – a protected structure - on a publicly funded bridge improvement scheme, however the planning authority point out that this is unlikely due to finances. A special contribution levy of €500,000 would be required in order to ensure that such works were carried out to facilitate the development. This should be applied in the event of a grant of permission.

Interference with local traffic

While the data shows how the HGV and extended artic loads generated by site preparation, concrete pouring and turbine delivery will be accommodated physically and quantitatively into the site and then physically accommodated through the site, there is limited data on the wider road network usage. The local road network is poorly aligned bog roads and ramparts serving as access to the forestry lands and local farming and residential communities in addition to schools and hostel and amenity routes. Traffic levels appear to be light but steady in parts at strategic points. The local traffic is likely to be affected by the conflict/overlap of public road with haul route and also by the disruption and generation of additional traffic onto the local road network notwithstanding the intentions to control off-haul route traffic. From examination of the drawings I estimate that it is proposed to upgrade in the order of at least 6km of the public road network as part of the continual haul route from the Eastern R235 access point. A few kilometres of road will be affected by the laying of the grid connection along a bog road. There will be 12 junctions into the site (off public roads). In view of the overlap of the haul route with public roads and the

volume of material to be excavated at about 1,000,000m³ of rock and peat for site preparation and construction in addition to peat restoration work there will be by my estimation a considerable volume of HGV traffic over a 255 day preparation/construction phase. I also think it is a fair criticism that there is insufficient data on other traffic generation, for example, there are no details of additional traffic generated by the extensive tree felling and removal proposals.

Directly Affected routes

- The stretch between areas 2a and b on the western side of T26 will be quite a busy construction route as it provides sole access to 5 Turbines sites and a construction compound and it must be crossed to access the borrow pits. The road is a cul-de-sac serving a cluster of houses to the south. (Although there is an unsurfaced track linking into the road network further south). It is likely that construction traffic will give rise to disruption to the residents at the end of this road as they are solely reliant on this road for access to the wider community, shops and services.
- There are three roads linking communities to the north and south of the central 2b and c areas of the site and there is a proposed network of haul routes intersecting these roads between the sub-sites. There will be in the order of 9 direct routes onto these public roads in addition to the intensification of existing road junctions. The residential and farming communities are likely to be effected in terms of access but I note there are alternative routes that could be temporarily set up. Road surfacing may be required.
- Along Carn Road between areas 2c and d, a length of almost 400m will form part of the haul route between improved forestry accesses to both areas. This is a fairly busy road in a local context and as it links Killygordon to Castlederg and has a good straight alignment. Congestion and diversion to sub-standard roads may arise.
- The access route directly off the R235 as a gateway point will be very busy and while the data is provided for the R235 it is not provided for the local access road which serves farms and residences.
- In terms of the east west road off the N15 where the grid connection is proposed I note that the planning authority has stated concerns about the feasibility of a stop start construction traffic management and this is likely to require a significant rethink in terms of logistics and traffic management in the wider area. This is also a fairly busy route particularly at time on my inspection in November when the N15 re-alignment works had commenced as it offers an alternative route.

Delivery:

Delivery for turbines is anticipated from Killybegs. (In the response submission it is stated to be from Donegal – which could still originate from Killybegs.) There is no information clarifying if the abnormal loads for the proposed size of turbines can be transported safely through a particular port and to the N15 before reaching the

Autotrack reviewed approach and is set out in fig 4.36 – The main accesses are off the N15 and one crosses the River Finn at Castlefinn. The routes take account of a blade length of 57.3 m. A range of measures is proposed such as convoy escorts, tests and other such measures as previously used for similarly scaled development.

Having particular regard to the detailed concerns of the planning authority - based on its appended engineer's report from the Stranorlar Municipal District Roads Department and based on the information submitted in relation to traffic, structural capacity of roads and nature and extent of work to public roads and potential variance in borrow pit extraction, it cannot be fully ascertained as to whether or not the intended and likely routes are feasible and safe. The information is lacking in what I consider to be significant data appropriate to assess the proposal and complete an EIA which should fully inform the Board's decision.

10.10 Archaeology and Built Heritage

Section 12 of the EIS addresses archaeology and concludes that there will be no impact. In the further response the applicant relies on the statement by the planning authority in support of its original conclusion.

The EIS includes features of archaeological interest within the study area and its environs including the haul routes. 17 protected structures are identified. (Churches, Houses and Bridges). No National Monuments are located on or within close proximity to the proposed development site or the study area boundary. Six Recorded Archaeological Monuments (RMPs) are located within the EIS study area boundary, Sixty-four (64) recorded monuments/smrns are located within 3km of the EIS study area boundary and are included here for purposes of assessing potential visual impacts on the surrounding archaeological heritage. 12 of these are in Tyrone. Ten recorded archaeological monuments are located within 50m of the proposed delivery route. Two recorded monuments are located along the proposed grid connection route within the EIS study area boundary. A total of 29 items of cultural heritage are identified.

The majority of features and zones are protected by design and avoidance. Recognising the potentially rich archaeological heritage of a bog area, monitoring in line with best practice will ensure the integrity of the area is preserved. It is conceded that the visual setting of the area will be altered by the turbines. Where the works are likely to be in close proximity to a structure, mitigation by means of physical barrier is proposed. E.g. roadside kilns

At most risk, are structures on the haul routes. Seven NIAH bridges are located on the proposed delivery route on the N15 and R235. Indirect impacts to these bridges, as a result of construction traffic and associated vibration may occur. If these features are likely to be utilised as part of the haul route or construction traffic route, an engineer's report is proposed to be undertaken to assess any potential impacts to the bridges. Similarly, the two newly recorded bridges CH6 and 7 have the potential to be indirectly impacted by construction traffic associated with the wind farm development.

In view of the planning authority concerns regarding the limitations on the capacity of the roads there is a risk of damage to the bridges and other road side features in the absence of appropriate structural survey and remedial measures. As raised in the previous section this matter needs further clarification.

I note the reference by the locals to the large dolmen type boulders which are celebrated in local folklore most notably by a local poet who is cited in his descendants' submissions. In the event of permission it should be clear that important local features are not unduly compromised by the proposed development. This may fall within the private lands that were not accessible to/surveyed by the applicant. This would be a matter for further clarification in the event of a consideration of a grant of permission.

10.11 Forestry Management

Forty-seven percent of the site area is stated to be under forestry although 65% is potentially under forestry at any stage (flora and fauna chapter). It is proposed to fell 121 hectares. The EIS does not include the proposed plantation lands. However, the response submission addresses this and indicates the proposed locations of the new forestry. This, I consider, constitutes a substantial and material addition to the proposal and should be publicised in circumstances in which the Board is minded to grant planning permission

The license applications for the proposed forestry plantations are presented in various formats and information is provided about site context. While the overall area seems adequate - the land parcels amount to a total area of 127.61ha – some further clarification would be helpful. For example the location of the last license in the appendix is unclear. I note that some of the completion dates have expired. While there would appear to be reasonable buffer provision to manage localised impacts identified in the license application, it is not entirely clear if the net areas are adequate when account is fully taken of conditions relating to set back for water, biodiversity, archaeological or other requirements arising from the sensitivity of the receiving environment. Significantly, all the sites are within 15km of Natura 2000 sites e.g upstream of SAC 002165 Shannon SPA 04077 Shannon and River Fergus Estuaries pNHA 01025, Saint Senan's Lough. The Board appointed consultant ecologist's report also refers to the proximity of a number of the proposed sites being within a 5km range of designated sites. Furthermore the consultant ecologist has pointed to concerns regarding the proximity of a plantation area to a hen harrier habitat – of significance by itself under the Habitats Directive and as a qualifying interest for a nearby SPA. The proximity to such sites and habitats has significant implications for indirect impacts of the proposed development and needs to be addressed in both the EIS as an indirect impact on flora and fauna and in the NIS.

In addition to the forestry issues raised in the consultant ecologist's report, the extent of forestry felling is also related to the issue of water quality. Tree felling of up to 127 hectares is proposed and in the order of 90 hectares is proposed in the Mourne Beg River catchment. This raises a number of questions. For example, what impact is

tree felling and planting likely to have on the local drainage regime and water table within the site? Also, is the area prone to acidification risks which could be exacerbated by scale, extent and timing of felling, leading to potential implications for water quality? While I note that the forestry is an established and largely commercial use and is governed by licensing laws, in a cumulative context and for a development subject of a requirement for EIA and AA, more precise information of tree felling and re-planting and its likely environmental impact is, I consider necessary. I say this also having regard to the issues raised in relation to the ecological impacts on the aquatic environment by the Lough Agency in its submission.

The Forest Service Northern Ireland raises the issue of wind-throw and requests adherence to separation distances from plantations in line with IWEA Best Practice Guidelines. This is a reasonable concern in view of the proximity of the turbines to adjacent forestry in Northern Ireland and may have implications for extent of felling. The proposed relocation of T48 improves the separation distance. There is also the issue of managing the local ecology by co-ordinating felling and planting phases and respecting the status of the adjacent forests. For example, Strabane District Council refers to the Local Biodiversity Action Plan and the need to co-ordinate with the Forest Service NI to avoid a negative cumulative impact of proposed felling with adjacent felling plans. These matters should be fully clarified prior to any grant of planning permission.

10.12 Community Gain

The EIS claims that the proposed wind farm development will represent an investment of approximately €200 million in the local area, with approximately €80 million of the total cost relating to on-site works, relying heavily on local contractors and suppliers. Accordingly it is concluded in the EIS that the proposed development has the potential to have significant benefits for the local economy, by means of investment, employment, Local Authority rates and payments to landowners. The case is made that the proposed wind farm also creates an opportunity to generate real tangible benefits for the local and wider community who may not have a direct involvement in the project. The benefits are achievable through a Community Gain Initiative.

I note the prevalence of social exclusion identified in the region at large in the Border Area Regional Planning Guidelines and accept that an injection of over €3.2m as a specific community fund would have potential to have tangible economic benefits. Notwithstanding the stated refusal by many of the objectors to partake in the fund administration it has to be accepted that this fund is part of the proposal and is a source of potential community focused projects.

I note the Economic Division of Northern Ireland disputes that there will be any benefit in the Northern Ireland

On balance I consider that there would be an economic gain in the local economy derived from the investment and direct financial contributions. Over the longer term

however there is a risk of compromising the development of a tourism industry that is derived from the landscape character. There is also what I consider to constitute a negative cross border community impact of an effective wall of turbines along the border which does not reflect a cross border regional spatial approach and is at odds with creating cross border connectivity as envisaged in the current Border Regional Guidelines 2010-2022. The socio-economic benefits are therefore likely to be substantially negated by the adverse visual impact on the area.

10.13 Property values

Many of the objections from the residents in the area raise concerns about the impact of the development on the value of property and the wider impact of effectively pushing people away and displacing a growing community. The EIS concludes that there have been no empirical studies of the effects of wind farms on property prices in Ireland and that it is a reasonable assumption based on the studies that have been published that the provision of a wind farm at the proposed location would not impact on the property values in the area.

From my assessment I am of the opinion that the proposed development will considerably alter the character of the landscape and detract from the visual amenities of the wider area in the context of being primarily in the public realm and that this constitutes grounds for refusal. It does not necessarily follow that each dwelling with a private view of turbines will depreciate in value.

At a strategic land-use level, in view of the settlement strategy and in line with regional and national policy for residential development which seeks to direct residential communities into serviced areas where residents can be provided with facilities in a sustainable manner over the longer term and also having regard to the general disposition of the wind energy strategy to favour wind farms in the region of the site I do not consider a presumption against the proposed wind farm on the basis of perceived property devaluation to be reasonable.

10.14 Telecommunications and Aviation

The EIS states that there were no interference issues or negative impacts on telecommunications identified during the process of scoping and consultation. However Irish Air Corps require turbines to be a minimum distance of .25 nautical miles from the Northern Ireland border. This affects the eastern cluster where the Air Corps has clarified that it periodically conducts security operations in this area which require helicopter overflight and landings to be carried out close to the border.

The response submission clarifies that despite consultation when this matter did not arise, this condition can be complied with. This is however in the absence of third party consideration. I do not consider this constitutes material grounds for refusal based on the information submitted.

11 EIA

11.1 Critical issues arising

This section should be read in conjunction with the preceding relevant sections of the Assessment. The key issues in the EIA relate to

- Flora and fauna and inadequacy of survey work
- Failure to adequately consider the Bundadowen Intake Scheme
- Impact on public water supplies
- Failure to adequately consider impact of extensive tree felling and secondary impacts of replacement forestry
- Description of roads condition and traffic impacts
- Visual impact
- Residential amenity
- Alternatives and
- Interactions

11.2 Flora and Fauna

The nature and extent of the site and its proximity to an extensive range of sites of conservation interest draws a considerable range of habitats and species into the net for impact assessment. The observations by the statutory bodies particularly at scoping stage flag the critical aspects, yet, the EIS fails to fully address the issues raised at scoping stage. The consultant ecologist has reviewed the adequacy of the EIS with respect to impacts on particular species and habitats of conservation interest in the area having regard to the nature and location of the site. In the consultant's opinion the EIS is considered to be deficient in a number of respects. :

- The information does not enable a reasonable assessment of the potential impact of the proposed development on populations of birds listed on Annex I of the EU Birds Directive due to:
 - a) The short-term nature of surveying;
 - b) Failure to carry out Viewshed analysis of vantage points;
 - c) Failure to carry out systematic, vantage point surveys at the key times of dawn and dusk in order to identify commuting corridors for species such as Whooper Swan and Greenland White-fronted Goose (both Annex I species);
 - d) Failure to survey water bodies outside the survey area but within the 15 km buffer zone, which may be utilised by species such as Whooper Swan and Greenland White-fronted Geese in order to identify any potential flight paths between these water bodies;
 - e) Failure to comprehensively identify potential bird mortality associated with turbine collision owing to deficient surveys;
 - f) Failure to satisfactorily address secondary habitat loss/disturbance for birds associated with avoidance; and
 - g) Failure to identify potential cumulative impacts through a "Barrier Effect".

- The information (is inadequate and) does not enable a reasonable assessment of the potential impact of the proposed development on Habitats listed on Annex I of the EU Habitats Directive due to:
 - a) Lack of evidence for a systematic assessment of habitats;
 - b) Lack of quantitative vegetation analysis for habitats of high importance (no less than five Annex I Habitats were identified as being present within the survey area) that may be subject to significant impacts due to a particular plan or project; and
 - c) The carrying out of flora/vegetation/habitat surveys at inappropriate times of the year.
- The information (is inadequate and) does not enable a reasonable assessment of the potential impact of the proposed development on Flora Protection Order species – primarily owing to the lack of evidence of targeted, species-specific surveys.
- The information (is inadequate and) does not enable a reasonable assessment of the potential impact of the proposed development on species listed on the Third Schedule of the European Communities (Birds and Natural Habitats Regulations) of 2011 due to :
 - a) The implications regarding the potential impacts associated with the potential spread/dispersal of a number of alien invasive plant species has not been satisfactorily addressed within the EIS. There is no specific Alien Invasive Plant Species Control and Management Plan referred to.
 - b) Although the Alien Invasive Species Himalayan Balsam (*Impatiens glandulifera*) is listed in Appendix 6-2 as occurring at the site, it is not referred to in the text of the Flora and Fauna chapter of the EIS. This alien invasive plant species is particularly problematic within riparian systems. Given the S-P-R linkages present between the proposed site and a number of Natura 2000 sites with qualifying interests vulnerable to the impacts of alien invasive plant species, this is a major oversight.
- The information (is inadequate and) does not enable a reasonable assessment of the potential impact of the proposed development on Annex II/IV Species (EU Habitat Directive) due to:
 - a) Implications of impacts of the proposed development on water quality/hydrology and consequent impacts on Atlantic Salmon (Annex II), Otter (Annex II/IV) and
 - b) Inadequacy of assessment of the proposed development on the local bat population owing to the short-term nature of surveys carried out.
- The information (is inadequate and) does not enable a reasonable assessment of the potential impact of the proposed development on flora and fauna during preparation/construction, operation and decommissioning - It is deemed that owing to the deficiencies in the base-line ecological studies as described, a robust assessment of likely impacts and any associated mitigation measures is not possible.
- The information (is inadequate and) does not enable a reasonable assessment of the potential impact of the proposed development in association with other key impact due to:
 - a) Inadequacy/errors in the calculation of bird mortality associated with wind turbines – the collision modelling was based on base-line data

- collated from inadequate surveying, thereby invalidating the collision model;
- b) Inadequate assessment of secondary habitat loss for birds associated with “Barrier Effects”;
 - c) Inadequate assessment of potential impacts on water quality/hydrology owing to a failure to comprehensively identify and quantify potential cumulative impacts; and
 - d) Potential failure to take into account changes in hydrology associated with the removal of large tracts of forestry through decrease in transpirational losses.

11.3 Failure to adequately consider the Bunadown Intake Scheme for Lough Mourne Reservoir

This matter is raised by the planning authority and while the applicant’s response addresses the topic it remains the case that it cannot be fully ascertained if the planned and approved Intake Scheme from Bunadown River catchment within the site will be viable in terms of water quantity and quality as a consequence of the proposed development which includes extensive tree felling, development works and a core haul route in close proximity to the Bunadown River catchment which will feed, in the near future, into a public water supply. While I note the omission of some of the proposed development works most notably T9 that are proximate to the site, I consider that in view of the submission by the planning authority and the scale of development proposed, the information contained in EIS is deficient in respect of cumulative impacts taking account of the Intake Scheme to enable:

- An adequate assessment of the potential impacts of wind farm construction works and operational wind farm on raw water quality at the proposed Lough Mourne Intake from the Bunadown River in the event that (i) any permitted wind farm commences first, or (ii) the Lough Mourne intake works commence first or (iii) works on both projects are ongoing simultaneously.
- An adequate assessment of the potential of the proposed wind farm, both, during and post construction to impact on the viability of the proposed Lough Mourne Intake from the Bunadown River as a result of material interference or impact on the catchment and the available water resource as a result of drainage regimes or other.

11.4 Other water quality impacts.

Due to the near surface nature of construction activities associated with typical windfarms, surface water is generally the main sensitive receptor assessed during impact assessments as impacts on groundwater are generally negligible. The integration of the proposed wind farm infrastructure with the existing forestry drainage in a manner that avoids water quality impacts in downstream water bodies is a key component of the wind farm design.

The low potential for pollutants to travel within the bedrock groundwater makes surface water bodies such as streams more sensitive to pollution than groundwater at this site. In such conditions and having regard to the distances between the

development works and location of wells it is accept that there will be no impact on private wells as a result of the proposed development.

The primary risk to groundwater at the site would be from hydrocarbon spillage and leakages at the borrow pits or during refueling.

Designated sites that receive surface water runoff from the proposed wind farm development or grid connection route include River Finn SAC, Lough Eske and Ardnamona Wood SAC and the River Foyle and Tributaries ASSI and SAC. Comprehensive surface water mitigation and controls are proposed to ensure protection of all downstream receiving waters. Any introduced drainage works at the site will mimic the existing drainage regime thereby avoiding changes to flow volumes leaving the site.

In terms of cumulative impacts on regional rivers arising from other wind farm developments, the regional surface water catchment with the potentially highest turbine density is the Mourne River catchment. With a potential turbine density of only one turbine for approximately every 3.2km², no significant cumulative impacts are anticipated. The potential maximum turbine density in the River Finn is 1 turbine for approximately every 8.5km², and therefore cumulative impacts are also not anticipated.

The **Loughs Agency** refers to the potential impacts on habitats and water quality and the risk of landslide due to building on peat which are relevant factors for the Mourne Beg fishery habitat - a tributary to the River Derg. Notably it has invested in habitat improvement works for salmonids in the Mourne Beg. To assist the Agency in its assessment of impacts, it recommends that the applicant be requested to submit details of proposed culverts including all proposed pipe and box culverts for road/track crossing and any works on site drainage. The applicant is also requested to submit a silt management plan and fuel oil management protocol in addition to further details and assurances on the management of released acidified water from peat bogs. In the absence of these details a fully informed observation on the proposed development, the full extent of impacts cannot be ascertained.

In respect of public water supply in Northern Ireland, Northern Ireland Water highlights that 41 of the 49 turbines are in the **Derg Water Treatment Works** catchment area and from where raw water is abstracted to provide drinking water for a wide area of County Tyrone. Notwithstanding the mitigation measures, I consider the concerns of Northern Ireland Water to be valid having regard to the multiple pathways and the absence of data on raw water quality. The applicant should submit an adequate assessment of the potential impact of the proposed wind farm during and post construction on the raw water quality at point of abstraction for the Derg Public Water Supply in County Tyrone. Regard should be had to the possible influences of forestry felling and the cumulative impact with the Bundown Intake Scheme. For example there may be changes to the assimilative capacity of the Mourne Beg River and consequent ecological impacts. The potential changes in the river flow may have a bearing on the characteristics of the receiving waters downstream of the proposed development.

The Northern Ireland body - the Water Management Unit advises that the proposed site borders the Derg and Mourne Local Management Area – in particular it is in close proximity to Glendergan River, Mourne Beg River Upper, Mourne Beg River Lower and Derg River 1 Lower. Acute and robust mitigation measures are stated to be required to ensure protection of surrounding water bodies from any discharge that may damage ecological status and ensure compliance with WFD objective. Potential threats may arise from sedimentation, pollution from drainage and surface water run-off from storage/treatment areas and access roads. In order to ensure Good Status is achieved it is recommended that the applicant identify all relevant Pollution Prevention Guidelines and adhere to same. I consider it necessary that the applicant should demonstrate this prior to any grant of permission for development of this scale. Furthermore while the EIS refers to these standards, the measures would also need to be revisited in the context of cumulative impact and possibly new data.

One of the mitigation measures in the layout is to setback development works from watercourses (this excludes the man-made forestry drains) by way of a 50m buffer (This would appear to be based on a 25m setback for forestry plantations). However in the context of possible public water supply contamination or pollution of any waters where there are Atlantic Salmon and/or Otter, the distance and layout should be sufficient in critical locations to accommodate step designed settlement lagoons to manage perhaps large volumes of contaminated run-off. Due to the schematic nature of the layout drawings and lack of dimensions on submitted drawings the feasibility of buffer measures is not evident or certain.

The EIS is considered to be deficient. The information submitted does not enable a reasonable assessment of the impact of the proposed development on the viability of the Lough Mourne Water Supply following the augmentation from the Bunadownen River catchment. Logically the baseline data cannot be therefore correct in the scenario of the Intake Scheme works either pre-empting the proposed development or occurring contemporaneously. This is further complicated by the possible impact on the water table caused by the deforestation and also the possible changes in water chemistry and capacity in the context of the WFD.

11.4 Forestry/hydrology

- The felling of about 121 hectares of trees requires consent by licence for the replanting of trees over the same area in addition to a net marginal gain. Given that Forestry as a land use needs an EIS if it is greater than 50 hectares, this is a considerable scale of plantation. As in the judgement in the O’Grianna case, the forestry removal in this case could be described as being ‘fundamental to the entire project and in principle at least, the cumulative impact of both must be assessed to comply with the Directive’. Although I would argue that it is not comparable to the grid connection element as the wind operation could operate without further forestry plantation. However, if planting were not carried out it would be in breach of forestry regulations and therefore compromise the felling of trees necessary for the wind farm construction and operation. It is therefore, fundamental to the construction of the wind farm but not to its operation. While not directly comparable to the

O’Grianna case, the omission of the forestry planting amounts, in my judgement, to project splitting. The applicant has attempted to address this in the response submission. This is significant additional information and if the Board is of a mind to grant permission, the amended EIS should be publicised. The scope of information remains inadequate in respect of impacts on sites and species of conservation interest in the vicinity of the proposed plantation sites.

- The Board should note the consultant ecologist’s report on this information and the comments in respect of the ecological sensitivity of the proposed forestry locations.
- In the applicant’s response submission, details of location and planting operations are provided. Sites are delineated and quantified. While I note the synopsis of site context and impact I consider there is insufficient appraisal of the potential impacts on Natura 2000 sites within the 15km range.
- The transboundary impacts in the context of Strabane District Council’s Local Biodiversity Action Plan have not been specifically addressed. This seeks to co-ordinate with the Forest Service NI to avoid a negative cumulative impact of proposed felling with adjacent felling plans.
- I am not satisfied that the applicant has clarified if the area is prone to acidification risks and whether or not this is likely to be exacerbated by scale, extent and timing of felling, leading to potential implications for water quality.
- The interaction between tree felling of such a scale and the water table has not been adequately considered by itself, or in the context of its cumulative impact with the Bunadownen Intake Scheme and potential changes to the local hydrological regime. This is of particular concern in relation to understanding the risk of peat slide.

11.5 Roads

The information submitted does not enable a fully reasoned assessment of the impact on the road infrastructure. Nor is there sufficient data in respect of local traffic. While I note the applicant’s further comments in the response submission, the EIS remains deficient in the following respects:

- Designated construction routes associated with all heavy loads, particularly the transport and movement of steel and concrete in addition to the identified turbine delivery routes are not fully identified.
- There is no detailed structural analysis of the existing local road network which it is proposed to utilise in any capacity as part of the development (and which includes all traffic movements and grid connection works (cable trenching) in accordance with NRA DMRB). The structural analysis should include Stage 1 and 2 Falling Weight Deflectometer (FWD) testing to determine the depth of reconstruction/overlay required to allow these roads to

carry the proposed wind turbine component loading imposed during delivery, all other loadings and cable trenching and this has not been provided.

- Notwithstanding its architectural and historic status as reflected in its protected status, there is no structural assessment of Castletinn Bridge which ascertains whether or not the bridge has the structural strength to carry the proposed loading associated with the development.
- There is insufficient details of local road upgrade, maintenance and repair programme for the local road network which should be specifically based on the results of a structural analysis as above and tailored to provide the following:
 - (i) structural reconstruction/overlay required to carry and bear all loadings prior to commencement of development.
 - (ii) maintenance of the reconstructed and overlaid road condition and bearing capacity during works, and
 - (iii) necessary repair to the local road network post works.
- An adequate traffic management system has not been submitted which minimises disruption to the public during road reconstruction and overlay, maintenance and repair works and during the period of construction. (The planning authority advises that the stop-go system during cable trenching is not viable due to road widths.)
- While it is noted that details of junction upgrade of the private road with the N15 with regard to provision of adequate vision lines have been submitted, for reasons already stated further details regarding vertical alignment are needed to demonstrate capacity to fully accord with the NRA DMRB guidelines and NRA Specification for Roadworks.
- While it is noted that the applicant has submitted drawings in the response submission illustrating substantial adherence to the requirements for provision of visibility splays of 160m in each direction at all local roads junctions these have not been available to the public for comment.
- There is insufficient detail regarding topographical surveys of roads to be widened. The full nature and extent of works is not apparent. It cannot be established if there will or will not be significant consequences for drainage arrangements and removal of vegetation. Evidence of permission to carry out such works may be an issue.

In the absence of this information the Board is not in a position to comprehensively ascertain the nature and extent of direct and indirect environmental impacts of this aspect of proposed development. The survey data may have implications for haulage routes and alterations to same and also to volume of material to carry out particular works necessary for the development.

11.6 Visual Impact

- The planning authority requires a revised Landscape Impact Assessment of the eastern element of the proposed wind energy development which has appropriate regard to the 'Transitional Marginal Land' type which informs the landscape setting and context of much of the eastern element of the development. I consider the extent of information submitted in the form of Maps, Zones of Theoretical Visibility and the range of photomontages to be sufficient to enable the Board to visually appraise this aspect of environmental impact for the purposes of EIA.
- For reasons already elaborated upon in detail, I do not concur with the conclusion of the EIS that the visual impact will amount to only a moderate or mild impact that could be considered 'acceptable'. The visual impact will be significant by itself and in a cumulative context when considered in conjunction with the existing turbines within a 20 Kilometre radius. This is apparent in a range of near, mid-distant and distant views in the area. Accordingly I consider that the proposed development would have significant adverse impact on the landscape character and amenity of the area and its environs which extend into Northern Ireland.

11.7 Noise

- The Environmental Health Service of the Department of Northern Ireland is of the opinion that potential exists for a significant transboundary impact due to noise and that any impact on properties located in Northern Ireland must be assessed in accordance with the noise standards and noise prediction methodologies relevant to the Northern Ireland jurisdiction. While I consider the revised information substantially addresses this issue and demonstrates that noise levels can be controlled to acceptable levels, the information has not been available for further informed comment by either the Northern Ireland Authorities or public generally and therefore the EIA process is incomplete in this regard.

11.8 Vibration and ecology

- While Chapter 10 addresses the human impact on noise I am not satisfied that the EIS adequately addresses the vibration impacts at construction stage on ecology. In the event of salmonid spawning beds, (I accept that Freshwater Pearl Mussels are unlikely) or other vulnerable habitats being in the adjacent watercourses, the setback from watercourses may be insufficient. Clarification of setback distances is needed. This should be supported by maps of zones of influence from vibration sources such as rock blasting, piling or other such significant sources highlighting those zones that

would be critical to such aquatic priority habitats/species. This should be supported by calculations and assumptions for estimated velocity and recommended radii for sensitive receptors based on best practice for such activities near fisheries.

The EIS is deficient in this regard.

11.9 Shadow Flicker

- Of the 106 no houses assessed, some level of shadow flicker is predicted to potentially occur at 93 houses, with 13 of these experiencing no shadow flicker as a result of the proposed 49 turbine. However, of the 93 properties that may experience some shadow flicker in the worst-case scenario, only 54 of those may (without any mitigation measures) experience daily shadow flicker in excess of the DoEHLG guideline threshold of 30 minutes per day. The planning authority is concerned about 41 of these. This I consider to be a significant impact. The applicant's response submission demonstrates how the reduction of turbines numbers to 38 would significantly reduce exposure to shadow flicker. I note that even if the Board were to consider only 38 turbines, 34 residences out of a possible 54 properties would be in excess of the 30 min threshold in the worst case scenario assuming full sunshine. However it is clarified that with either the 49 or 38 turbines the SCADA technology can satisfactorily mitigate this impact.
- In the response submission, the applicant also submitted a map which will allow for identification of each numbered turbine relative to houses as numbered to allow for assessing distances and comparing turbine base elevations with relevant properties. However this has not been available for public comment and in this regard the EIA process is not complete.

11.10 Alternatives

- Chapter 3 of the EIS sets out the approach to selecting alternative sites in the context of the County Development Plan and Wind Energy Strategy and also having regard to the constraints set by European and domestic conservation objectives. By assessing 6 different sites having regard to the proposed scale of the development and environmental sensitivities of the sites a process of elimination resulted in the subject site. The choice was from among Area 1 Knockletteragh 14km², Area 2 Leagan Hill 4.5 km², Area 3 Carrickaduff Hill and Lismullyduff 33 km², Area 4 Tievemore and Groushall Hill 17 km², Area 5 Binna Hill and Crockmore 7 km² and Area 6 Finmore Hill 5Km² site. The EIS accordingly demonstrates that consideration has been taken of alternatives in terms of site selection.
- The applicant has more latterly submitted a potential alternative layout (which has not been subject to public scrutiny).

- While it is apparent that the applicant has sought to avoid direct connection with sites of nature conservation value, in view of the inadequacies of much baseline data and particularly that pertaining to the bird flight paths, the elimination of alternatives has not been fully informed.

11.11 Interactions

A matrix is provided in section 14 and summarises what are considered to be the key interactions. This is set out in section 11.13 (d) below. However arising from the deficiencies in the EIS I do not consider the interactions are accurate. Accordingly appropriate mitigation measures cannot be reliable.

I consider the more significant interactions as set out below have not been adequately described.

Visual Impact and Landscape/Cultural Heritage/Material Assets

- The proposed development will have a significant adverse impact on the landscape character in its border context. This has potential impacts on amenity and cross border connectivity and identity which in turn could impact on the development of tourism in the border region.

Peatslide and Hydrology/water supply:

- The peatslide assessment and proposed mitigation measures do not take adequate account of the risk to water pollution and public water supply.

Structural capacity of roads and Impact on heritage:

- Given the lack of structural/survey data specific road alignment/ works required, it is not possible to adequately ascertain the nature and extent and impact on features of cultural heritage interest.

Roads and Drainage

- The planning authority has raised concerns about the feasibility of excavating in the road corridor – provision of trenches and the risk to the stability of the roads which are described as bog ramparts. The loading in terms of nature and intensity may cause collapse of roads with a consequent impact on the planned drainage mitigation measures as a means of controlling the risk of water pollution. This underlines the importance of addressing the structural capacity of the roads as recommended by the Roads department of the planning authority.
- There is insufficient details of existing and projected traffic patterns and characteristics within the site to determine the busier roads and the capacity of road network to carry such traffic and impacts on same. It is not clear where roads are to be widened and if this is feasible – which may be critical in sensitive locations, e.g. upstream network of tributaries of the Bunadownen River among other rivers. Accordingly it cannot be ascertained if the road network and drainage system will be sufficiently robust to protect the sensitive watercourses.

- Pending the structural survey of the road network including haul routes it is possible that additional material will need to be extracted from some borrow pits. In this event this may have consequences for the extent of works and encroachment on water table.

Tree felling and hydrology, replanting and flora and fauna

11.12 Communication and transparency

I consider the quality of information in some of the drawings to be deficient.

- The drainage layout drawings for example which are presented in PDF format cannot be scaled from and lack dimension and therefore make it impossible to quantitatively assess the scale of the development for those relying on digital access.
- Identification of elements relative to properties is difficult. Many maps lack identification of house numbers, borrow pit numbers, compound numbers and dimensions.
- I note the EIS refers to a public consultation process yet many objectors dispute this. I do not have sufficient evidence to determine on this matter.

11.13 EIA Conclusion

As outlined in these preceding sections there are serious deficiencies in the EIS in respect of accurately establishing baseline data and determining with accuracy the nature and extent of impacts in respect of the following areas:

- Flora and Fauna
- Lough Mourne Intake Scheme form Bunadownen River
- Proposed forestry plantation sites
- Traffic generation and impact on local network- lack of evidence of structural capacity of road network.

There are also concerns relating to the adequacy of information in respect of :

- Risk to public water supply
- Nature and extent of road works
- Clarity of information on drawings

Such deficiencies ultimately compromises in my view a complete understanding of the direct and indirect effects of a proposed development. In this context and having regard to the parameters of assessment under the European Directives I consider the main impacts and their significance can be summarised as follows:

- (a) human beings, flora and fauna,

- The EIS examines impacts on human beings in terms of direct impacts on health and safety and nuisance during construction stages (traffic, noise, dust) and operation stage by shadow flicker and noise, and also in terms of the wider socio-economic impacts through Employment and investment, population, land-use, dust, tourism, interference with communication systems. renewable energy production and reduction in greenhouse gas emissions,

While the socio-economic benefits are stated to be positive, the EIS identifies that there will be varying levels of impacts on a comprehensive range of residential properties by reason of noise and shadow flicker and these are addressed by mitigation measures.

- The indirect impact on public water supply has not been adequately addressed.
- The EIS does not provide adequate baseline data on flora fauna to reasonably assess direct or indirect impacts.
- The indirect impact of Forestry replantation on bird species in particular has not been addressed
- The indirect impact on extensive tree felling on the water table and water quality has not been adequately addressed and accordingly the interaction with aquatic ecology may not be fully understood.

(b) soil, water, air, climate and the landscape,

- Soil: The most significant impact is the removal of topsoil and peat and redistribution. Over 1,000,000 cubic metres of material is to be excavated within the site with peat accounting for over half of this volume. Detailed volumes are provided in chapter 4. The soil classification is based on probe tests. A Peat management plan addresses the logistics and ecological issues e.g. peat protection, run-off and restoration in general terms
- Risk of contaminants is identified at construction stage and mitigation measures through design and management are stated to significantly reduce the risk of such an impact
- Peatslide is identified as a possible risk and a risk assessment has been carried out in an appended report. There are I consider shortcomings with this in respect of factoring in the cumulative impacts of potential changes in the hydrological regime arising from the Intake Scheme and tree felling. There may also be shortcomings with the risk assessment having regard to extreme weather events.
In this context the risk to public water supplies has not been adequately assessed.

- Surface Water is classified down to sub catchments and is identified as being most vulnerable to construction activities due to run-off and this is addressed by an extensive network of drainages and treatment measures. Direct and indirect risk to public water supplies remains a concern, particularly in absence of full consideration of cumulative impacts
- Due to the non-industrial nature of the development there will be no long term impacts on air quality. Impact on air is not identified as a significant issue. Measures to control dust dispersion at construction stage will mitigate residual effects.
- Vibration during construction is not fully addressed in terms of impact on sensitive habitats.
- Climate: The wider strategic impact of the development on climate is identified in the EIS. Over the proposed twenty-five year lifetime of the wind farm, 3,642,400 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation. The 250,431 tonnes of CO2 that will be lost to the atmosphere due to the construction and operation of the proposed development will therefore be offset by the proposed development after 20.6 months of operation. This I accept is a positive impact.
- Landscape: The EIS concludes that the landscape character and use being open moorland with extensive commercial forestry has the capacity to absorb the scale of development. I do not agree for reasons already explained that the visual impact will not be significant and adverse in terms of altering protected views and protecting the quality of the landscape either locally or in a transboundary regional context

(c) Material assets and the cultural heritage,

- The EIS is deficient in relation to describing the full extent of road works. Accuracy is further constrained by the absence of structural survey data and quantification of materials and borrow pit extraction volumes to meet these needs.
- The absence of clarity with respect to a clear travel route and implication for protecting its infrastructure is also an issue.
- The EIS identifies tourism as a material asset that will benefit from the proposed development. While the enhancement of facilities is accepted as a positive impact, the interaction with the adverse landscape impacts arising from my detailed assessment stands to negate this benefit over the longer term.

(d) The interaction between the factors mentioned in paragraphs (a), (b) and (c).

- The Matrix in Section 14 of the EIS identifies the negative impacts in respect of
 - Human Beings and Interaction with, Hydrology/Hydrogeology, Air, Landscape, Noise and Material Assets
 - Flora and Fauna and Interaction With Soils, Hydrology/Hydrogeology, Air and Landscape
 - Soils and Flora and Fauna and Hydrology/Hydrogeology
 - Hyrdo and Humans, Flora and Soils
 - Air and Humans, Flora and Soils and Material Assets
 - Landscape and Humans and Flora
 - Material Assets and Humans and Air

- Most of the negative impacts arise at construction stage whereas at operational stage the negative impacts are confined to between
 - Human Beings and Noise and Human Beings and Material Assets
 - Flora and Fauna and Hydrological.

For reasons set out in primarily my appraisal of both visual and flora and fauna impacts I do agree with the EIS conclusion that Interaction of impacts between landscape and human beings and landscape and flora and fauna are deemed to be neutral. Furthermore in view of the scope of impacts arising as summarised in sections a, b and c above and in more detail the scope of interactions has not been fully addressed.

On the basis of my assessment, the Environmental Impact Statement accompanying the application, which was lodged with An Bord Pleanála on 3rd February 2015, does not fully comply with the requirements of article 94 and Schedule 6 of the Planning and Development Regulations, 2001, as amended, due to:

- (a) The lack of baseline information and failure to provide a reasonable understanding of the loss of habitats, species, disturbance, displacement, changes in the water environment, and effects of activities on adjoining lands from the relevant development;
- (b) The failure to take account of the cumulative impacts of the proposed development and associated works taking account of the proposed Lough Mourne intake scheme from the Bunadownen River which traverses the site and potential risk to public health
- (c) The failure to adequately describe the proposed development relating to the extent of forestry plantation and the nature and extent of road widening and associated works.
- (d) The lack of details of material significance and substance in regard to impacts on built heritage such as the bridges on the surrounding road network.

Without adequate baseline information a fully informed and comprehensive EIA cannot be properly undertaken. As a result, there can be no full understanding of the loss of habitats, species, disturbance, displacement, changes in the water environment, and effects of activities on adjoining lands and sites of conservation value from the proposed development. Critically, the submitted documentation does not scientifically demonstrate that the proposed development will not have a negative

impact on any Annex I (EU Habitats Directive) Habitat, Annex II (EU Habitats Directive) Species, Annex IV (EU Habitats Directive) Species or Annex I (EU Birds Directive) species.

In conclusion I consider the EIS is deficient in scope and detail for the purposes of the Board completing a full EIA. If the Board intends to give further consideration to a grant of permission, it would be necessary to seek a revised EIS taking account of the above mentioned deficiencies in order to ensure information is accurate to carry out a complete EIA.

12 APPROPRIATE ASSESSMENT

12.1 Overview

The purpose of an Appropriate Assessment in this case is to establish and conclude whether or not the proposed development either individually or in combination with other plans or projects is likely to give rise to any significant effects, on the European site(s) within the vicinity or connected to the site. If so, it needs to be established as to whether or not the integrity of the respective site is compromised. This can be established whereby such effects on qualifying interests and their conservation objectives can be reasonably ruled out on the basis of objective scientific information and analysis to the extent that there is no significant threat.

Fifty-two sites of conservation interest within a distance of 15Km of the study area are identified in the submitted documentation and these are set out in Table 3.1 of the NIS. The name, identification code and distance from the study area are provided and give a fair indication of the potential complexity of the site context.

Croaghonagh Bog	SAC 000129	Adjoins North West boundary with very small intrusion into study area
River Finn	SAC 002301	Adjoins Southern boundary (Mourne Beg River) with small intrusion into study area, the River Finn runs to the north of the study area & receives drainage from part of the northern side of it
River Foyle and Tributaries	SAC UK0030320	Adjoins Southern boundary in two places (south bank of the Mourne Beg River & the Glendergan River).
Lough Eske & Ardnamona Wood	SAC 000163	Adjoins South West boundary with very small intrusion into study area
Monegal Bog	SAC UK0030211	689 m E
Dunragh Loughs/Pettigo Plateau	SAC 001125	4.8km SW
Donegal Bay (Murvagh)	SAC 000133	7.2 km SW
Meenaguse/Ardbane Bog	SAC 000172	9.3 km W
Meenaguse Scragh	SAC 001880	10.2 km W
Tamur Bog	SAC 001992	11.4 km SW
Lough Nageage	SAC 002135	11.4 km S
Fairy Water Bogs	SAC UK0016611	12.4 km SE
Lough Nillan Bog (Carrickatlieve)	SAC 000165	12.6 km W
Ballintra	SAC 000115	14.2 km SW
Durnesh Lough	SAC 000138	14.7 km SW

Pettigo Plateau Nature Reserve	SPA 004099	6.1 km SW
Donegal Bay	SPA 004151	7.2 km SW
Lough Derg (Donegal)	SPA 004057	7.5 km S
Lough Nillan Bog (Carrickatlieve)	SPA 004110	12.6 km W
River Foyle and Tributaries	ASSI229	Adjoins southern boundary of the study area
Croagh Bog	ASSI378	Adjoins southern boundary of the study area
Killeter Forest&Bogs&Lakes	ASSI357	271 m S
Monegal Bog	ASSI005	638 m E
Monegal Bog Part II	ASSI209	940 m E
Essan Burn & Mullyfamore	ASSI134	4.7 km S
Drummahon	ASSI383	10.7 km S
Fairy Water Bogs	ASSI008	12.3 km SE
Scraghy	ASSI300	12.4 km S
Strabane Glen	ASSI058	12.4km NE
Lough Corr	ASSI294	12.7 km SE
Baronscourt	ASSI349	12.8 km E
Sloughan & Willmount Glens	ASSI276	13.8 km SE
Kirlish	ASSI275	14.9 km SE
Cashelnavean Bog Adjoins	NHA 000122	NW boundary with very small intrusion into study area
Barnesmore Bog Complex	NHA 002375	Adjoins (within 08 m) western boundary
Meenagarranroe Bog	NHA 002437	555 m N
Lough Hill Bog	NHA 002452	740 m N
Lough Fad Bog Complex	NHA 001159	10.8 km S
Croaghonagh Bog	pNHA 000129	560m N
Lough Eske & Ardnamona Wood	pNHA 000163	1.2 km W
Owendoo & Cloghervaddy Bogs	pNHA 002046	4.8 km NW
Dunragh Loughs/Pettigo Plateau	pNHA 001125	4.8 km SW
Donegal Bay (Murvagh)	pNHA 004151	7.23 km SW
Lough Derg (Donegal)	pNHA 001992	7.5 km S
Meenaguse/Ardbane Bog	pNHA 000172	9.2 km W
Meenaguse Scragh	pNHA 001880	10.2 km W
Tamur Bog	pNHA 001992	11.3 km SW
Lough Nillan Bog (Carrickatlieve)	pNHA 004110	12.5 km W
Feddyglass Woods	pNHA 001129	13.1km NE
Tullytresna Bog	pNHA 001870	13.5 km N
Ballintra	pNHA 000115	14.1km SW
Durnesh Lough	pNHA 000138	14.7km SW

12.2 Natura Impact Statement Assumptions

It is noted that the Natura Impact Statement is based on the assumption that the conclusions of the EIS (as regards potential impacts on flora and fauna) are robust, accurate and precise. Screening out of a number of Natura 2000 sites from the Appropriate Assessment process based on insufficient data is identified by the consultant ecologist and is regarded as a critical issue. It is therefore considered that the NIS cannot reasonably demonstrate that the proposed development will not, firstly have a significant effect on a number of Natura 2000 sites including those screened out by the applicant, or, secondly, significantly adversely affect the integrity of these sites or those sites subject to stage 2 assessment alone or in combination with other plans and projects in view of the sites' conservation objectives. The impact of the proposed development on the integrity of the Natura 2000 network is,

therefore, uncertain. Where impacts of a proposed development are unclear or uncertain, the Precautionary Principle must apply and the project should not proceed.

In regard to bird species of conservation interest, in particular, the applicant has not sufficiently addressed the issues raised in the scoping responses by the Department of Arts, Heritage and the Gaeltacht and the Northern Ireland Environmental Agency. For reasons already explained in section 10.3 (page 39) of this report, this should be done by reference to the Scottish Natural Heritage Guidance on recommended bird survey methods to inform assessment of onshore wind farms (May 2014). Methodology is flawed and should be clearly explained and accompanied with mapped vantage points and data to allow independent scientific assessment of viewsheds. Having regard to the range of key target bird species and complexity of the site, further survey work over a period of at least 2 years and in accordance with appropriate methodology is required.

12.3 Adequacy of Screening Process by Applicant

The NIS identifies 4 SPAs and 14 SACs (ref section 10.3 of this report) which includes Network 2000 sites in both Ireland and Northern Ireland within a 15km radius of the site. The NIS is considered to adequately identify the conservation objectives for all these sites with the exception of the Pettigo Plateau Nature Reserve which includes the Greenland White-fronted Goose as being of Special Conservation Interest in this SPA.

Residual sites for Stage II Assessment.

Having identified the risks and relationship between the proposed development and these sites, all the SPA sites and some SACs have been screened from the need for a stage 2 assessment. Notably, the following sites have been screened out: Moneygal Bog SAC, Dunragh Loughs/Pettigo Plateau SAC, Donegal Bay (Murvagh) SAC, Meenaguse/Ardbane Bog SAC, Meenaguse Scragh SAC, Tamur Bog SAC, Lough Nageage SAC, Fairy Water Bogs SAC, Lough Nillan Bog (Carrickatlieve) SAC, Ballintra SAC, Durnesh Lough SAC, Pettigo Plateau Nature Reserve SPA, Donegal Bay SPA, Lough Derg (Donegal) SPA and Lough Nillan Bog SPA.

As a consequence of the screening process by the applicant the following sites are identified for further assessment in terms of likely impacts on the integrity of the particular site. These are; Croaghonagh Bog SAC, River Finn SAC, River Foyle and Tributaries SAC and Lough Eske and Ardnamona Wood SAC. This is mainly due to proximity and/or hydrological connection by way of site drainage.

Screening out of SPA sites.

The consultant ecologist highlights serious inadequacies in the methodological approach to bird surveys for target species and the limitations of data for scientific accuracy and precision. A further two years of methodologically correct survey work is recommended to comply with the requirements of the scoping recommendations by the NIEA and to ensure accuracy. While the additional data is acknowledged in terms of duration the consultant concludes that

The additional data as presented in Appendix 2-1 (Breeding and Winter compiled Bird Data) indicates that there is a severe deficit in Vantage Point Surveys carried out during the key time of movement for Whooper Swan and Greenland White-fronted Goose with the vast amount of vantage point surveys carried out well outside of the windows of time. The ornithological assessment has, therefore, failed to address impacts on these Annex 1 (EU Birds Directive) Bird Species.

Given the deficiencies in the bird surveys, the consultant disputes the 'None Predicted' impact as it is not reliable in respect of cumulative impacts with other projects or plans having regard to the unreliable data and the risk of barrier effect or collision where there are other windfarms in the area.

In view of the qualifying interests which relate to bird species that are quite possibly likely to use the development site and the veracity of the bird data there is no reasonable scientific basis to screen out Pettigo Plateau Nature Reserve SPA and Lough Nillan Bog both of which include the Greenland White-Fronted Goose as a qualifying interest. In this regard I note the NIS refers to Lough Nillan Bog SPA description as being '... of high ornithological importance, with nationally important populations of Golden Plover, Merlin and Red Grouse. Whilst the size of the Greenland White-fronted Goose flock has declined, the site is still of significance as it is one of the few traditional bog sites in the region that is still used by the species. Of particular note is that Golden Plover, Merlin and Greenland White-fronted Goose are all listed on Annex I of the E.U. Birds Directive.'

Alien Species

Noting the sensitivity of a range of protected habitats and species in both terrestrial and aquatic ecosystems and the risks of dispersal and sedimentation the consultant's report concludes that the screening out of several Natura 2000 sites at potential risk from infestation with Alien Invasive Plant Species is a flaw in the Appropriate Assessment Screening Process. Even taking into account the additional data supplied, all relevant concerns flagged in the Interim Report regarding the absence of a detailed Invasive Species Management and Control Plan have not been addressed.

Secondary Impacts/Indirect Impacts

The consultant's report also highlights the lack of due consideration of secondary impacts which is considered relevant in this case having regard to

- The Hen Harrier which is not a qualifying interest of a site within a distance of 15km but given the presence of this declining species at the site of the proposed development, any potential impacts on the local Hen Harrier population associated with the proposed development could have secondary impacts at other sites, such as Slieve Beagh SPA (designated for Hen Harrier) in Northern Monaghan approximately 60 km from the proposed development by reason of habitat change, windfarm development and various disturbance factors (e.g. peat extraction)
- The Whooper Swan which is not a qualifying interest of a site with a distance of 15km but which is supported by Lough Neagh and Lough Beg SPA situated approximately 80km away with its migratory route to Iceland passing through the site area. A barrier effect by itself and cumulatively could have secondary impacts on this population.
- Forestry plantation and impact on SPAs and SACs.

- All 8 of the proposed replanting sites are within 15 km (in the order of 5km) of at least one Natura 2000 site yet this is not addressed in the NIS.
- The proposed replanting in Glantane Beg is located between two SPAs being within 7.5km and 15km respectively of Stacks to Mullaghareirk Mountains/West Limerick Hills and Mount Eagle SPA to the north and Mullaghanish to Musheramore Mountains SPA to the south which are both designated for Hen Harriers. (These constitute 2 of the 6 sites designated nationally for such species.) There has been no consideration of this in the NIS.
- Tree felling and potential change in water table and chemistry and implications for hydrologically connected Natura 2000 sites.
- There are also potential secondary impacts on Lough Derg (Donegal) SPA: The site synopsis refers to The Pettigo Plateau flock of Greenland White-fronted Geese formerly used Lough Derg as a feeding and/or roost site. Inishgoosk Island appeared to be the main feeding area used. In the 1980s, the bogs were largely deserted in favour of coastal grassland sites at Durnesh Lough and Brownhall. It is believed that nowadays the geese (which probably number in the region of 100 individuals) may be feeding at least partly on the Pettigo bogs but it is not known if they visit Lough Derg. **Winter surveys and assessment of the habitat potential are required to determine the status of Greenland White-fronted Goose in the site.** Wintering waterfowl are scarce on Lough Derg due to the oligotrophic character of the system but small numbers of Tufted Duck, Mallard and Goldeneye occur. A feral flock of Greylag Goose is more or less resident in the site.

12.4 Adequacy of assessment of sites requiring Stage II Assessment as stated by the applicant.

At this stage of assessment the key issue is to establish whether or not the proposed development, either individually or in combination with other plans or projects would be likely to adversely affect the integrity of the European site(s), in view of the site's Conservation Objectives.

By identifying the pressures and threats for the qualifying interests it is stated that the direct and indirect impacts are ascertained. As the development footprint does not directly encroach on any of these sites it is concluded in the NIS that there are no perceived direct impacts on any of the sites. It is concluded that by reason of the nature, detailed design (principally drainage related) and management of the construction and operational activities, the integrity of the qualifying interests will be maintained. Pages 206-250 of the NIS list the qualifying interests and the particular pressures and threats for each habitat and species. The pathways (which are bolded in the table below) are identified and a range of measures to block these are summarised from page 251.

For reasons already highlighted in this report and summarised in the following Assessment column I do not consider that the Board can determine that the integrity of the following European sites can be protected with reasonable certainty in view of the conservation objectives. In the following table the first column lists the sites

screened in the NIS by the applicant for Stage 2 Appropriate Assessment. The second column lists the qualifying interests. The third column highlights the reason for impact and also sets out the more important pressures and threats which do not necessarily correspond for all habitats and species in the area. These include the main pathways identified. The fourth column summarises the main considerations that undermine the conclusions of the NIS. This is in addition to the fundamental issues in respect of data compilation as set out in the consultant ecologist report.

THE NIS – SYNOPSIS			ASSESSMENT HAVING REGARD TO CONSULTANT ECOLOGIST AND OTHER MATTERS ARISING - mitigation limitation
Site identified for AA	Qualifying interest	Reason for Potential likely sig. impact <hr/> More relevant Pressures and Threats	
<p>Croaghonagh Bog SAC (Site Code: 000129)</p> <p>Borders site</p>	<p>Habitat:</p> <ul style="list-style-type: none"> Blanket Bogs (Active) (Priority) 	<p>proximity</p> <hr/> <ul style="list-style-type: none"> Works and grazing Air borne pollution Groundwater abstraction Invasive species Erosion Peatslide Changes in abiotic and biotic condition Wind energy 	<p>Habitats have not been accurately surveyed. No comprehensive Invasive Species Management and Control Plan.</p> <p>The SAC is separated by a potential key haul route. In view of inadequacies regarding invasive species and the bordering location of the road there is an issue regarding transport loads. E.g Given the considerable volumes of extraction (and transport) of peat and soil stripping and likelihood of using this road. It is noted that a borrow pit in the eastern end is to be solely used for entire site prep work at beginning and there is no direct internal route. Therefore the road bounding the Bog is likely to be used. Site may be hydrologically connected and impacted upon by cumulative impacts taking account of the Bunadown Intake Scheme and tree felling on large peat based strata.. Risk from peat slide not clearly identified.</p>
<p>River Finn SAC (Site Code: 002301)</p> <p>Tributaries to SAC waters within site</p>	<p>Habitats:</p> <ul style="list-style-type: none"> oligotrophic waters – this habitat is upstream so no risk. Northern Atlantic Wet Heaths with <i>Erica tetralix</i> Blanket Bogs (Active) Priority Transition mires and quaking bogs 	<p>Receive water from drainage of development site</p> <hr/> <ul style="list-style-type: none"> Changes in abiotic conditions Mechanical removal of peat Water Quality and Pollution to surface water, peat cutting Invasive species Abstraction of groundwater Roads/machinery Invasive non-native and problem native species Quarrying/Erosion/ Landslide/pollution Wind energy Changes in biotic condition Altering Hydrological regime: height of water table; water flow Pollution from forestry activities 	<p>NIS identifies importance of maintaining hydrological regimes. Peat stability report rules out likely significant risk regarding peat movements compaction but peatslide not sufficiently dealt with as a threat. Possible underlining inaccuracies with this assessment due to failure to consider cumulative impact and changes in water table due Intake scheme and tree felling.</p> <p>Non-native invasive species stated to be not critical as it is a contained issue – but this has not been adequately demonstrated or addressed through a Control Plan.</p> <p>Drainage design to avoid residual impacts on water quality. Not sufficiently detailed at this stage. Preliminary CEMP</p> <p>There are outstanding construction details as identified by statutory authorities. E.g. Loughs Agency, Water Management Unit. In addition to above mitigation approach no change in hydrological regime is assumed but this is not based on full consideration of cumulative impacts</p>

	<p>Species:</p> <ul style="list-style-type: none"> • Atlantic Salmon and Otter 	<ul style="list-style-type: none"> • Vegetation Composition: retain typical species • Disturbance (Otter) 	<p>Risk of road stability and nature and extent of works and therefore impacts not clear.</p>
<p>River Foyle & Tributaries SAC (Site Code: UK0030320) Includes Glenderg River and Mourne Beg River both in NI - downstream also includes R. Mourne & R.Foyle.</p>	<ul style="list-style-type: none"> • Ranunculion fluitantis and Callitriche Batrachion vegetation, <p>Species:</p> <ul style="list-style-type: none"> • Atlantic Salmon and Otter. 	<p>Receive water from drainage of development site</p> <hr/> <ul style="list-style-type: none"> • risk of reduced water quality • risks of impacts by pathways (bolded above) generally of higher importance for QI habitat. 	<p>Issues for River Foyle catchment generally as above</p> <p>Issues re hydrological connection for Lough Eske generally as above.</p>
<p>Lough Eske and Ardnamona Wood SAC (Site Code: 000163) Lowerymore Catchment, which is a sub-catchment of the Eske catchment</p>	<p>Habitats</p> <ul style="list-style-type: none"> • Oligotrophic Waters - very few minerals • Petrifying Springs (priority) <p>Species</p> <ul style="list-style-type: none"> • Old Oak Woodlands • Fresh Water Pearl Mussel • Atlantic Salmon • Killarney Fern 	<p>works in road carriageway near/traversing Lowerymore River</p> <ul style="list-style-type: none"> • lack of specific design measure could pose threat to deterioration in water quality 	<p>Risk of erosion due to road works along Lowerymore River raised by PA and consequent impacts on water quality has not been adequately addressed.</p> <p>The NIS has not used the conservation objectives for Donegal Bay SPA/SAC for this site as advised by NPWS for Lough Eske SAC</p> <hr/> <p>Not all pathways sufficiently identified primarily concerning Birds (Donegal Bay) and invasive alien plant species. Changes in hydrology not fully addressed</p>

The consultant's report includes a comprehensive critique of identification of pathways for impacts on those sites carried to Stage II Appropriate Assessment. See pages 60-71. The report is critical of the lack of identification of site specific conservation objectives. E.g the NPWS report classes a particular habitat as 'bad' on a national basis whereas in fact in the case of Lough Eske and Ardnamona Wood SAC the status is classed 'Good' or 'A' which is more favourable.

All relevant concerns are concluded by the consultant to have not been addressed. In particular it has not been clarified if there will be any impact on the hydrological regime upon removal of a large area of forestry on an area with a large proportion of peat based substrate. In addition, no Invasive Species Management and Control Plan has been drawn up in order to control or eradicate invasive species listed in the Third Schedule of the 'EC (Birds and Habitats) Regulations 2011 and occurring within the development site so as to avoid dispersal. These matters are critical for sensitive receiving waters and habitats and species supported by such and as identified in the above SACs.

12.4 Conclusion

By reference to the recent High Court judgement (Kelly v An Bord Pleanála, 2013 No 802 JR) it is incumbent on the Board to identify, in the light of the best scientific knowledge in the field, all aspects of the development project which can, by itself or in combination with other plans or projects, affect the European site in the light of its

conservation objectives. The Board must have complete precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the proposed development on the European sites concerned having regard to the sites conservation objectives.

Having regard to the range of species and habitats categorised as being qualifying interest that may be connected to or in the vicinity of the site and based on the lacunae of data as identified by the Board appointed consultant ecologist and the absence of complete and precise findings and ultimately a lack of conclusions capable of removing all reasonable scientific doubt as to the likely significant effect of the proposed development, either individually or in combination with other plans and projects (namely other windfarms, the Bunadown Intake Scheme and the forestry proposals associated with the proposed windfarm) on a range of Natura 2000 site(s) in view of the sites' conservation objectives, the Board cannot in my judgement conduct a full appropriate assessment.

In view of the risk of the potential for likely significant effects and adverse impacts on the integrity of a range of European sites permission must therefore be refused.

13 CONCLUSIONS

In view of the foregoing, the following conclusions are I consider reasonable:

- The principle of wind energy at the proposed site region is acceptable in terms of meeting national energy targets and localised spatial policy insofar as the site is an area where wind energy development are open for consideration and is also substantially outside delineated environmentally and amenity designated areas.
- While the site selection is generally acceptable in the context of spatial policy strategy, the layout, scale and extent is not sufficiently informed by robust data. The Board cannot therefore be satisfied that the proposed development would not pose a significant risk to the environment which includes a range of Natura 2000 sites.
 - There is an insufficiency of data necessary to undertake a full EIA. There are significant deficiencies principally in respect of impacts on flora and fauna, cumulative impacts having regard to the Lough Mourne Intake Scheme, the proposed forestry plantations and roads and traffic data. From the information provided, the main effects cannot be fully identified; the environmental impacts cannot be adequately predicted, either directly or indirectly, in terms of their character, magnitude, duration and consequences.

[Note: It is noted that the applicant's response to submissions includes significant material information that would warrant revised public notices. I refer in particular to the revised site boundary, proposed forestry sites, flora and fauna data, proposed road alignments and provision of sightlines and noise data in addition to a revised layout. However, while the information clarifies some deficiencies, the EIS remains inadequate. It is considered that the EIS remains seriously deficient to the extent that additional information is

required that is likely to be material. This information relates to flora and fauna data, impact on a public water supply, traffic data and structural analysis of roads. There are also matters that need further clarification in relation to water and transboundary impacts.]

- Having regard to the provisions of Article 6(3) of the EU Habitats Directive, the NIS and supporting documentation and the conclusions of the Board appointed consultant ecologist, there is insufficient information to, firstly, screen out all relevant sites for the purposes of appropriate assessment, or secondly, complete an appropriate assessment in so far as the Board cannot fully determine on the basis of reasonable and objective scientific evidence the likely significant impacts by the proposed development by itself or in conjunction with other projects or plans and cannot rule out with reasonable certainty that there would be no significant adverse impacts on the integrity of a range Natura 2000 sites having regard to the respective conservation objectives. In these circumstances, having regard to the provisions of Article 6(3) of the EU Habitats Directive, the Board is therefore precluded from granting permission for the proposed development.
- Based on the information submitted it cannot be reasonably concluded that the proposed development would not have significant negative effects on material and cultural assets such as roads infrastructure and amenity trails which include many old stone bridges which form part of its indigenous character.
- Notwithstanding the inadequacies of information, I consider there is sufficient information to assess the likely visual impact.
- The proposed wind farm would extend across over 16 kilometres of upland terrain in the border region with turbines and infrastructural work being sited in close proximity to Northern Ireland. The proposed development by reason of its scale and extent would be a visually prominent feature in the wider landscape and also for residents in the immediate locality both in Donegal and County Tyrone. Noting Northern Ireland planning guidance, in a transboundary context the proposed wind farm is of an exceptional scale of industrial proportions. Furthermore, when taken in conjunction with the existing and permitted turbines to the south west it would create a significant stretch of turbines in the order of 20 kilometres along the Donegal side of the border with Tyrone. It is therefore considered that the resultant belt of turbines at this location in a cross border region would have a visually overbearing impact and would constitute a barrier effect where it is policy to promote cross border connectivity. In landscape and visual terms, the scale and extent is not sensitive to its visual or spatial context, cannot be visually assimilated into its environment and will detract from the visual amenities of the area. It would therefore have a significant adverse visual impact on the local cross border regional landscape.
- The proposed development of 49 turbines would result in a potential 406 turbines in a 20km radius of the proposed development site and would be likely to inhibit the exploitation of the area's potential for tourism derived from its natural landscape. While this is potentially in conflict with the Border Area Regional

Planning Guidelines, on balance, this is not considered to constitute grounds of refusal in view of the limited scale of tourism in the area presently and regional policy also supporting wind energy.

- The operation of the proposed turbines is not considered to constitute a significant risk to public health. With the exception of one turbine being within a distance of 400m of a dwelling, the layout has achieved separation distances comfortably in excess of the 500m recommended distance. Noise and shadow flicker levels have been assessed for all properties up to a distance of 1km from the site perimeter and are within acceptable limits by reference to current Wind Energy Guidelines. On balance, it is considered in the context of a rural area that is designated as being 'open for consideration' for wind energy projects that aside from wider visual impact, private residential amenities are likely to be reasonably safeguarded. The Board should note if it is minded to grant permission, that noting their concerns about amenities of properties within 1Km of the proposed turbines, further consultation with the Northern Ireland authorities is appropriate to complete the EIA process.
- The transboundary impacts have been assessed. Based on the submissions made, it is considered that the proposed development would have significant adverse impact primarily in respect of visual amenities of the border regional area which is characterised by both Kinletter Uplands and Headwaters of the Derg Valley. Furthermore, in the absence of further consultation it cannot be reasonably concluded that the proposed development would not be likely to have other significant adverse transboundary effects on roads and traffic, flora and fauna and water quality.
- Finally, having regard to the significant adverse visual impact on the amenities of the area and in the absence of supporting ecological data particularly in relation to certain bird species it is considered that the proposed development constitutes an unwarranted risk to the environment. In these circumstances it cannot be concluded that the proposed development would be in accordance with the proper planning and sustainable development of the area.

While I note there are some matters of detail raised in the submissions that need clarity and have not been fully addressed, I consider that in view of the substantive reasons for refusal of permission further information and assessment is not warranted.

14 RECOMMENDATION

In view of the substantive grounds for recommending a refusal of permission, I do not consider it necessary to seek further information or observations in order to make a recommendation. In light of my assessment of the submissions on file and my site inspection I recommend that permission be **REFUSED** for the reasons set out below:

- 1 The proposed development by reason of its scale and extent, by itself and also when viewed in conjunction with existing and permitted turbines in the vicinity of the site would be visually dominant, obtrusive and incongruous in the landscape in near, mid and distant views and would, therefore, be overbearing and seriously detract from the visual amenities of the wider area. Furthermore, the proposed development by reason of its scale and extent, prominence in the wider landscape and relationship with Kinletter Upland Landscape Area to the south and the Derg Valley Landscape Area to the south east would detract from the amenities of this border region in Northern Ireland. It is considered that the proposed development does not demonstrate due regard to respecting its border landscape context and would therefore be contrary to the Border Area Regional Planning Guidelines 2010-2012. The proposed development therefore would not be in accordance with the proper planning and sustainable development of the area.

- 2 The proposed development site lies within a distance of 15km from an extensive range of statutorily designated European sites (Special Areas of Conservation and Special Protection Areas) in both Ireland and Northern Ireland. The site potentially hosts a range of bird species that are listed as qualifying interests for Special Protection Areas within this catchment and also in the wider area. The site is also hydrologically connected to a number of Special Areas of Conservation through its natural drainage channels. Furthermore based on the information submitted by the applicant on 2nd October in response to the observations the applicant indicates a range of additional proposed forestry sites outside the development site and which are within a 15km distance of an additional range of Natura 2000 sites that have not been included in the NIS.

The Board has particular concern about the potential impact of the proposed development, by virtue of the disturbance, barrier effects to movement and collision risk arising from the construction and operation of the wind farm on birds categorised as being a qualifying interest and known to traverse the site and the network of SPA's in the vicinity of the site and also in the wider catchment. These bird species notably include the Greenland White-Fronted Goose, the Golden Plover, the Whooper Swan and the Hen Harrier which are known to be present in the area.

The Board is not satisfied that sufficient information has been submitted to, firstly, enable the consideration of the likely significant effects on and therefore screen out all relevant European sites for the purposes of carrying out an appropriate assessment, or, secondly to complete an appropriate assessment in so far as it cannot determine and rule out the likelihood of adverse effects of the proposed development individually or in combination with other plans or projects on the integrity of a range European sites in view of their conservation objectives. In these circumstances, having regard to the provisions of Article 6(3) of the EU Habitats Directive, the Board is therefore precluded from granting permission for the proposed development.

- 3 The Board is not satisfied that it has been adequately demonstrated that the proposed development would not pose a significant risk to a major public water supply in Lough Mourne by reason of impacting on the viability of the Bunadownen Intake Scheme. The proposed development would therefore pose an unacceptable risk to public health and undermine investment in public infrastructure and the economic provision of public resources. The proposed development would therefore be contrary to the proper planning and sustainable development of the area.

- 4 The Board is not satisfied that it has been adequately demonstrated that the proposed development would not pose a significant risk to the River Derg catchment by reason of the proposed development by itself and by its cumulative impacts with the Bunadownen Intake Scheme and tree felling activities on the quantity and quality of water in the tributaries of this catchment within the site. The proposed development would therefore pose an unacceptable risk to water quality, aquatic ecology and public health.

- 5 The information contained in the EIS and supporting documentation is considered to be deficient in a number of respects:
 - a. The information does not enable a reasonable assessment of the potential impact of the proposed development on populations of birds listed on Annex I of the EU Birds Directive due to:
 - i. Failure to carry out Viewshed analysis of vantage points;
 - ii. Failure to carry out systematic, vantage point surveys at the key times of dawn and dusk in order to identify commuting corridors for species such as Whooper Swan and Greenland White-fronted Goose (both Annex I species);
 - iii. Failure to survey water bodies outside the survey area but within the 15 km buffer zone, which may be utilised by species such as Whooper Swan and Greenland White-fronted Geese in order to identify any potential flight paths between these water bodies;
 - iv. Failure to comprehensively identify potential bird mortality associated with turbine collision owing to deficient surveys;
 - v. Failure to satisfactorily address secondary habitat loss/disturbance for birds associated with avoidance; and
 - vi. Failure to identify potential cumulative impacts through a “Barrier Effect”.

 - b) The information does not enable a reasonable assessment of the potential impact of the proposed development on Habitats listed on Annex I of the EU Habitats Directive due to:
 - i. Lack of evidence for a systematic assessment of habitats;
 - ii. Lack of quantitative vegetation analysis for habitats of high importance (no less than five Annex I Habitats, including one priority habitat were identified as being present within the survey area) that may be subject to significant impacts due to a particular plan or project; and

- iii. The carrying out of flora/vegetation/habitat surveys at inappropriate times of the year.
- c) The information does not enable a reasonable assessment of the potential impact of the proposed development on Flora Protection Order species – primarily owing to the lack of evidence of targeted, species-specific surveys.
 - d) The information does not enable a reasonable assessment of the potential impact of the proposed development on species listed on the Third Schedule of the European Communities (Birds and Natural Habitats Regulations) of 2011 due to :
 - i. The implications regarding the potential impacts associated with the potential spread/dispersal of a number of alien invasive plant species has not been satisfactorily addressed within the EIS. There is no specific Alien Invasive Plant Species Control and Management Plan referred to.
 - ii. Although the Alien Invasive Species Himalayan Balsam (*Impatiens glandulifera*) is listed in Appendix 6-2 as occurring at the site, it is not referred to in the text of the Flora and Fauna chapter of the EIS. This alien invasive plant species is particularly problematic within riparian systems. Given the S-P-R linkages present between the proposed site and a number of Natura 2000 sites with qualifying interests vulnerable to the impacts of alien invasive plant species, this is a major oversight.
 - e) The information does not enable a reasonable assessment of the potential impact of the proposed development on Annex II/IV Species (EU Habitat Directive) due to:
 - i. Implications of impacts of the proposed development on water quality/hydrology and consequent impacts on Atlantic Salmon (Annex II), Otter (Annex II/IV) and
 - ii. Inadequacy of assessment of the proposed development on the local bat population owing to the short-term nature of surveys carried out.
 - f) The information does not enable a reasonable assessment of the potential impact of the proposed development on flora and fauna during preparation/construction, operation and decommissioning - It is deemed that owing to the deficiencies in the base-line ecological studies as described, a robust assessment of likely impacts and any associated mitigation measures is not possible.
 - g) The information does not enable a reasonable assessment of the potential impact of the proposed development in association with other key impacts due to:
 - i. Inadequacy/errors in the calculation of bird mortality associated with wind turbines – the collision modelling was based on base-

- line data collated from inadequate surveying, thereby invalidating the collision model;
- ii. Inadequate assessment of secondary habitat loss for birds associated with “Barrier Effects”;
 - iii. Inadequate assessment of potential impacts on water quality/hydrology owing to a failure to comprehensively identify and quantify potential cumulative impacts; and
 - iv. Potential failure to take into account changes in hydrology associated with (i) the Bunadownen Intake Scheme and (ii) the removal of large tracts of forestry through decrease in transpirational losses.

The Board cannot therefore be satisfied that the proposed development would not a significant adverse impact on the ecological environment. The proposed development is not therefore in accordance with the proper planning and sustainable development of the area.

Suzanne Kehely
Senior Planning Inspector
3rd March 2016