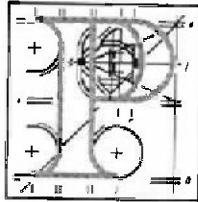


An Bord Pleanála



Inspector's Report

Development:

10-year permission to construct a wind farm at Derrineanig, Cleanrath North & Cleanrath South, Inchigeelagh, consisting of 11 no. turbines with maximum height of 150m, access road, wind monitoring mast (100m), 2 no. borrow pits, underground electricity cabling, sub-station, all ancillary works, and underground grid connection at the townlands of Cloontycarthy, Cleanrath North, Cleanrath South, Derrineanig, Derrineanig, Turnaspidogy, Milmorane, Coomlibane, Rathgaskig, Derragh, Augeris, Gurteenakilla, Carrignadoura, Gurteenowen, Gurteenflugh, Lyrenageeha and Lackabaun, Co. Cork.

Planning Application

Planning Authority : Cork County Council
Planning Authority Register Ref. : 15/06966
Applicant : Cleanrath Windfarm Ltd.
Type of application : Permission
Planning Authority Decision : Grant permission

Planning Appeal

Appellant(s) : Sharon Clatworthy
: West Cork Ecology Centre
: Con Lehane & Mick O'Connell
: Cleanrath Windfarm Ltd.
: Klaus Balz, Hanna Heubach & Others

Type of Appeal

: 1st & 3rd Parties v Grant

Observer(s)

: Con Ó Briain & Máire Uí Bhriain
: Edward Cook
: Macroom District Environmental Group

Date of Site Inspection

: 7th & 8th September and 4th & 5th
November, 2016

Inspector : **Michael Dillon**

DECISION QUASHED

1.0 Site Location & Description

- 1.1 The wind farm site, with a stated overall area of 111.7ha (the permanent footprint being approximately 10.55ha), is located some 2.5km northwest of the village of Inchigeelagh, in Co. Cork. The site straddles Derrineanig Hill (304m) which forms the divide between the Toon River valley to the north and the Lee River valley to the south (the Toon flowing into the Lee just to the east of Toon Bridge – some 9km from the wind farm site). Derrineanig Hill forms part of a range of hills north of the Lee River valley – extending from higher ground to the west on the Cork/Kerry border. The site comprises undulating rough grazing land for the most part (heath/peatland/exposed rock) divided by post & wire fences. There is a block of semi-mature and mature coniferous forestry within the northern and eastern parts of the site, with newly-planted and semi-mature coniferous forestry in smaller parcels across the middle section of the site. The site is accessed by a number of tracks with different entrance points from the public road network – including a series of agricultural gates. There is a stayed wind-monitoring mast within the wider site as outlined in blue. There is evidence of current small-scale peat harvesting and previous large-scale peat harvesting around Derrineanig. There are agricultural tracks criss-crossing the site with tractor tracks evident on the summit of Derrineanig Hill. The site was grazed by sheep and horses on the dates of site inspections with evidence of recent cattle grazing. There was evidence of older burning of vegetation across much of the southern portion of the site with further evidence of recent burning of vegetation (as late as summer/autumn 2016). There has been some fly-tipping adjacent to tracks between turbines T1, T3 & T5 – much of it now overgrown with briars.
- 1.2 Access to the site will be from three different points. The main access for construction and outsize loads is from the L74332 to the north – within the townland of Cleanrath North. Roads in this area are narrow and winding, wide enough for only one vehicle in sections. Access for workers will be via county road L7433 – within the townland of Derreenacarton. This road is wide enough for one vehicle only. This access point is opposite an entrance to a farmyard. Construction/operational access for the substation will be from a county road (no number indicated) – within the townland of Cleanrath South. This is a narrow twisting road – wide enough for only one vehicle. This site straddles this latter road – along the southwestern and western sides of the wider site – but turbines are all located to the northeast of it. All roads in the immediate vicinity are narrow and twisting and most have grass growing along their centres. The 80kph speed restriction applies in this area. There are no public footpaths and no public lighting in the area. Traffic on surrounding roads was light on the dates of site inspection.

- 1.3 There are fine views from the site in all directions from the summit of Derrineanig Hill. There are wind farm developments visible away to the north, east and south within Co. Cork and to the northwest within Co. Kerry. There are no wind farm developments within a 10km radius of the site, although planning permissions have been granted for a number of wind farms within this radius – many the subject of Judicial Review.
- 1.4 The grid connection route from the site follows narrow county roads/forest tracks (from some of which all tarmac/adam has been washed away) through Rathgaskig townland (to connect to the proposed Derragh wind farm sub-station). This area is sparsely populated with only intermittent houses in Rathgaskig townland. From the Derragh wind farm connection point, the route travels through Augeris townland (the road here being wide enough for two vehicles to pass); then back onto narrow county roads through Gorteenakilla and Gurteenowen townlands into a network of culs de sac leading to Lackabaun townland. This area from Augeris onwards is flanked by more one-off houses than that part of the route closer to the wind farm. In Lackabaun townland, the route follows a private farm track zig-zagging up to the mountain pass on the border with Co. Kerry (approximately 450m OD). [The route within Co. Kerry was the subject of a separate planning application to Kerry County Council. Permission was granted, and no appeal was lodged with the Board. A new access road and a base for the new sub-station at Coomataggart within Co. Kerry have recently been completed. It is proposed to connect the wind farm to this proposed new sub-station at Coomataggart].
- 1.5 Both the wind farm site and the grid connection route are located within a Gaeltacht area.

2.0 The Proposed Development

- 2.1 A 10-year permission was sought on 22nd December 2015, for a wind farm development (33MW) as follows-
- 11 no. turbines (T1-T11) – maximum blade tip height of 150m and rotor diameter of 117m. Colour to be matt-grey. Exact model not yet decided, but all to have three blades, to be geared and to rotate in the same direction. Circular foundation indicated as 19m in diameter and 3.5m deep (but it is acknowledged that bases could be hexagonal or square-shaped). Turbines are located at ground levels varying from 189m to 259m OD.
 - Cable-stayed, wind anemometer mast of up to 100m in height, of triangular lattice construction, to southeast of T10 at 206m OD (to replace existing monitoring mast at this wind farm site).
 - 38kV electricity sub-station (50m x 23m) and surrounded by 2.5m high palisade fencing to southeast of T10. Single-storey control building (158m²) with pitched roof (6.1m high) within the compound.

- Two borrow pits – one at T5 (7,614m²) and one at T10 (8,720m²).
- Underground cabling of 20kV to connect turbines to the sub-station.
- Water supply harvested from roof rainwater.
- Foul effluent to be discharged to wastewater storage tank and tankered off the site for disposal.
- Surface water disposal to ground.
- Upgrading of existing (1.9km) and provision of additional (7.7km) internal access roads (6m in width). Floating roads to be used where peat depth is greater than 2.0m.
- Two construction access points in the townlands of Cloontycarthy and Cleanrath North (L74332 & L7433) the former for outside loads.
- Two alternatives for an underground grid connection: firstly, to proposed 38kV sub-station at wind farm at Derragh and secondly direct to the site of a proposed 110kV sub-station at Coomataggart, Grousemount, Co. Kerry (following the original indicated grid connection route for the Derragh wind farm to Coomataggart). The distance from the wind farm site to the proposed Coomataggart sub-station is 15.6km – the final 2.0km of which is within Co. Kerry.
- New access track and upgrade to existing and proposed junctions and sections of public roads on proposed delivery route from the L3402.
- Temporary construction compound (50m x 80m) beside T1.
- Sign, measuring 1.8m x 2.4m high at site entrance.
- Felling of 10.9ha of coniferous plantation with an additional 2.65ha to prevent turbulence effects.

2.1.1 The application is accompanied by the following-

- Environmental Impact Statement (EIS) – contained within two volumes. Volume 1 contains the Non-Technical Summary, Main Document and Appendices. Volume 2 contains a series of photographs and photomontages.
 - Natura Impact Statement (NIS).
- Letters of consent from landowners to the making of the planning application.
- Consent of Cork County Council to the use of public roads within which to lay cables.

2.2 Unsolicited additional information was received from the applicant on 19th January 2016, in the form of a composite map of the wind turbine element of the project.

2.3 Unsolicited additional information was received from the applicant on 3rd February 2016, in relation to maintenance of the 24 no. site notices erected to advertise the proposed development.

- 2.4 Unsolicited additional information was received from the applicant on 17th February 2016, in the form of rebuttal of 3rd party objections.
- 2.5 Following a substantial request for additional information, the submission of the applicant, received on 12th April 2016, is of note for the following-
- There is no change to the proposed development layout.
 - Details of drainage design submitted.
 - Details of drainage to maintain flush conditions in proximity to T4 & T9.
 - Kerry Slug Derogation Licence has been obtained.
 - Surveys for Otter were carried out at wind farm site and along grid connection route, and sections of turbine delivery route, where junctions are to be altered.
 - Justification for Merlin observations on the site.
 - Map indicating position of houses relative to turbines.
 - Noise monitoring rationale and additional survey work at new Point C.
 - Waste management proposals – including Outline Construction Waste Management Plan.
 - Archaeological Report in relation to distance of grid connection route from Recorded Monuments.

3.0 Development Plan & Other Guidance

3.1 National Policy

3.1.1 Guidelines for Planning Authorities on Wind Farm Development and Wind Energy Development 2006:

The Guidelines offer advice on planning for wind energy through the development plan process and in determining applications for planning permission, and are intended to ensure consistency of approach in the identification of suitable locations for wind energy developments, and acknowledge that locational considerations are important. These considerations include ease of vehicular access and connection to the electricity grid. It is acknowledged that visual impact is amongst the more important issues when deciding a particular application. I would note that whilst there are proposed changes to these Guidelines – “Proposed Revisions to Wind Energy Development Guidelines 2006 – Targeted Review in relation to Noise, Proximity and Shadow Flicker” (December 2013) – no changes have been adopted to date, and the 2006 Guidelines remain in force.

3.1.2 Government Policy

Outlined in a number of government policy documents such as the National Climate Change Strategy 2007-2012, National Spatial Strategy 2002-2020, Towards 2016 – Ten Year Framework for Social Partnership

Agreement 2006-2015, National Development Plan 2007-2013, Energy White Paper – “Delivering a Sustainable Energy Future for Ireland” (2007), National Energy Efficiency Action Plan; it is policy to promote the production of electricity from renewable resources such as wind power, in order to meet demand, reduce emissions and meet commitments under the Kyoto Protocol. The White Paper – “Ireland’s Transition to a Low Carbon Energy Future 2015-2030”, issued by the Department of Communications Energy & Natural Resources, promotes the idea of a carbon-free energy sector by 2050.

3.2 Regional Guidelines

South West Regional Planning Guidelines 2010-2022:

Objective RTS-09: Energy and Renewable Energy, promotes the development of renewable energy resources in a sustainable manner. In particular, development of wind farms shall be subject to:

- The Wind Energy Planning Guidelines.
- Consistency with proper planning and sustainable development.
- Criteria such as design and landscape planning, natural heritage, environmental and amenity considerations

3.3 Development Plan

Cork County Development Plan 2014-2020:

- There is a Wind Energy Strategy contained within the Plan. The development is located within an area ‘Open to Consideration’ – indicated at Figure 2.7 of the EIS. The Plan states at Objective ED 3-5- “This area comprises almost 50% of the County area. Within these areas there are locations that may have the potential for wind farm developments but there are also some environmental issues to be considered. This area has variable wind speeds and some access to the grid”. Commercial wind energy development is open to consideration in these areas where the proposed development can avoid adverse impacts on:
 - Residential amenity particularly in respect of noise, shadow flicker and visual amenity;
 - Urban areas and Metropolitan/Town Green Belts;
 - Natura 2000 Sites [SPA and SAC], Natural Heritage Areas [NHAs] or adjoining areas affecting their integrity;
 - Architectural and archaeological heritage;
 - Visual quality of the landscape and the degree to which impacts are highly visible over wider areas.
- The northern portion of the site lies within Landscape Character Type 12(a) – Rolling Marginal Middleground. The southern portion, lies within Landscape Character Type 15(a) – Ridged and Peaked Upland.

- There are a number of Scenic Routes in the vicinity of the site – indicated at Chapter 5 of Volume 2. Of note is Scenic Route S26 to the north of the site and S28 to the south of the site. In addition, S32 runs along the south side of Lough Allua and S35 runs along a county road to the east of Inchigeelagh. This section of the Plan notes that landscapes are living and changing and that it is not proposed that development be prohibited along these Scenic Routes.

3.4 Local Area Plan

Macroom Electoral Area Local Area Plan 2015:

The LAP deals primarily with settlement issues. The closest village is Inchigeelagh – 2.5km to the south.

4.0 Planning History

Ref. 15/1164: Permission granted by Kerry County Council on 7th July 2016, for that portion of the underground grid connection for the current wind farm/grid connection appeal, which lies within Co. Kerry. Approximately 2.0km of the grid connection is within the townland of Grousemount, Co. Kerry – to connect to a proposed electrical transformer station (referred to as Coomataggan) to serve a proposed wind farm at Grousemount (ref.10/1333). Construction work is under way at this site.

Ref. 11/5245: Permission refused by Cork County Council to Cleanrath Windfarm Ltd. for 11 no. wind turbines (height of up to 126m), meteorological mast, sub-station, 2 no. borrow pits and ancillary works on this same site. On appeal by the 1st Party to the Board (**PL 04.240801**), permission was granted on 29th April 2013, subject to conditions. This decision to grant permission was the subject of Judicial Review by Klaus Balz & Hanna Freubach (2013 No. 450 JR). The decision of Barton J, delivered on the 25th day of February 2016, was to quash the decision of the Board on the grounds that Appropriate Assessment had not been properly carried out.

Ref. 12/5270: Permission granted by Cork County Council to Framore Ltd. for construction of six wind turbines and associated infrastructure at Derragh townland (approximately 2.0km to the west of the current appeal site). On appeal by a 3rd Party to the Board (**PL 04.242223**), permission was granted subject to conditions. This decision was the subject of Judicial Review by Pól Ó Grianna & Others. The decision of Peart J (2014 No. 19 JR) was to remit the case to the Board for further consideration, as the grid connection had not been considered under EIA and AA. The Board sought additional information from the applicant in relation to the grid connection. When a response was received, the Board assigned a

new number to the case (**PL 04.245082**). The grid connection indicated was to Coomataggart, Grousemount, Co. Kerry. By Order dated 15th June 2016, the Board granted planning permission for the wind farm – subject to conditions. The permission did not provide for the grid connection (as permission had not been sought for it) – the route of the grid connection was indicated in the revised proposals. There is no development to date on foot of this permission. [I note that drawings submitted with the current appeal incorrectly state the Board's reference numbers for this wind farm at Derragh – mistakenly quoting the Board's reference number for a wind farm at nearby Barnadivane, Co. Cork]. The decision of the Board in relation to PL 04.245082 is the subject of Judicial Review to the High Court (2016 No. 643 JR) with no decision to date.

5.0 The Planning Authority's Decision

By Order dated 3rd June 2016, Cork County Council issued a Notification of decision to grant planning permission subject to 10 no. conditions – the principal ones of which may be summarised as follows-

1. Development to be carried out in accordance with plans and particulars submitted on 22nd December 2015, and 12th April 2016.
2. Turbines T3, T4, T6, T7 & T9 shall be omitted.
3. Permission is for ten years.
4. Operational period shall be for 25 years from the date of commissioning of the wind farm.
5. Relates to meadow flicker compliance modelling.
6. Requires oversight by competent person of all construction mitigation measures.
7. Requires submission of a Transport Management Plan. All deliveries to the site shall be from the L3402.
8. Requires applicant to carry out a road condition survey prior to commencement of development.
9. Requires payment of a bond of €100,000 for damage to roads.
11. Relates to a structural survey of the bridge over the Toon River on the L74332.

17. Requires submission of a detailed Construction and Environmental Management Plan (CEMP).
27. Relates to aeronautical safety requirements.
29. Relates to noise standards.
30. Relates to a noise monitoring programme.
32. Requires submission of a Habitat Restoration and Enhancement Plan to mitigate/compensate for loss of or damage to habitats of biodiversity value, including peatland habitats and the habitat of the Kerry slug.
34. Relates to archaeological requirements for two recorded monuments along the grid connection route.
35. Relates to archaeological requirements for lands around T6.
38. Requires engagement of a suitably qualified engineer to supervise works on bridges CH 2 & CH 6 on the grid connection route – to ensure structural integrity of heritage structures.
39. All signage relating to the site to be bilingual (Irish and English).
40. Requires payment of a Special Development Contribution of €128,250 for roads improvements on the L3402, L7435, L7434, L7433 and L7432.

6.0 Grounds of Appeal

The 1st Party has appealed against condition no. 2 of the decision to grant permission. In addition, there are four 3rd Party appellants. The documentation submitted is both extensive and comprehensive.

6.1 1st Party Appeal

- 6.1.1 The appeal from McCarthy Keville O'Sullivan, agent on behalf of the 1st Party, Cleanrath Windfarm Ltd, received by the Board on 29th June 2016, can be summarised in bullet point format as follows-
 - The applicant has engaged in further and more detailed assessment of the site, including ground conditions, ecology and impact on humans to proof the original proposal (ref. 11/5425) for a layout of 11 turbines at this site. Some small changes have been made – including change to the delivery route for turbines.

- The planning authority issued a considerable request for additional information in relation to ecology, the environment (noise in particular) and archaeology. A comprehensive response was submitted, and permission subsequently issued.
- Issues relating to hydrology were reviewed by O'Callaghan Moran (engaged by Cork County Council for the purpose). OCM had no objection to the development on hydrological grounds.
- The Environment Section of Cork County Council had no objections on noise grounds.
- The Heritage Officer was satisfied with the proposal in relation to Appropriate Assessment (AA).
- The Archaeologist for Cork County Council was satisfied with the proposal.
- The Roads Section of Cork County Council was satisfied with the proposal.
- Condition 2 has required the removal of five turbines. The Heritage Officer was concerned in relation to the impact on Dry heath and Wet heath/Blanket bog (Active) habitats on site and on Snipe, Kestrel, Woodcock and Golden plover.
- The total loss of peatland habitat is 5.09ha. There is 185ha of this habitat within the wider site. Such a loss cannot be considered substantial. Some 3.5ha of land which is now under conifer plantation will be felled for turbulence mitigation reasons and will be restored as part of the Habitat Management and Restoration Plan. There will be a net loss of only 1.5ha of peatland habitat. In the event that the Board is satisfied to grant planning permission, the applicant can reinstate an additional 5ha of recently-planted coniferous forest back to peatland mosaic habitat. Significant areas of similar type habitat exist in the wider area (as estimated from 2005 aerial photography). This habitat type is mainly distributed west and northwest of the appeal site. The loss of 5.09ha will be insignificant in terms of what exists in the wider area.
- Peatland habitat surveys were undertaken at various times between October 2010 and December 2015, for planning application reasons. The site was further visited on 20th June 2016, for the purposes of making the 1st Party appeal. The peatlands on this site are not 'intact'. All have been modified to some extent and none are in favourable conservation condition.
- The site comprises a mosaic of Northern Atlantic wet heath with *Erica tetralix*, European dry heath, Exposed rock, Blanket bog and Acid flush. All areas are subject to heavy grazing and subject to encroachment from conifer plantations. Peat has also been harvested from this area and associated drainage put in place.
- Northern Atlantic wet heath with *Erica tetralix* is an Annex I habitat. In this instance it is dominated by Purple moor grass, and lacks the 50% cover of positive indicator species – with less than 15% cover

of ericoid species and supports less than 10% bryophyte and lichen cover to be considered in favourable conservation status.

- European dry heath habitat is limited (only 0.3ha within the wider study area) – with 0.05ha impacted by the development. It is fragmented and degraded and does not contain 50% cover of indicator species.
- Blanket bog (Active) is an Annex I Priority habitat. It is fragmented on the site and generally occurs along with small areas of Northern Atlantic wet heath and Acid flush. The larger areas of this habitat have been avoided in the turbine and road layout. All has been subject to some degree of drainage and cutting. Whilst still active, it has a degraded hydrology. Scrub and coniferous plantation has encroached into the habitat. For the reasons above, the conservation status of this habitat is not considered to be favourable.
- Acid flush is widespread within the study area – particularly the southern and eastern sections. This is not an Annex I habitat. Drainage has impacted on the amount of this habitat remaining. Some of this habitat type has formed because of drainage of peat for harvesting.
- The constraints-led design of the proposal avoided the best peatland habitats on the site – there being two areas of largely intact blanket bog within the wider site (north of T5 and west of Cleanrath Lough). Much of the site is subject to drainage for agriculture, forestry and peat harvesting, resulting in encroachment of scrub and coniferous trees.
- Mitigation measures for protection of wet habitats include the following:
 - Use of porous bases where infrastructure is located within Acid flush habitat.
 - Surface water drainage measures to contain peak run-off flows from the site.
 - Use of dams on drains to encourage water retention.
 - 50m buffer between all turbine bases and the nearest watercourse.
- Bird surveying has continued on this site since the planning application was lodged. Information gleaned from surveys carried out in 2016, does not alter the conclusions reached following earlier surveys for the EIS.
- Snipe is an Amber-listed species in the Birds of Conservation Concern in Ireland 2014-2019 (BoCCI). The species does not appear on Annex I of the Birds Directive. Sightings were not frequent. Snipe was not recorded in a survey of 20th June 2016. Young forestry is the most suitable habitat for this species. Closed canopy forestry is not considered suitable habitat for this species. The site is no more important than any other open upland habitat

for breeding purposes. Snipe on this site is of local importance only.

- Kestrel is an Amber-listed BoCCI species. The species does not appear on Annex I of the Birds Directive. The species was encountered in surveys for the EIS and again in December 2015, in January-May surveys, but not in June 2016. The birds using the site are of local importance. The species is known to be susceptible to collision with turbines. A possible nesting site was identified in farmland to the northeast of the main study area. The population is of local significance only.
- Golden plover is a Red-listed BoCCI species. The species is a winter visitor – not considered to be breeding on the site. The species has been observed on site during studies – extending to one fly-over in May 2016. Collision mortality would not be significant in terms of overall numbers of the species, regard being had to the numbers occurring during survey work.
- Woodcock was not recorded during breeding bird surveys. Surveys in winter 2015 recorded the species. Dedicated breeding surveys in June 2016, recorded no breeding activity.
- The omission of five turbines would not result in any significant reduction in the impact of the proposed development on the ecology of the area. These turbines should be allowed by the Board.

6.1.2 The appeal is accompanied by the following documentation of note-

- Habitat Restoration and Enhancement Plan – dated June 2016. This document focuses on wet habitat and Kerry slug restoration/enhancement/management.

6.2 3rd Party Appeals

The appeals received are from the following-

- Sharon Clatworthy, received on 16th June 2016.
- West Cork Ecology Centre, received on 24th June 2016.
- Don Lehane & Mick O'Connell, received on 28th June 2016.
- Noonan Linehan Carroll Coffey, Solicitors, agent on behalf of Klaus Balz, Hanna Heubach & Others, received on 30th June 2016.

6.2.1 The issues of note are summarised briefly in bullet point format as follows-

- Conditions of the permission are contradictory – particularly nos 2 & 37.
- There is no precedent for a higher noise level of 43dB(A) over 40dB(A).
- One of the noise monitoring points was located next to a saw-mill and working farmyard, and so would naturally give a higher background noise level.

- A 35dB(A) night-time limit should be imposed on this development.
- Condition 5 suggests that shadow flicker of more than 30 minutes per day can be allowed – so long as the total is not more than 30 hours per annum. Shadow flicker of 30 minutes per day should be a maximum.
- The occupants of house H4, which is to the north of the hill, will likely suffer more shadow flicker in the evenings – just when the occupants would be relaxing after work.
- Increased run-off from this site will have a negative impact on The Gearagh SAC. The anastomosing properties of the Toon River within The Gearagh SAC are being undermined by the creation of a single channel through the SAC due to the increased run-off from the upper reaches of the catchment and consequent increases in destructive flash-flooding. Flood attenuation measures to be put in place on the site will in no way substitute for the natural soakage of the heaths and bogs to be destroyed on this site. To understand the hydrology of the river takes years of measurements and observations. No attempt was made by those compiling the EIS to contact local people with knowledge of the river. Flood protection measures at other wind farms are completely ineffective. Floods wash away channels, roads and farmland. Attempts to control heavy discharges from wind farm sites can result in bog bursts and land-slides. Hydrologists compiling the EIS did not visit the damaged areas of The Gearagh.
- The scientific evidence presented by the applicant was accepted by Cork County Council, whilst that presented by objectors was dismissed.
- There is a danger that accidental spillage of contaminants will enter the Toon River and The Gearagh SAC.
- The site is a unique ecological area which is worthy of protection from development. This is reflected in the decision of the Council to limit five turbines. The site contains habitats and species of high biodiversity value. Permission should have been refused for the entire development.
- Cork County Council did not give sufficient consideration to the objections lodged by local people.
This application is not the redesign of a previously-approved scheme, as the previous grant of permission from the Board was quashed by the High Court.
- The carbon used in the creation of this wind farm and the destruction of peatlands will far outweigh the clean energy benefits of electricity created from wind power. The cost of transmission and the necessity to have other forms of electricity generation (in the event of there being no or little wind) results in wind farms not being nearly so energy-efficient as claimed.

- The EIS submitted for the Derragh wind farm and the EIS submitted for the Cleanrath wind farm contradict each other – particularly in relation to winter bird surveys and White-tailed sea eagle studies.
- Excavation could impact on a spring serving The Farmhouse, Rath an Ghascaigh.
- Drainage measures proposed for this site are not site-specific and are general in nature – such as are indicated by the applicant for any wind farm development.
- Welfare and wishes of the community should have primacy over those of the developer. No special status can be afforded to the developer.
- Residential property in the area will be devalued.
- Noise nuisance will result for residents of the area – particularly in combination with the Derragh wind farm proposal. This can have a detrimental impact on health – particularly in relation to low frequency noise. Sleep patterns can be affected. There are a number of studies which show that wind farms have detrimental impacts on human health.
- Wind turbines can negatively affect people with epilepsy, and can result in other health impacts from noise and sleep disturbance.
- Turbines will be unsightly and will alter the landscape character. Photomontages underestimate the impact of the development. Some of the viewpoints chosen for the EIS are not representative. These turbines are on elevated ground and will entirely dominate the landscape.
- High voltage cables, even if underground, can impact negatively on peoples' health. It is not clear if 38kV will pass through each of the three underground cables at the one time.
- The Targeted Review of the Wind Energy Guidelines 2013 recommended stricter limits in relation to siting of turbines, noise and shadow flicker. No shadow flicker should be permitted to occur at nearby residences.
- Sediment entering watercourses will affect aquatic ecology – including the Freshwater pearl mussel in the Toon River. Discharge to vegetation will not be suitable on steep ground during heavy rainfall where ground is already saturated.
- Monthly rainfall has been under-estimated, and does not account for heavy rainfall events. Climate change makes heavy rainfall events much more likely. All drainage from this area ultimately ends up in Cork City and can contribute to flooding there.
- Scenic Routes S23, S26, S27 & S28 will be negatively affected by this development.
- Distracted drivers looking at wind turbines could cause traffic accidents.
- Turbines will result in interference with television and broadband signals.

- The Planning Report of Cork County Council had no regard to the fact that the decision of the Board to grant planning permission for 11 turbines at this site had been overturned by the High Court.
- Conditions attached by way of grant of permission are insufficient to protect the environment.
- There will be little or no employment or economic benefit to the local community from this development.
- The house of the Fourth 3rd Party appellant is located only 635m from the closest turbine. The family business (growing shrubs and making flower arrangements) is threatened by this development. There is no way of compensating the family for this loss and the development would, therefore, be in breach of their Constitutional rights to respect for their family life and the peaceful enjoyment of their home, and their right to earn a livelihood from their property.
- The additional information submission to Cork County Council of 12th April 2016, was substantial, and objectors were not notified of its receipt.
- The Board is biased in favour of wind farm developments, just because of National Policy in favour of renewable energy. However, there are also National policies in favour of promoting sustainable rural enterprise and preserving viable lifestyles supportive of the rural economy.
- The 2006 Wind Farm Guidelines are out of date and were from a time when wind turbines were smaller. The noise condition recommendation is outdated (derived from an old ETSU-R-97 standard). The Board should have regard to the Targeted Review of the Wind Energy Guidelines 2013.
- The developer was not engaged with the local community in any meaningful way. The public meeting in Ballyvourney in December 2015, was poorly attended.
- Blades could fall off turbines, towers can collapse and nacelles go on fire. Ice throw is another safety concern. There have been a number of lightning strikes/fires/blade malfunction at turbines in Ireland. The 500m setback requirement is inadequate to protect the safety of nearby residents.
- The grid connection route is too close to houses. People living close to the route or using it for recreation will be subjected to unacceptably high levels of electromagnetic radiation. There is no information regarding magnetic flux density over ground level for the proposed 38kV cable when operating at its maximum design level.
- The narrow roads in the area will not be able to accommodate the proposed level of construction traffic; resulting in traffic hazard and obstruction of road users.
- The health and safety of workers at the wind farm will be endangered.

- The EIS submitted does not contain sufficient information to allow the Board to make a decision in relation to EIA.
- Cable-laying will be disruptive to local traffic and may result in longer delays than anticipated – particularly where there is rock to be excavated. Cost, rather than convenience of local people seems to have been the determining factor in selection of the route.
- The number of existing, permitted and proposed wind farms in the area undermines the tourism potential of the area.
- County Cork is providing more than its fair share of renewable energy within the country.
- The site is zoned for agricultural use, and industrial turbines are not an appropriate use within this zoning.
- Peace and tranquillity of the area will be disturbed and industrial wind farms are not considered an appropriate use within this area.
- The development contravenes a number of Development Plan policies in relation to protection of rural communities, recreational facilities, business development in rural areas, tourism, protection of the natural and built environment.
- Documentation on this file was not available for consultation by the public until the third week of January 2016 – although the application had been received by Cork County Council on 22nd December 2015.
- Roads in the area of the Toon River have frequently been flooded in the past, and the proposed development will exacerbate this problem.

6.2.2 The appeals are accompanied by the following documents of note-

- Annotated maps (not exacts) showing channels of the Lee & Toon Rivers in 1985 and 2015.
- Annotated colour aerial photograph of Toon River at Toon Bridge.
- Report from Professor David Harper of University of Leicester (dated 15th April 2015) in relation to The Gearagh.
- Title page extract from the Journal, Global Ecology and Biogeography Letters (1997).
- Report of Niall Cussen, DoEH&LG, concerning site visit to The Gearagh on 15th April 2015.
- Report of Jervis Good, Ecologist, NPWS, relating to visit to The Gearagh – dated 17th April 2015.
- Newspaper Article in relation to peat slide at Maughaknockane, Listowel, Co. Kerry.
- Newspaper article in relation to Bandon's Flood Alleviation Scheme.
- Annotated colour photographs of flooding effects in the Roughty River, Co. Kerry.

- Correspondence and documentation in relation to *Asplenium tiginense* – a fern – recorded in the Lee River valley.
- Ecological Analysis of the Upper Lee valley and the Toon River valley with specific reference to Cleanrath North, Cleanrath South and Derrineanig (undated), from Kevin Corcoran, Biologist.
- Petition of names of those supporting the preservation of The Gearagh.
- Diagram, showing wind turbines built, permitted and applied for within the area.
- Proposed Revisions to Wind Energy Guidelines 2013.
- Series of Noise studies in relation to wind farm development from around the world.
- Series of Health studies in relation to wind farm development from around the world.
- Report on the impact of wind farms on property values from Germany (2013).
- Series of Public Health & Safety studies in relation to noise and particular wind turbine models – including photographic examples of accidents at wind farms in Ireland.
- Irish Academy of Engineering submission (July 2014) on the review of National Energy Policy as set out in the “Green Paper on Energy Policy in Ireland”.
- Ó Grianna judgement of the High Court – 2014 No. 19 JR.
- Board Decision and Inspector’s Report in relation to PL 04.243630.
- Connolly judgement of the High Court – 2014 No. 488 JR.
- Kelly judgement of the High Court – 2013 No. 802 JR.
- Balz & Heubach judgement of the High Court – 2013 No. 450 JR.

7.0 Observations

- 7.1 There are a total of three observers to this appeal – listed on the front cover of this Inspector’s Report. All are opposed to the proposed development. The issues raised, where different from those already raised by 3rd Parties, can be summarised in bullet point format as follows-
- The view from houses in the area will be destroyed by turbines.
 - Details of the noise monitoring programme have not been outlined in the conditions attached to the Notification of decision to grant planning permission.
 - No River Basin Management Plan for the Lee has been drawn up – as required by the Water Framework Directive.
 - The Board should give consideration to the Derogation Licence issued by the NPWS for the Kerry slug on this site.
 - The developer submitted unsolicited additional information to the Council, and the objectors were not given any opportunity to rebut

the information contained therein. Insufficient time was available to objectors to gather information and lodge a comprehensive appeal.

- The Toon Valley is a pNHA (Site code 001083) as is Lough Allua (Site code 001065).
- Watercourses in the area contain a number of protected species. Bird kills are common at wind farms. The area is visited by White-tailed sea eagles.
- Bats can be killed by wind turbines, by blades and by pressure changes around rotating blades. The Lesser horseshoe bat forages in this area.
- Freshwater pearl mussel and Freshwater sponge occur in the Toon and Lee Rivers and depend on clean water. Any sediment released from the site will impact negatively on such species.
- Peat and debris slides have been recorded in the area – an indication of the unstable nature of the receiving ecology.
- The development would materially contravene objectives of the Development Plan to protect NHAs, species of plant listed in the Flora Protection Order 1999, fauna protected under the Wildlife Acts and habitats and species protected by the Habitats Directive and the Birds Directive.

7.2 Observations are accompanied by the following documents of note-

- Excerpt from Bat Conservation Ireland 'Guidelines on Bats and Appropriate Assessment' (December 2012).

8.0 Response Submissions

8.1 1st Party Response to 3rd Party Appeals

8.1.1 The response of McCarthy Keville O'Sullivan, agent on behalf of the applicant, Cleenrath Windfarm Ltd, was received by the Board in two separate submissions on 14th July and 4th August 2016, and they can be summarised in bullet point format as follows-

- Any references to seven turbines in the EIS are typographical errors – 11 turbines are proposed. Permission was granted by Cork County Council for six turbines.
- A noise limit of 43dB(A), as required at condition 29 of the Notification to grant permission, is in line with the 2006 Wind Energy Guidelines.
- Shadow flicker from this wind farm will comply with the 2006 Wind Energy Guidelines. Modelling assumed the worst case scenario – in the absence of any screening from vegetation or buildings. Shadow flicker can be controlled via the SCADA system.
- It is acknowledged that perceived visual impact on a landscape is emotive. Nonetheless, it is contended that the landscape can accommodate these turbines. Neither of the landscape character

areas, straddled by the scheme, are deemed to be of 'High' landscape value.

- There is no reason to support the assumption that house prices surrounding wind facilities are affected by either the view of wind turbines or the distance between a house and a wind farm. There is no evidence that house prices near wind turbines are affected in either the post-construction or post-announcement/pre-construction periods.
- There is currently no published, scientifically-proven, evidence to definitively link wind turbines with adverse health effects.
- The public information session, held on 16th December 2015 in Ballyvourney, was well-attended. A significant number of observations were lodged with Cork County Council and appeals/observations with the Board.
- It is the decision of Cork County Council whether or not to require re-advertisement of additional information submissions. The information was not considered significant by the Council. The public remain firmly engaged with the planning process through the submission of appeals/observations to the Board.
- The development is not in contravention of the County Development Plan or the Macroon Electoral Area Local Area Plan.
- The National Renewable Energy Action Plan (NREAP) is a policy document which sets out in detail Government policy and objectives in the area of renewable energy. This document cannot be considered to be a 'plan or programme' for the purposes of the SEA Directive, as it is not required by legislative, regulatory or administrative provisions. The NREAP does not set "the framework for future development consents" unlike a County Development Plan or a Local Area Plan.
- The opinion of the Irish Academy of Engineers in relation to National Energy Policy is not a relevant consideration.
- The EIS was prepared in line with all relevant guidance. The Council was satisfied that the EIS complied with Article 94 and Schedule 6 of the 2001 Planning Regulations.
- The development has the potential, if required, to comply with the stricter noise guidelines set down in the 2013 Targeted Review of the Wind Energy Guidelines 2006.
- The issue of Amplitude Modulation is addressed in the Technical Note on Noise accompanying this submission.
- Full details of drainage measures to be incorporated into the design of the scheme are included in the Technical Note on Hydrology accompanying this submission.
- O'Callaghan Moran for Cork County Council was satisfied with the arrangements made for drainage at this site. The development will not result in any increased run-off to The Gearagh SAC. Best

practice mitigation measures will be implemented on-site. The development will not impact on any wells in the area.

- The NIS submitted addressed the issue of potential impacts on birds within The Gearagh SPA. The birds involved are non-breeding wintering species. The SPA is 8.3km from the western boundary of the site. Whooper swan does not forage this distance from its roosts. There were no swans recorded at the site – although some birds may use the Toon River in flood (as documented in December 2015).
- White-tailed sea eagle is known to roost at Sillahertane – 9.6km to the west of the appeal site – and has been spotted at Lough Allua (some 2.0km to the south of the appeal site). No birds were recorded during bird survey work for either this wind farm (previous and current applications) or the neighbouring project at Derragh some 2.0km to the west. As reported in the EIS, the bird was recorded during a Vantage Point watch for another unrelated study about 4.0km to the northwest of the main study area in February 2015 – one sighting during 60 hours of survey.
- Heath and peatland within the site are not in a pristine state. The small patches of woodland within the site do not correspond to Annex I habitat 'Bog woodland'.
- No rare or scarce plant species were recorded within the site.
- Hen harrier sightings have occurred outside the breeding season. Merlin & Peregrine are occasional visitors to the site.
- All mitigation measures set out in the EIS, and as required by Derogation Licence in relation to Kerry slug, will be carried out.
- Otter was not identified as being present on the site.
- Freshwater pearl mussel exists in catchments to which the site drains, but no population is of SAC importance. Surface water mitigation measures proposed will protect this species.
- The closest scenic route, S26, is located 1.75km to the northwest of the site.
- The EIS included details of all possible impacts of the grid connection. Details of the potential cumulative impacts of all aspects of the development have been outlined.
- It will take approximately 30 days to lay the grid connection on the public highway – two teams working from opposite ends. Some roads may need to be closed temporarily. This will be done in accordance with a Road Opening Licence which will have to be acquired from Cork County Council.
- Safety incidents outlined by appellants are isolated occurrences. Fencing is not necessary around turbines. Blades are manufactured in glass-reinforced plastic to reduce the likelihood of lightning strike. Nacelles will be earthed. Ice throw is a very remote possibility.

- There is no evidence that Extremely Low Frequency (ELF) or Electro-Magnetic Frequency (EMF) cause harm to individuals or animals. The grid connection will be installed to Eirgrid specifications. It will comply with the relevant guidelines established by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and EU guidelines on exposure of workers to electromagnetic fields.
- An alternative access for construction traffic has been provided from that set out in application 11/5245. Junction improvements required have been set out. All aspects of construction traffic management have been set out. Outsize loads will be delivered in 11 days. Convoys of traffic will deliver these parts at night accompanied by Garda escort. No roads will be closed, but there may be some delays at pinch-points.
- The applicant will comply with the conditions relating to roads matters attached to the grant of planning permission.
- A Transport Management Plan will be submitted to the Council for written agreement.
- Section 8.2.3 of the EIS sets out the applied methodology in relation to carbon savings. The methodology accounts for losses of carbon due to the production/manufacture of turbines, transportation, erection, operation and dismantling of the wind farm, back-up power generation, loss of carbon-fixing potential of peatland, loss of carbon stored in peatland, carbon saving due to improvement of habitat, and loss of carbon-fixing potential as a result of forestry clearances. The losses are estimated at 44,373 tonnes of CO₂. Some 40,665 tonnes of CO₂ will be displaced per annum compared with burning of carbon-based fuels such as peat, coal, oil and gas.
- No significant issues were raised by telecoms providers in the EIS scoping. Mitigation measures are outlined in the unlikely event of telecommunications interference.
- This application is a stand-alone one and does not rely on application ref. 11/5425 – a Judicial Review decision on which was delivered after the current application had been lodged with Cork County Council.

- 8.1.2 The submission is accompanied by the following documentation of note-
- Summary of conclusions in 25 reviews of the research literature on wind farms and health.
 - Technical note from AWN Consulting in relation to noise.
 - Technical note from Hydro Environmental Services in relation to hydrology.
 - Executive Summary of the "Overview of Scientific Assessments of Research on ELF EMF and Health, Epidemiologic Studies 2007-2015" by Exponent.

- Eirgrid document “EMF & You: Information about Electric & Magnetic Fields and the electricity transmission system in Ireland” – 2014.

8.2 2nd Party Response to Appeals

A letter from Cork County Council, received by the Board on 3rd August 2016, indicates that the Council has no further comment to make.

8.3 3rd Party Responses to Other Appeals

8.3.1 The responses received were from-

- Con Lehane & Mick O’Connell, received on 28th July 2016.
- Sharon Clatworthy, received on 29th July 2016.
- West Cork Ecology Centre, received on 3rd August 2016.
- Noonan Linehan Carroll Coffey, Solicitors, agents on behalf of Klaus Balz & Hanna Heubach, received on 4th August 2016.

8.3.2 In summarising the issues raised in bullet point format, I have attempted to avoid repetition where issues have already been stated in original grounds of appeal-

- The 1st Party appeal to Cork County Council should also be an appeal to Kerry County Council which has granted permission for a portion of the grid connection.
- The turbines have been increased in height by 24m.
- Cork County Council did not give sufficient weighting to the 46 no. observations submitted.
- The drainage from this site will increase flash-flooding in the Toon River catchment, which in turn will negatively impact on the anastomosing nature of The Gearagh SAC.
- Coniferous plantation should never have been allowed on this wider site in the first place, due to the biodiversity importance of the peatland habitat. In addition to the recommendation to remove turbines in condition no. 2, T10 & T11 together with the borrow pit at T11, and the sub-station and much of the proposed new road infrastructure are identified in Cork County Council reports as being located within unplanted peatland habitats (of higher biodiversity importance), and the remaining T1, T2, T5 and T8, together with the borrow pit at T5, are only classified as lower biodiversity importance because of inappropriate and irresponsible planting of conifers in the past.
- The planning permission contained a number of conditions relating to protection of surface water – viz. no. 16, 17, 19, 22, 23, 24, 25 & 26.
- The need for a bunded area to store hazardous chemicals and waste on this site represents a huge threat to downstream ecology.

- Shadow flicker, noise and visual impact will be greater from 150m turbines than from the earlier proposal at this site. Thresholds set down in the 2006 Guidelines will be exceeded at this proposed development.
- The permission does not satisfy the provisions of the Cork County Development Plan and Biodiversity Action Plans. Intact peatlands will be damaged, bird species will be impacted, restoration of former coniferous plantation areas to peatland will be merely cosmetic. Habitats cannot be created artificially by human hand: habitats are far too complex for this.
- Burning of heathland will not be permitted once wind turbines are erected in this area. Consequently, all heathland will be lost.
- The site is not marginal agricultural land, but rather a wild district of blanket bog and rocky heathland, intermittently grazed by farm animals. Plants illustrative of blanket bog habitat are all present on this site. The site is not degraded, but ecologically intact.
- The folding geology supports a rich diversity of habitat types – all of which are linked, and damage to one habitat will result in damage to others. This area is unique and cannot be compared with 10,090ha of similar-type habitat in the area, as claimed by the applicant. These surrounding areas are affected by tree-planting, agriculture and turf cutting.
- Flood attenuation measures will not work in such a buckled topography, and flooding will result downstream in The Gearagh.
- Burning of heathland can result in invasion by aggressive colonisers – so the health of heathlands needs to be measured over a long period of time. Surveys for the EIS were carried out in winter 2010/2011 – a week after a serious fire on this hill. Areas that were only moderately burnt are in excellent conservation status.
- There is no agricultural, peat-cutting and forestry drainage on the western portion of the site, as claimed by the applicant. This area is extremely wet under foot. There may be some small amount of drainage on the eastern side.
- Accessing required turbine positions will require movement through the best of the peatlands within the valley depressions.
- Turf extraction on this hill was intermittent and was never carried out on a commercial scale. The last significant episode was during the Second World War. Waters in drains have now been turned into water-logged Sphagnum pools.
- The Upper Lee basin and the Toon valley represent a major stronghold for Merlin.
- It is not possible for the Board to satisfy itself beyond reasonable scientific doubt that the wind farm will not have a detrimental impact on The Gearagh SAC. The Board does not have enough data to complete Appropriate Assessment.

- The applicant mischaracterises the judgement of Barton J in relation to the earlier wind farm application on this site. The previous application has no precedent value.
- Turbines will result in the deaths of Kestrel and Golden plover.
- The National Renewable Energy Action Plan was adopted unlawfully without Strategic Environmental Assessment being carried out on it. The same goes for the Wind Energy Guidelines 2006. Based on the judgement of Advocate General Julianne Kolkott, delivered in Case C-290/15 on 14th July 2016, that public documents which promulgate wind farm development must be classified as a plan or programme within the meaning of Directive 2001/42/EU.

8.3.3 Response submissions were accompanied by the following items of note-

- Annotated colour photographs of the site and surrounding areas.
- Graph of upland heaths in the area with their conservation status indicated.

8.4 Responses to Board Circulation to Prescribed Body

The Board circulated the appeals for comment to The Heritage Council. There was no response received.

8.5 Responses to Board Circulation of Second 3rd Party Response Submission

The Board circulated the response of the West Cork Ecology Centre (received by the Board on 3rd August 2016) to the other parties/observers to the appeal for comment on or before 10th October 2016.

8.5.1 1st Party Response to Board Circulation

The response of McCarthy Keville O' Sullivan, agent on behalf of the applicant, received on 10th October 2016, can be summarised in bullet point format as follows-

- The majority of the issues raised by the West Cork Ecology Centre response submission have already been addressed in the submissions to Cork County Council and the Board.
- The presence of heathland and blanket bog does not prevent this site containing marginal agricultural land. Low-intensity agriculture is necessary for the management of heathland.
- The run-off assessment for the site concluded that the potential increase in run-off would be 0.0034%. The appellant has not submitted any scientific evidence for claims of higher run-off rates. Statements are in the nature of opinion and speculation. The application documentation provides a robust scientific analysis of the site and demonstrates that the proposed development can be

carried out without adverse impacts on the existing hydrological regime.

- Peat depths are clearly indicated on drawings submitted.
- The appellant provides no scientific analysis of the current status and condition of peatlands on the site. No details of survey methodologies have been indicated. No alternative habitat map is provided. Reference to a fire within the site does not elaborate on how much of the site was burned or when it took place. Evidence of burning was not apparent during surveys for the EIS which took place over a six-year period from 2010-2016.
- Photographs submitted by the appellant do not indicate the location from which they were taken. The photographs appear to show the most intact sections of Blanket bog on the site, rather than those sections which are within the footprint of the site. The most extensive areas of Blanket bog have been deliberately avoided in the layout of the development.
- Turbines T6, T7 & T8 are located on degraded heathland habitat which does not exhibit signs of burning.
- There is no indication of when or how the information on which the graph on p.11 of the appellant's submission was obtained. There is no information on what other sites were considered. No evidence is provided to back up the claim that the habitat on the wind farm site is better than anything else in the vicinity.
- Stock has been observed on the vast majority of this site during the winter – contrary to the claim of the appellant that stock is taken off the land during winter.
- Survey by the appellant of peatland habitats on site followed 'Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland' – Perrin *et al*, 2014. The peatlands on site are not in a favourable conservation status for a number of reasons including drainage, isolation and scrub encroachment.
- The appellant gives no indication of surveys carried out to substantiate the claim that the development will have a deleterious impact on birds. A comprehensive range of surveys has been carried out by the applicant over a number of years. Impacts on Kestrel and Snipe will be of local significance. No significant impact on Merlin or Woodcock is predicted.
- There is no scientific basis for the claim that all peatland on this wider site will be lost if the development proceeds. The Habitat Restoration Plan involves areas where coniferous plantation has struggled to thrive on peatland habitat. Restoration of peatland is being accomplished elsewhere in Ireland and Britain.

8.5.2 2nd Party Response to Board Circulation
None received.

8.5.3 3rd Party & Observer Responses to Board Circulation

There were five responses received from the following-

- Con Lehane & Mick O'Connell – received on 3rd October 2016.
- Sharon Clatworthy – received on 4th October 2016.
- Edward Cook – received on 5th October 2016.
- Con Ó Briain & Máire Uí Bhriain – received on 7th October 2016.
- Macroom District Environmental Group – received on 7th & 10th October 2016.

8.5.3.1 The responses can be summarised in bullet point format as follows-

- The findings of the West Cork Ecology Centre are based on hard scientific fact.
- Heathland habitat can be restored.
- Blanket bog cannot be restored in a short space of time.
- There has been an increase in destructive flooding over the last few years. This development will destroy crucial flood attenuation in the upper reaches of the Lee River.
- The proposed development is one of a number by the same developer – an example of project-splitting.
- The development will result in deterioration in The Gearagh SAC.
- Reclaimed agricultural land and coniferous forestry has replaced much heathland in this area. Only 2 or 3% remains of what existed in 1980.
- West Muskerry has been identified under the "2014-2020 Forestry Programme" for accelerated afforestation, at a time when such schemes, together with agricultural improvement are contributing to flooding in the Lee River at The Gearagh and downstream in Cork City.
- The Precautionary Principle must be applied where there is scientific doubt.
- There are low levels of sheep and cattle grazing the site – with somewhat more horses around T3.
- This area is burned regularly.
- The Killarney fern has been identified within The Gearagh SAC.
- Kestrel is a significant predator in the area – contrary to the surveys submitted by the applicant. White-tailed sea eagle is also a visitor to the area – recorded on 29th/30th December 2015, 1st June 2014 and 29th November 2007.
- Appropriate assessment should consider "best scientific knowledge in the field" and "local knowledge". The in-combination impact of the development must be considered.
- Ecological impacts which require longer term analysis have not been properly addressed in the EIS.

9.0 General Assessment

The principal issues of this appeal relate to the principle of development as set out in national, regional and local policies/plans, visual impact, residential amenity (noise and shadow flicker) and ecology. Other issues include traffic and archaeology.

9.1 Development Plan & Other Guidance

- 9.1.1 Development of energy from wind sources is supported in national and regional guidance. Government policy in relation to wind farms is largely set out in the 2006 Guidelines. Within these Government guidelines there is a presumption in favour of wind farm development in suitable circumstances. The visibility of a wind farm from designated views or prospects would not automatically preclude an area from such development. The strategic importance of wind farms in reducing dependence on fossil fuels needs to be considered. Birds can be impacted by wind farms in terms of direct loss or degradation of habitats for breeding, feeding or roosting purposes. Noise impact must be examined for noise-sensitive receptors within 500m of the turbines. Careful design can reduce the negative impact of shadow flicker. Peat stability must be considered where applications are on peat lands. It is clear that the Guidelines envisage wind farm developments even where Development Plan policies might appear to indicate that they should not be located within a particular area.
- 9.1.2 Within the Cork County Development Plan 2014-2020, there are general objectives which favour development of electricity from wind energy. The development is located within an area 'Open to Consideration', where the proposed development can avoid adverse impacts on residential amenity and nature conservation, whilst not impacting negatively on the landscape. The issue of visual impact is addressed under the EIA assessment section of this Report relating to Visual Impact.
- 9.1.3 Wind farms in Ireland are almost all located in rural areas. The locations of such a development type is not necessarily incompatible with Development Plan policies to protect rural communities, recreational facilities, business development or protection of the natural environment.

9.2 Community Gain

It is proposed to establish a Community Gain fund if permission is granted. It will be administered by the developer in consultation with community groups. The amounts involved are €6,250 per megawatt upon commissioning, and thereafter €1,250 per megawatt per annum over the 25-year lifespan of the project – resulting in a potential sum of in excess of

one million euro. It has not been the practice of the Board to attach a condition to any grant of planning permission requiring payment into such a Community Gain initiative.

9.3 Duration of Permission

The applicant has sought a ten-year permission. It has been the practice of the Board to grant such permissions, where there may be a long lead-in time to the commencement of construction on site – dependent upon finance, grid connection availability or Gate offer. In the past, permission was often granted without any indication of connection to the national grid or if a Gate offer was available to the owner/operator of a wind farm. I note that the applicant has put forward no case for a ten-year planning permission. Having regard to the number of Judicial Review cases in relation to wind farm developments in this area, and to the fact that the sub-station at Coomataggart in Co. Kerry is not yet built, I would consider that a 10-year permission is reasonable.

9.4 Development Timescale

The EIS indicates that the construction phase will take 12-18 months. It has been the practice of the Board to grant 25-year lifespans for wind farm applications – to allow for reconsideration in the light of new technology developments in wind energy. I would see no reason to depart from this practice in this instance. The time period should run from the date of commissioning of the first wind turbine.

9.5 Telecommunications

Section 12.3 of the EIS deals with this issue. There are no masts or communication structures located within the site. Consultation regarding electromagnetic interference during the operational phase of the development was undertaken with relevant stakeholders. No interference issues were identified. If required, repeater relay links can be used out of line with the wind farm where unanticipated broadcast or signal interference arises. The scheme has been designed so as not to impact on telecommunication signals: therefore, there will be no cumulative impact with other wind farm developments in the area. It would be possible to attach a condition to any grant of planning permission requiring the developer to protect radio/television/telecommunications signals.

9.6 Construction Cost & Employment

The estimated construction cost is €60m. The EIS refers to up to 40 jobs during the construction phase and up to three long-term jobs in

management and maintenance. Approximately €8,000 per megawatt per annum will be paid to Cork County Council by way of rates.

9.7 Public Consultation

A public meeting was held in Ballyvourney in relation to the project on 16th December 2015 – shortly before the application was lodged with Cork County Council. There is no obligation on an applicant to consult with members of the public – public notices of a proposed development indicating that members of the public are invited to make comments to the planning authority during consideration of an application. Section 2.10.2.1 of the EIS indicates public bodies and telecommunications providers contacted by the developer prior to submission of the planning application (not all of whom responded). Drawings submitted indicate that a total of 24 site notices were erected to alert the public to the making of the planning application. This is a substantial number – even for an application which includes a grid connection route along a public road. It is noted that the application attracted a large number of letters of objection to Cork County Council, notwithstanding the claim by objectors that drawings were not available for inspection at the offices of Cork County Council until mid-January 2016: this is necessarily a matter for operational organisation of Cork County Council. There are similarly, a large number of appeals/observations objecting to the development – giving an indication of wide awareness of the application/appeal within the community. It would appear that the requirements for REFIT (the feed-in tariff for the national grid) obliged the applicant to lodge the application with (and have it validated by) Cork County Council prior to the end of 2015. There is a substantial amount of information submitted to the Board on all aspects of this proposed development.

9.8 Depreciation in Property Values

No evidence has been submitted to justify the claim that wind turbines result in devaluation of residential property. There are a number of wind farms in the wider area, and permission exists for further wind farm developments. There is no evidence that studies carried out in other countries have applicability to this particular part of Co. Cork.

9.9 Impact on Tourism

No evidence has been provided one way or another in relation to claims of impact/no impact on tourism. This is a rural area. Wind farms already exist in the wider area. Planning permission has recently been granted for a number of wind farms in the area. The site does not benefit from any special tourist designation in the Development Plan – although the Lee River valley is recognised as a tourism asset. Lough Allua and the

surrounding area, some 2km to the south, is designated a Scenic Landscape. Gouganebarra, some 10.5km to the west-southwest is a noted beauty spot. The visual impact of turbines, in terms of the beauty or rural nature of a site, is a subjective one. There is no evidence that tourists avoid areas within which turbines are located. The existence of a cycleway along part of the S32 scenic route (that portion which follows the southern shore of Lough Allua) is noted, but a wind farm will not have a significant impact on the intermittent views from this Scenic Route. There are no cycle-ways or walking routes on the roads or tracks within or immediately abutting the site. Existing forestry tracks at Cleanrath are limited to the northeast portion of the site.

9.10 Financial Contributions/Bonds

It has not been the practice of Cork County Council to attach development contribution conditions to wind farm permissions. The Cork County Development Contribution Scheme – dating from 2004 (with rates regularly updated), does not provide for payment of a development contribution for wind farms – not even for buildings within such wind farm developments. The Scheme provides for Special Development Contributions for wind farms, where deemed necessary by the Council. Condition 9 of the Notification of decision to grant planning permission required payment of a bond of €100,000 for damage to roads/bridges during the construction phase. A bond condition should be attached to any grant of planning permission issuing from the Board in relation to damage to roads during the construction phase. A bond for the restitution of the site upon decommissioning should be payable to Cork County Council – notwithstanding that the Council did not attach such a bond condition. Condition 40 of the Notification of decision to grant planning permission required payment of a Special Development Contribution of €128,250 for works required to upgrade roads/bridges to facilitate construction traffic. It would be open to the applicant to liaise with the Council in relation to who carries out the works and supplies the materials. I note that the applicant has not appealed this condition to the Board. It would be prudent to attach such a condition to any grant of planning permission issuing from the Board.

9.11 Decommissioning

Section 3.10 of the EIS refers briefly to decommissioning. It is standard practice to limit the lifetime of a wind farm development to 25 years from the date of commissioning of the first wind turbine on the site. This will allow the planning authority to review the operation of the wind farm in the light of conditions then prevailing. It is obviously open to applicants to seek to extend planning permissions or seek permission for alterations to turbines in the future. It is stated that turbines will be removed, and

foundations covered over and the areas allowed to revegetate. Access tracks will be retained for forestry and agricultural use. The sub-station is a permanent feature (as is the underground grid connection) and will remain in place. Proposals put forward would seem reasonable. I have elsewhere in this report referred to the desirability of a bond to be paid to the planning authority to ensure appropriate restitution of the site upon decommissioning.

9.12 Aircraft Safety

The site is located roughly equidistant from Farranfore Airport in Co. Kerry and Cork City Airport – approximately 45km. The applicant consulted the Irish Aviation Authority prior to making the application, and it was indicated that the development would not have an impact on navigation of aircraft – providing appropriate warning lighting was installed. Condition 27 of the Notification of decision to grant planning permission dealt with this issue. Provided the development complies with requirements for aeronautical lighting, I would not see any difficulty with the application. A standard condition relating to requirements for aeronautical lighting should be attached to any grant of planning permission issuing from the Board, in the interests of the safe navigation of aircraft.

9.13 Extent of Permission & Precedent

The proposed development stands on its own, and no other project is contingent upon it. The application is for 11 turbines with a dedicated grid connection – albeit one that has been designed to serve the proposed Derragh wind farm to the west. The proposed development is not part of the Derragh wind farm – the closest turbine of which is located approximately 20km to the west. There is no precedent planning permission on this site. I would note that the current application to Cork County Council was lodged before the decision of the High Court to quash the Board's grant of permission ref. PL 04.240801. The EIS does, not unnaturally, refer to "redesign of a previously permitted wind farm" given that it was compiled at a time when the Board had issued a grant of planning permission.

9.14 Waste Management

The additional information submission of 12th April 2016, contained detailed proposals in relation to construction and operational waste management on this site in the form of an Outline Construction and Waste Management Plan – included as Appendix 5. This Plan related to site and materials compounds; management of C&D waste; containment of fuel and oil/lubricants; construction compound impermeable/hardstanding surfaces; surface water monitoring; and records of checks and

inspections. If these undertakings are adhered to, in conjunction with the more detailed mitigation measures outlined in the Construction and Environmental Management Plan, I would be satisfied that waste generated on this wind farm site and along the grid connection route will not result in any significant impact on the Environment.

9.15 Hours of Operation

During the construction phase, hours of operation have the potential to cause nuisance to neighbours. The construction phase is estimated to last 12-18 months. Having regard to the extent of the site and the separation distance from houses – I would not consider that hours of operation would be a significant issue – apart from blasting at the borrow pits. The Construction Environmental Management Plan would be the appropriate document for the control of hours of operation – to be agreed in writing with the Planning Authority, prior to commencement of development.

9.16 Other Issues Raised by Appellants/Observers

What follows is a list, not necessarily exhaustive, of comment on issues which may have a planning impact, as raised by appellants/observers to the proposed development-

- In assessing the appeal, the Board has regard to all relevant planning considerations. There is no good planning reason why the wishes of one group should prevail over another, in terms of whether permission should or should not be granted. Each case must be dealt with on its merits – regard being had to the proper planning and sustainable development of the area.
- There is no fixed fraction of the wind energy developed within the county as a whole which should come from any particular county.
- The site is not zoned for agricultural use, and reference to wind turbines as being 'industrial' does not have a bearing on consideration of the proper planning and sustainable development of the area.
- There is no reason why development of a wind farm should have any impact on a shrub/flower growing business in the area – particularly given the separation distance between the nearest turbines and such premises (635m).
- Wind turbines will not prevent people using gardens and curtilage of houses for amenity purposes.
- The carrying out of Strategic Environmental Assessment (SEA) on the 2009 National Renewable Energy Action Plan, is not a matter for the applicant, Cork County Council or the Board. The Board is tasked with the consideration of the appeal – regard being had to national, regional and local policies, with particular regard being

had to EIA, Habitats and Birds Directives, and to proper planning and sustainable development of the area. I note the comment of the applicant claiming that the NREAP would not be subject to SEA.

- The notification of objectors of receipt by Cork County Council of additional information relating to this application is not a matter for consideration by the Board. It is clear from the number of objectors and volume of material submitted to the Council and the Board that there was widespread knowledge of the application/appeal in the area.

10.0 Environmental Impact Assessment

10.1 General Comment

10.1.1 The EIS submitted uses the grouped format method to describe impacts on human beings, flora & fauna, soils & geology, water, air & climate, noise & vibration, landscape & visual, archaeology & cultural heritage, material assets, and interaction of the foregoing. The EIS is accompanied by a Non-Technical Summary at the beginning of Volume 1. I note that part of the section on 'Traffic and Transportation' would appear to refer to another wind farm site to the north. Volume 2 comprises a photomontage booklet. The fact that a number of bodies consulted during the scoping exercise did not respond to the applicant's invitation to engage, does not have any impact on the status of the EIS as a document.

10.1.2 The proposed development, in overall terms, is in compliance with Articles 94 and 111 of the Planning and Development Regulations, 2001, as amended. To this extent I would observe that-

- The EIS contains the information specified in paragraph 1 of Schedule 6 of the Regulations. The EIS-
 - Describes the proposal, including the site and the development's design and size;
 - Describes the measures envisaged to avoid, reduce and, if possible, to remedy significant adverse effects;
 - Provides the data necessary to identify and assess the main effects the project is likely to have on the environment;
 - Gives an outline of the main alternatives studied and the main reasons for the choice of site and development, taking into account the effects on the environment.
- The EIS contains the relevant information specified in paragraph 2 of Schedule 6 of the Regulations. This includes-
 - A description of the physical characteristics of the project and its land use requirements – including the grid connection;
 - The main characteristics of the wind energy process to be pursued;
 - The emissions arising;

- A description of the aspects of the environment likely to be significantly affected by the proposal;
- A description of the likely significant effects on the environment resulting from the development's existence, the development's use of natural resources, the emission of pollutants and creation of nuisances, and a description of the forecasting methods used;
- An indication of any difficulties encountered in compiling information.
- There is an adequate summary of the EIS in non-technical language.

10.1.3 The environmental impact of the proposed development is assessed and, where relevant, the cumulative impact with other permitted or proposed developments in the area is considered as part of the EIA process. Other large-scale developments in the area are similarly subject to the EIA process. The fact that one company or set of companies is responsible for a number of planning applications for wind farms within a wider area does not amount to project-splitting. An EIS was prepared for this application and cumulative impacts with other wind farm developments (existing and proposed) were considered.

10.2 Consideration of Alternatives

10.2.1 Schedule 6 of the Planning and Development Regulations, 2001, as amended, requires an EIS to include 'An outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment'. Section 2.9 of the EIS states that the strategic site selection process for the subject proposal was constraints-led from the outset, with the initial site search area limited by the need to locate the development proposed within a distance of approximately 15km from the grid connection node at the proposed Croomataggart sub-station in Co. Kerry, in order to ensure economic viability. Within this study area potential alternative site locations were eliminated having regard to certain critical site selection criteria and other design constraints, including wind speeds, planning history, environmental designations (such as Natura 2000 sites and Natural Heritage Areas), the provisions of the Development Plan (in reference to 'Strategically Unsuitable Areas') and other physical site considerations/characteristics – particularly the proximity of houses. This process culminated in the identification of this wind farm site as the optimum location for the proposed development. The largest turbines have been selected to achieve the maximum power output of 3MW each. The turbine model has not been chosen – other than to state that maximum height will be 150m. Existing tracks within the site were utilised where possible. Turbines were sited having regard, amongst other factors, to proximity to houses and watercourses, and shadow flicker/noise

impacts. Underground cables were considered to be preferable to overhead cables for the grid connection.

10.2.2 It is of relevance to note that the 'Guidelines on the information to be contained in Environmental Impact Statements' published by the Environmental Protection Agency in March 2002, acknowledge the existence of difficulties and limitations when considering alternatives in the context of Environmental Impact Assessment. In this respect it should be noted that whilst EIA is confined to the assessment of the environmental effects which influence the consideration of alternatives, it is important to acknowledge that other non-environmental factors may have equal or overriding importance to the developer, such as project economics, land availability, engineering feasibility and planning considerations. Similarly, the consideration of alternatives also needs to be set within the parameters of the availability of land or the need for the project to accommodate demands or opportunities which are site specific.

10.3 Human Beings

10.3.1 Population & Employment

Section 4 of the EIS deals, amongst other things, with potential impacts on human beings. Latest available census figures from 2011 indicate a population density per square kilometre of 13.09 for the study area around the wind farm. The development will not have any impact on population. Construction-phase employment is expected to result in up to 40 (elsewhere in the EIS, 65) jobs during phases of the 18-month construction period; resulting in a short-term beneficial impact on the economy of the area. Up to two (elsewhere in the EIS, three) permanent jobs are expected to be created. This will not have a significant effect on employment in the area.

10.3.2 Health & Safety

Exposure to electromagnetic fields (EMF) is common – even within houses. Houses flanking the grid connection route are generally set back from the edge of the carriageway. No evidence has been submitted by appellants to indicate that 38kV cables, buried 1.0m below the road surface, would have a deleterious impact on human health. The applicant has stated that the voltage of the three cables will be 38kV in total. The magnetic field associated with underground cables decreases rapidly with distance, as the ground absorbs the magnetic field. The grid connection would be laid in accordance with the international guidelines for ELF-EMF of the International Commission on Non-Ionizing Radiation Protection (ICNIRP). There are a number of wind farms constructed around the country, and it would not be reasonable to refuse permission on health grounds.

The wind farm will be constructed, operated and decommissioned in accordance with existing safety, health and welfare legislation and standards. The wind farm will be remotely monitored, and routine maintenance visits will be undertaken. The sub-station will be surrounded by 2.5m high palisade fencing, and turbine access doors will be locked to prevent trespass. Objectors have referred to safety considerations on the site – particularly in relation to turbine malfunction and fire, and have listed instances of accidents with turbines elsewhere in Ireland and throughout the world. The applicant has stated that turbines will be routinely monitored and controlled remotely. Sensors will be able to detect malfunctions or abnormal operating conditions (particularly in relation to ice formation on blades). If constructed properly and regularly maintained, turbines should not malfunction and cause a health risk to workers or visitors to the site. I would note that at many wind farms in Ireland it is open to visitors to approach turbine bases. The EIA process requires the Board to assess the likely impacts of projects which could have significant effects on the environment. The likelihood of an accident is remote and is not a reason for refusing planning permission. The claim by objectors that motorists will be distracted by turbines is not a significant effect on the environment. Wind farms are common in many parts of the country in proximity to roads, without causing a traffic hazard.

10.3.3 Shadow Flicker

The 2006 Wind Energy Guidelines recommend that shadow flicker at neighbouring dwellings should not exceed a total of 30 hours per year or 30 minutes per day. This standard has been applied to houses within ten rotor diameters (1,170m) of the development. Figure 4.7 of the EIS shows the position of houses in the vicinity of the proposed wind farm. There are no houses within 500m of any turbine. Table 4.9 of the EIS shows that there are some 18 houses within 1,170m (ten rotor diameters) of the turbines. Three of these houses are occupied by landowners who are promoting the wind farm (H18, H22, & H28). H29 has been identified as not being a house. Amongst the 18 identified houses, some are not occupied, but are capable of future renovation to habitable status. The closest house to any turbine is H15 at 616m and then H14 at 619m.

Shadow flicker will not be a nuisance if affected rooms in houses are not occupied at the time. Wind direction will have an impact on shadow flicker for recipient houses – insofar as turbines revolving perpendicular to sunlight will have the most impact. Cloud cover is a significant feature in Ireland – reducing the instances of potential shadow flicker nuisance. Weak sunshine will not result in shadow flicker nuisance. Modelling does not take account of intervening buildings or vegetation – all of which help to lessen the incidence of shadow flicker. Obviously the greater the wind speed, the more likely that shadow flicker will be perceived as a nuisance, as the flicker-effect will not be so noticeable when turbines are rotating

slowly. Insufficient/excessive wind speed will mean that turbines will not be rotating at all.

The turbine model and dimensions have not yet been selected. Modelling assumed a rotor diameter of 117m and a hub height of 91.5m (the maximum – anything smaller will have a lesser impact). Table 4.10 of the EIS presents maximum or worst case shadow flicker analysis for each of the 18 properties within 10 rotor diameters of a turbine. Some 13 properties could be subject to more than 30 minutes shadow flicker per day (and only one more than one hour – a participating landowner H28). Three of these houses are owned by promoters of the wind farm development. Of the houses within 1,170m of a wind turbine, thirteen could possibly experience shadow flicker for more than 30 days (121 possibly experiencing shadow flicker for more than 30 minutes on 109 days per annum). Weather data for this area indicates that sunshine is available for 32.5% of the daylight hours per year (based on Cork Airport data). If this percentage of sunshine is applied, then no house would be subjected to unacceptable amounts of shadow flicker per year (as per Table 4.11 of the EIS) – except at H28, and this house belongs to a participating owner. This is obviously an average figure – and mornings and evenings are likely to be the times when shadow flicker could occur, and the average figure for 32.5% sunshine during daylight hours does not distinguish between different times of day. Shadow flicker may, therefore, still exceed the 30 minutes per day threshold.

Mitigation measures proposed include the installation of blinds or curtains in affected rooms, or screen planting between the affected window and the offending turbine(s). Wind turbine control software (SCADA) is available which can programme the relevant/offending turbine(s) to shut-down at specific times and dates. This will be based on complaints received by occupants of houses. Site visits will be used to verify complaints and any mitigation measures to be employed – with the agreement of the house occupants. Table 4.12 indicates which turbines might need to be shut down on which days in order to limit shadow flicker nuisance to less than 30 minutes per day at the properties listed. A condition could be attached to any grant of planning permission relating to shutting down of wind turbine(s) in the event of exceedances of shadow flicker as set down in the Wind Farm Guidelines 2006.

Any shadow flicker nuisance caused for participating landowners would be easily remedied, by occupants/owners carrying out simple mitigation measures such as the installation of blinds within houses.

10.3.4 Noise & Vibration

These associated issues are addressed under a separate heading within this Inspector's Report.

10.4 Flora & Fauna

Section 5 of the EIS deals with the issue of ecology. A separate Natura Impact Statement (NIS) accompanies the application (to deal with possible impacts on European sites). Site visits were undertaken over the years 2010, 2011, 2012 & 2015. Much of the survey work was carried out for a previous wind farm planning application on this site, ref. 11/5425. Additional information in relation to ecology was supplied to the Council on 12th April 2016. Environmental Impact Assessment (EIA) of the application was carried out by the Ecologist of Cork County Council. It was concluded that turbines T3, T4, T6, T7 & T9 could have a negative impact on habitats and species of high biodiversity value and these were excluded from the grant of planning permission.

10.4.1 Habitats

Habitats were mapped during survey work, carried out in December 2015 – extending to within 100m of roads, turbine bases etc. Figures 7.7a-g [but within Section 5 of the EIS] comprise maps of the habitat mosaics within the wind farm site (and in the vicinity of roadworks required for turbine delivery) – a large part of which, within the wind farm site, is Conifer plantation (one third of the study area), with lesser areas of Wet heath/Exposed siliceous rock and Wet heath/Acid flush/Blanket bog/Exposed siliceous rock. Smaller areas of other habitat types (Deciduous woodland, Scrub, Acid grassland, Eroding upland river) are present within the wind farm site. Within the wind farm site, four Annex I habitats occur – Northern Atlantic wet heath with *Erica tetralix*; European dry heath; Blanket bog (inactive); and Blanket bog (active) – this latter a Priority habitat. Some 5.4ha (elsewhere in the EIS 10.9ha) of coniferous forestry and 5.4ha of heath/peatland/exposed rock habitat will be lost if the development proceeds. Habitat types along the turbine delivery route within Cleonrath townland comprise mainly Coniferous plantation; with lesser areas of improved agricultural grassland; Scrub; and Hedgerow.

The loss of habitat for turbine bases, roads and ancillary elements (1.3ha) with some additional turbulence felling of trees (indicated previously as 2.65ha or 3.5ha within the EIS), will not be significant in terms of the amount of similar-type habitat within the wider blue/red-line boundary of the site and within surrounding lands. The 1st Party appeal included an aerial photograph (Figure 4.1) indicating the location of similar peatland habitats in the wider area. Northern Atlantic wet heath habitat is widespread within the site and the loss of habitat will not be significant. European dry heath habitat is rarer within the site and will be more significantly impacted. Blanket bog habitat to the north of T5 and west of Cleonrath Lough has been largely avoided within the layout of turbines and access roads – as these are the best-preserved areas of such habitat,

notwithstanding that there is evidence of older peat harvesting within these areas – together with its accompanying drainage. Blanket bog to the north of T4 may be impacted by construction and drainage – although I note that there is already a number of older drains in the vicinity of T4, and T4 itself is located on the boundary of an area of acid grassland – a finger of such habitat pressing into surrounding peatlands and obviously reclaimed land. T5 has been located within coniferous plantation – separate from a large area of blanket bog to the north. There is evidence of small-scale peat harvesting from within this bog to the north of T5. Acid flush habitat occurs in the vicinity of T9 – approximately 17.0ha, an area characterised by exposed folds of rock with peat infilling within the roughly parallel folds. The footprint of the development in this area is 0.9ha. Flush flows will be maintained under access roads using porous road base and impermeable membrane. Drainage from construction areas will not be to acid flush areas. Construction of roads in the area of acid flush will be undertaken in dry weather (if possible). These measures will be sufficient to limit the impact of the development on acid flush habitat. The contention of the appellants that the entire site is one complex inter-related bio-geomorphological system is not borne out by any evidence submitted. The entire site has been subject to greater or lesser degrees of human intervention for agriculture/forestry/peat harvesting uses, and continues to be so. It is not some isolated area of unique ecological diversity in a pristine state of conservation. The proposed development will not result in the significant impact on geology, and consequently on hydrology of the area. Proposals have been put forward by the applicant to maintain existing hydrogeological flows through use of porous bases in roads, porous surfaces, construction using rock excavated on the site, and floating roads on areas of deeper peat. I would be satisfied that the proposed development will not result in deterioration in the quality of habitats on the borders of access tracks, turbine bases and other ancillary features of this wind farm development.

An Habitat Restoration Plan was submitted as part of the 1st Party appeal (Appendix 2) – outlining how 3.5ha of peatland habitat will be restored/renalivated at two locations within the site (largely through felling of coniferous plantation) to compensate for the loss of such heath habitat as a result of the construction of the wind farm. The two areas proposed are adjacent to T4 & T7. Arguments have been put forward that coniferous planting should never have been carried out at Clearrath in the first instance. The applicant proposes that the removal of coniferous plantation is somehow beneficial to the environment, and objectors argue that peatland habitats cannot be readily recreated once destroyed. I would not consider that the existence/removal of coniferous plantation (whether thriving or poor-quality) should be viewed as in favour or against the proposed wind farm development. Habitats on site are as they are. Human intervention over the years has altered such habitats through

drainage, peat harvesting, forestry, agriculture, fly-tipping, road/track construction and burning amongst other activities. Appellants claim that it is not possible to recreate blanket bog or heathland habitats once they have been destroyed. The applicant is satisfied that habitat recreation is possible, and over time, I would agree that such would be possible with appropriate management following tree-felling. Proposals include blocking forestry drains, removal of brash material, ban on the use of pesticides and herbicides, limiting vehicular access and installation of piezometers to monitor the water table. I note that Cork County Council was satisfied with the proposals for habitat restoration (condition no. 32 of Notification to grant planning permission). I would agree with the contention of the applicant that the removal of turbines (as per condition 2 of the Notification of decision to grant planning permission) is not warranted in order to protect habitats on this site. Any grant of planning permission issuing from the Board should be for all eleven turbines and associated infrastructure.

Extensive burning was evident on the dates of site inspection by this Inspector in various different patches on Derrineanig Hill – the most recent having taken place in the summer/autumn of 2016. It has been argued by appellants that burning on Derrineanig Hill occurred prior to survey work for the original EIS studies for wind farm application/appeal PL 04.115425 (2010 & 2011), and that immediate regrowth would not have constituted a typical mix of the flora which would be expected within such habitats. The applicant has countered that the claim is not backed up by maps showing the extent of said burning. In any event, habitat maps included within the current EIS were based on survey work carried out in December 2015, during which time vegetation should have recovered. As already stated, Derrineanig Hill shows evidence of substantial burning of vegetation – both recent and over the past number of years. It may be that the erection of turbines will bring an end to such burning, which it is claimed by appellants is necessary for the maintenance of heathland habitat – promoted so that the area can be used for agricultural grazing. Alternatively, instances of burning of vegetation may need to be targeted and controlled; and there is no reason why this could not be accommodated – even on a wind farm site. Such burning already needs to be controlled to protect infrastructure such as cabling, houses and agricultural infrastructure such as fencing and sheds, and in particular, coniferous forestry which occupies a good portion of the wider appeal site in various blocks.

The EIS states that areas along roads and around turbine bases will be restored to peatland habitat (where it previously existed) using a variety of measures such as vegetation stripping, storing of excavated turves and over-seeding with cut heather brash or vacuumed heather seed. Appendix 3-2 of the EIS identifies 13.54ha of land in Co. Clare for replanting with coniferous trees – as required under the Forestry Act 1946

to replace the equivalent amount to be felled to facilitate this wind farm development. The appendix assesses the environmental impact of this replanting at two potential sites. In relation to the loss of acid flush habitat, the extent of impact is minor in relation to what exists in the immediate area, and the nature, structure and function of the habitat, and viability of species, will not be significantly impacted. Aerial photography submitted with the application indicates the quantity of similar-type habitats in existence on surrounding lands – particularly to the southeast, south, southwest and west.

Decommissioning will result in short-term disruption for fauna, but will not have any significant impact on habitats, as turbine bases, roads and the sub-station will remain in place.

Habitats along the grid connection route were not mapped – being largely within the road/verges or along a 1.45km long unsurfaced agricultural access track within the townland of Lackabaun on the boundary with Co. Kerry. In-stream crossing will not be required at any of the watercourse crossings along the cable route – being either above culverts/bridges or using trenchless technology (directional drilling beneath the watercourse). The grid connection will not have any significant impact on habitats.

10.4.2 Biodiversity

The County Cork Biodiversity Action Plan 2009-2014 would not appear to have been updated since it was first prepared. Biodiversity is protected by both European and Irish legislation, most particularly the EU Habitats and Birds Directives and the Irish Wildlife Acts (1976 & 2000) – the latter through designation of Natural Heritage Areas. The fact that an EIS and an NIS have been submitted are indication that biodiversity has been considered in this application. In this connection it is noted that The Gearagh is both a Ramsar Site for conservation of wetlands, and a Statutory Nature Reserve. Issues affecting The Gearagh are dealt with in the Appropriate Assessment section of this Inspector's Report. In the context of the limited footprint of the proposed development, the extent of the habitats on the site and on surrounding lands, and the ultimate reversibility of the impact (apart from turbine bases and tracks), I would not consider that the proposed development will have a significant impact on biodiversity in the county – particularly where no part of the site has been identified for protection, either under European or Irish legislation. The EIS and the NIS deal with issues relating to rare habitats and species.

10.4.3 Natural Heritage Areas/proposed Natural Heritage Areas

The closest proposed Natural Heritage Area to the wind farm site is Lough Allua (001065) – some 2.2km to the south of the proposed sub-station – extending from Lough Allua itself into the Lee River to the east of Inchigeelagh. The southwest portion of the wind farm site drains to Lough

Allua via the Aghnakinneirth Stream and a second unnamed stream. Mitigation measures for the control of sedimentation of watercourses and for the handling of hydrocarbons within the site will ensure that discharge of sediment/accidental spillage of hydrocarbons during the construction phase will not result in a deterioration in water quality within the pNHA. The majority of the wind farm is set back, where possible, by 50m from the closest watercourse. Bird surveys carried out on site indicated no connection between the site and the pNHA other than possibly for Grey heron. The Toon Bridge Wood pNHA (001083) is located a significant distance from the wind farm site. Comments in the Appropriate Assessment section of this report in relation to The Gearagh SAC would apply to this pNHA also.

A portion of the grid connection route within Co. Kerry immediately abuts Sillahertane Bog NHA. The trench will be excavated within an existing hard-core access track flanked by drainage channels. The trench will not have any impact on the NHA.

The portion of the grid connection route within Co. Kerry drains to the Roughty River pNHA. This pNHA is some 7.5km downstream of the grid connection. Approximately half of the route has been provided with ducting as part of the preparatory works for the Coomataggart sub-station. The duration of trench excavation will be limited, and with good construction practices in relation to the control of sedimentation of watercourses, will not result in any significant impact on the pNHA. This portion of the grid connection has already been assessed by Kerry County Council, and permission has been granted.

There will be no other significant impacts on Natural Heritage Areas, as a result of the proposed development – due to the fact of these areas being located within different drainage catchments or located a substantial distance from the wind farm site. A number of Natural Heritage Areas overlap, or are interminous with, European sites – and where this is the case, issues relating to nature conservation are dealt with under the heading of Appropriate Assessment within this Inspector's Report.

Notwithstanding claims by appellants in relation to the unique nature of the habitats on this site consisting of wild blanket boggy and rocky heathland, intermittently grazed by low stocks of sheep and cattle, with a few horses, which has escaped the worst excesses of conifer plantation, I would note that Figure 3.5 of the EIS indicates clearly just how much of the area is covered by coniferous plantation. The site has not been designated for nature conservation and is neither a proposed Natural Heritage Area nor a Natural Heritage Area. The absence of such designation is an indication that the habitats/species on site are not considered to be of such high value as is claimed by appellants.

10.4.4 European Sites

The possible impact of the development on European sites is addressed in the Appropriate Assessment section of this Inspector's Report. No part of the site is within or immediately abutting a European site.

10.4.5 Flora & Fauna

Surveys of the site for the EIS did not reveal any rare or protected plants or species. Reference is made by one appellant to the presence of *Asplenium tiginense* and *Hymenophyllum wilsonii* (rare fern species) within the wind farm site. However, whilst photographs are submitted, there is no indication of the locations of the photographs. The same submission contains a photograph of "Hyper-oceanic sessile oak wood at Clearrath North" – home to *Hymenophyllum wilsonii*. No part of the proposed development site contains Sessile oak wood habitat.

10.4.6 Avifauna

Bird surveys were carried out between October 2014 and November 2015, using Vantage Point and Walkover surveys. Surveys are included in Appendix 5-2 of the EIS. Vantage point surveys (using three points) were carried out for a total of 78 hours during 2011/2012 and 2015. Five breeding season transect surveys of the wind farm site were carried out between April and August 2015. These surveys were largely for breeding waders. Surveys were also carried out for breeding Hen harrier, Peregrine, Merlin and Barn owl in May, June and July 2015. Red grouse surveying was carried out using a megaphone along parallel transects (dates not indicated).

In addition, species of conservation importance were selected for detailed assessment – Wigeon, White-tailed sea eagle, Hen harrier, Sparrowhawk, Kestrel, Merlin, Peregrine, Golden plover, Snipe and Woodcock.

Waterbird species were assessed for possible connection with waterbird species from The Gearagh SPA and Lough Allua pNHA. There was one sighting of a pair of Wigeon on 15th April 2015 – and it was concluded that the species was not breeding on the site. White-tailed sea eagle is known to roost at nearby Sillahertane in Co. Kerry and has been sighted at Lough Allua. There was no sighting of this species during survey work. Hen harrier was recorded on a number of occasions – all but one being outside of the breeding season. Sparrowhawk and Kestrel were recorded on site – likely to be breeding. Merlin was recorded on site – one sighting being during the breeding season – insufficient evidence of breeding within the site. Peregrine was recorded on the site – but outside of the breeding season. There was no record of Red grouse during survey work on the site – although the habitat would be suitable for this species. Golden plover was observed in winter on this site – but breeding is rare in Ireland south of Galway Bay. Woodcock was not recorded in any of the bird

surveys, but was recorded once in a winter habitat survey in 2015. Snipe (a wader species) was recorded on site during the breeding season in 2015. Barn owl was not observed during surveys, but is known to nest 2.3km to the north of the main study area. Chough has been observed on the site (limited occasions) during survey work. Based on population size or irregular occurrence, only Hen harrier was given a rating of county importance. Canopy closure of coniferous plantation will reduce the foraging habitat for this species within the study area over the coming years. Additional forestry plantation in the future could further reduce foraging habitat.

Based on records of waterbirds using Lough Allua, and records of waterbirds counted during survey work on the site for the EIS, it was concluded that the only species likely to be regularly commuting from Lough Allua to the site was Grey heron. The closest significant wintering waterbird habitat within The Gearagh is approximately 9.5km from the closest proposed wind turbine. Golden plover is the only species recorded at The Gearagh and the wind farm site in any significant numbers. The separation distance renders it unlikely that the species is commuting, but the possibility is not ruled out. There were no significant sightings of waterbirds at Cleanrath Lough (a small water body on the eastern boundary of the wider site) during surveys carried out. Cleanrath Lough is located outside of the site boundary – the closest turbine T4 being approximately 670m distant. There are no turbines located on the direct flight path between The Gearagh and Cleanrath Lough or between Lough Allua and Cleanrath Lough.

Snipe is likely to be displaced by construction works and by the wind turbines. However, in view of the amount of similar-type habitat in the vicinity of the wind farm site, this displacement is not likely to be a significant impact on the species. There is insufficient evidence in relation to a number of bird species as to whether they avoid wind turbines. The displacement impact for Kestrel, Sparrowhawk, Woodcock, Hen harrier, Peregrine, Merlin and Chough are assessed as slight – again in view of the amount of similar-type habitat available in the area – and the impact would not be significant. Golden plover does use the site in numbers – particularly around Derrineanig Hill. However, the EIS points out that the land is not used for foraging – so displacement is not likely to have a significant impact on the species.

Collision risk for birds flying above 30m is a concern. Collision risk modelling for the site (based on avifauna survey work) estimated that the only species which could be affected to any extent was Golden plover. The numbers (11 fatalities estimated over the lifetime to the wind farm) could not be considered significant in environmental terms – even if these birds belonged to The Gearagh population. Monitoring of bird activity and

breeding within the wind farm will occur during the operational phase, and it would be possible to attach a condition to any grant of planning permission requiring annual monitoring for the first five years of operation. The site is not a key foraging area for Hen harrier. Hen harrier has been observed hunting within wind farms elsewhere in Ireland. The turbines are sufficiently spaced (400m minimum) to reduce the barrier effect for passing birds – the limited number of turbines will not produce a significant barrier. The cumulative impact with the proposed wind farm at Derragh will not result in barrier effect – the separation distance between the two being approximately 2.0km. No tree-felling will be carried out during the bird breeding season – 1st March to 31st August.

I would be satisfied that the level of bird surveys carried out for this proposed development is adequate for the purposes of establishing that the proposed development would not have any significant impact on this aspect of ecology.

10.4.7 Selected Mammals

Walkover surveys were carried out in October 2010 and March and May 2011. Further surveys work was carried out in December 2015. Red squirrel, Pine marten, Red fox, Irish hare and Sika deer were recorded on site. Hedgehog, Pygmy shrew, Otter, Badger and Irish stoat were not recorded in any surveys, but are likely to occur. The proposed development will result in some disturbance for these species during construction (and to a lesser extent decommissioning), but this will be of limited duration. Pre-construction surveys would be desirable for Otter and Badger within the wind farm site, along the grid connection route and at any necessary road works along the turbine delivery route, to allow for the possibility these species might develop holts or setts subsequent to original survey work.

The cable will be laid entirely within the public road/verge or within tracks on either side of the county boundary: there will be no instream works. Works will be of short duration in any one location – a few days. There will be no significant impact on mammals arising from such short-term works.

10.4.8 Amphibians & Reptiles

Detailed surveys for species were not carried out. The EIS indicates that suitable habitat exists for Frog, Common lizard and Smooth newt within the site. The limited area of the development will ensure that there will be no significant impact on these species during construction or decommissioning phases. The development of surface water attenuation features on the site may in fact expand the habitats necessary for this fauna to thrive.

10.4.9 Bats

Bat surveys were undertaken in May, July and September 2015. Survey results are presented in Appendix 5-4 of the EIS – for a total of nine transects – indicated at Figure 5.11 (a total of 371 hours). In addition, stationary monitoring points were utilised within coniferous plantation and on exposed areas of the site. Five species were recorded – Common pipistrelle, Soprano pipistrelle, Liesler's, Brown long-eared, and a single recording of Lesser horseshoe. There is a known colony of Lesser horseshoe bats in Silvergrove townland to the east of the windfarm site. The majority of the recordings were of the Pipistrelle species, with few recordings of Leisler's which are of concern due to their collision risk (flying at higher levels). Recordings were low – typical for upland exposed habitats. No suitable locations for bat roosts were found during surveys – a bridge and old abandoned house being targeted during searches. Trees on site are mostly coniferous – with only small areas of scrub deciduous species. Any large trees to be felled on site will be examined beforehand for bat roosts, and any bats found moved under Derogation Licence. Along the grid connection route, bridge structures (one in particular have been identified) will be examined before work commences to determine if any bat roost is present. Given the possible time lag between any planning permission and commencement of development (particularly in this instance where a ten-year permission has been sought), it would be prudent to attach a condition requiring surveys of bridge structures on the grid connection route prior to commencement of any trenching/drilling operation.

Bat mortality due to collision with rotating blades has not been the subject of significant study in Ireland. Low pressure close to turbines can lead to barotrauma mortality. Felling of trees will ensure that there is an interval of at least 50m between woodland edge and the nearest rotating blade. This is the most significant mitigation measure put forward for bat species.

10.4.10 Aquatic Ecology

A new crossing is proposed on the Toon River for construction access from the A7433 at Dereenacarton townland. An existing concrete bridge structure (one mid-stream support) on the Toon River at Glenties/Cleanrath North townlands may need to be strengthened for outsize loads. No in-stream works are proposed – bottomless culverts being the preferred construction method. Surface water mitigation measures will ensure that siltation of watercourses does not occur and that accidental spillages of hydrocarbons could be contained within the site. Forestry felling would occur in the normal course of events: mitigation measures to prevent nutrient release into watercourses will be put in place.

There is no salmonid habitat within the site. Freshwater pearl mussel is present in both the Lee and Toon Rivers – at Port Bán on the Toon River – some 2.0km downstream of the wind farm site; and to the east of Lough Allua in the Lee River – some 3.0km downstream of the main study area. The species is not a qualifying interest of The Gearagh SAC – the closest downstream European site. Watercourses within the study area are too small or lack appropriate habitat for this species. Forestry Service draft Freshwater Pearl Mussel requirements will apply to all felling operations. Nutrients released from brash will not be any different from trees felled in the normal course of forestry rotation at this plantation. Inland Fisheries Ireland (in a report to Cork County Council) was satisfied with the proposed development, and recommended that conditions be attached relating to interference with drainage and banks of watercourses, control of suspended solids released to watercourses and requirements for bridging or culverting of watercourses, so as not to obstruct movement of fish. Sediment control measures will provide the surest means of limiting the impact of the development (wind farm itself, turbine delivery route accommodation works, and trench for the grid connection) on aquatic ecology. Such measures are contained within the Construction Environmental Management Plan which accompanies the application.

10.4.11 Kerry Slug

Surveys were carried out in August/September 2011 for this Annex II species. The species was recorded on a number of the transects surveyed. Slugs were also recorded in habitat surveys in December 2015. A Kerry slug Habitat Management Plan was submitted as part of the 1st Party appeal to the Board. This provides for pre-construction measures (such as possible slug removal prior to commencement of construction) and habitat restoration and creation – all subject to Derogation Licence from the National Parks & Wildlife Service. Annual monitoring will be carried out for five years following construction of the wind farm. The loss of habitat will not be significant in terms of what already exists in the area. The new access roads, constructed of locally sourced rock, can be considered suitable habitat for this species. The arrangements proposed for this species are appropriate for the purposes of protection.

10.4.12 Lepidoptera

The Marsh Fritillary, an Annex II species was not recorded during surveys of the site.

10.4.13 Invasive Species

There is no record of any invasive species within the wind farm site. There are at least two small stands of Himalayan knotweed along the turbine delivery route. The control of this invasive species is a matter for the Council or the private landowner within whose land the species occurs. Notwithstanding this, there is the possibility of spread of the

species with the excavation works which will be required for the alignment of roads and junctions through the movement of machinery and plant along different sections of the route. Given the time delay between a grant of permission and commencement of development, there is a likelihood that such invasive species could spread in the meantime. Therefore, a pre-construction/commencement survey would seem to be prudent, and such could be required by way of condition attached to any grant of planning permission.

10.4.14 Decommissioning

The decommissioning phase will result in temporary disturbance for fauna. The period involved will be limited, and only wind turbines would be removed. There will be no felling of trees required to facilitate decommissioning. This phase of the development will not have a significant impact on the ecology of the area. Decommissioning will not have any significant impact on aquatic ecology, as the old connection, new roads and sub-station infrastructure will be left *in situ*.

10.4.15 Cumulative Impact with Other Projects

There are a number of other wind farms in the wider area – and permission granted for a six-turbine wind farm at Derragh (some 2.0km to the west) and a five-turbine wind farm at Carrigarierk (some 7.0km to the south). The cumulative impact on habitats of conservation importance was assessed in the EIS, and it was concluded that, having regard to the limited footprint of the development and the amount of similar-type habitat in the wider area, the cumulative impact of this 11-turbine wind farm would not be significant. Cumulative impacts in relation to avifauna, regard being had to the proximity of the proposed Derragh wind farm, have been assessed, based on bird species recorded in EIS surveys at Derragh. The land-take for Cleenrath and Derragh wind farms would not be significant in terms of the amount of similar-type habitat available in the wider area. The closest existing wind farm is at Sillahertane in Co. Kerry – some 9.0km to the west. Proposed wind farms at Carrigarierk and Shehy More are located some 7.0km and 6.5km respectively to the south. There are no other significant developments in the immediate area which could have any significant cumulative impact on ecology. Mitigation measures are outlined to control surface water run-off and quality. Therefore, there will be no cumulative impact on surface water quality with any other development in the area.

10.5 Soils & Geology

10.5.1 General

Section 6 and Appendix 6 of the EIS deal with these interrelated issues. There are rock outcrops over much of the southern portion of the site, with shallow peats in pockets between southwest/northeast trending ridgelines.

The elevation of the site is between approximately 130m and 300m OD. Farm tracks criss-cross the area – running up to the summit of Derrineanig Hill. Mineral sub-soil and peat coverage is generally thin. Peat probing was carried out at 171 no. locations within the site. Figure 6.2 of the EIS indicates depths of between 0.0 and 0.7m at turbine bases: peat depths of up to 3.4m were encountered on the access road to T3. Bedrock comprises Devonian old red sandstones: faults within the area are numerous (indicated at Figure 6.3). Estimated volumes of peat to be removed are 36,246m³ – dried down to 25,372m³. Some peat will be re-used for reinstatement and landscaping. Brash mats will be used for heavy machinery to limit soil compaction. I note that there are no geological heritage sites in the vicinity of the development.

10.5.2 Borrow Pits

The stated area of Borrow Pit 1 is 7,614m². This borrow pit is located within a coniferous plantation. The stated amount of aggregate to be extracted from this borrow pit is 6,232m³ (as per Table 3.2 of the EIS), but is 16,995m³ (as per Table 6.8 of the EIS) – the latter figure being almost three times the former. At the lower level of proposed extraction, the pit would be an average of 1m deep. Even allowing for the necessity of stripping top-soil/peat, the pit should not be any deeper than 2.0m. If the higher rate of extraction is taken, then the pit should not be more than approximately 4.0m deep. Yet cross-section drawings submitted with the application indicate that this borrow pit is up to 12m deep. There is obviously an error somewhere in the drawings submitted – even allowing for the larger volume as set out in Table 6.8). The stated area of Borrow Pit 2 is 8,720m² – divided into two parts by an access road. This area is currently mostly exposed rock. The stated amount of aggregate to be extracted from this borrow pit is 9,438m³ (as per Table 3.2 of the EIS) but 19,950m³ (as per Table 6.8 of the EIS). At the lower level of proposed extraction, the pit would be somewhat over 1m deep. Allowing for the necessity to strip top-soil/peat, the cross-section drawings would appear to roughly correspond to the amount of aggregate to be removed – even allowing for the higher figure in Table 6.8. Maximum peat depths at borrow pits are stated to be 0.5m. The amount of rock to be extracted will not be significant in terms of the amount of similar-type rock in the immediate area. Upon completion of extraction, unwanted peat from excavations elsewhere on site is to be deposited within the two pits. It would be possible to attach a condition to any grant of planning permission issuing from the Board requiring that no borrow pit be excavated to a depth exceeding 5m.

10.5.3 Peat Stability

Appendix 6-1 of the EIS comprises a Peat Stability Assessment – dated December 2015 – site visits having been undertaken within the same month. There are no recorded peat failures at the wind farm site – and the

nature of the landform extensive rock outcropping would act to contain any peat slippage. Turbines are mostly located in areas with slopes from 1-4 degrees. The slope at T6 is 14 degrees, but there is no peat at this location. Analysis of 171 peat probes was undertaken. Shear vane testing was carried out across the site. Peat shear strengths were in the range of 8kPa to 39kPa – with an average value of 20kPa. The strengths recorded are indicative of shallow, well-drained peat. Peat depth of 3.4m was encountered along the proposed access route to T3. This area of the site is flat, and partly within coniferous plantation, and poses no risk of peat slippage. The Factor of Safety (FoS) of peat slopes is a derived measure of the degree of stability of a slope – anything less than 1.0 being unstable. For thoroughness, undrained peat is assumed to extend over the site, with a shear strength of 6kPa. The acceptable safety range is generally considered to be 1.3 or above. Table 6.5 indicates a FoS for undrained peat for two conditions – (1) no surcharge loading and (2) surcharge of 10kPa – the equivalent of 1m of stockpiled peat on top of the surface. The lowest FoS [for Condition (2)] was 2.32kPa at T6. The results for drained peat (indicated at Table 6.6) were even higher – the lowest FoS [for Condition (2)] was 3.25kPa at T6. The EIS concluded that the proposed development posed no risk of a peat slide. Mitigation measures include placement of turbines in areas of shallower peat; use of floating roads in areas of deeper peat; and use of borrow pits for deposit of unwanted peat. Cork County Council engaged the services of O'Callaghan Moran & Associates to comment, *inter alia*, on peat stability. The Consultants were satisfied with the proposals, as originally outlined in the EIS, to deal with the issue of peat stability during construction, and having walked this site, I would concur with that assessment.

10.5.4 Grid Connection

The 15.6km grid connection will be located mostly within roads and forestry/agricultural tracks. Elevation ranges from 190m OD at the boundary of the wind farm site to a low of 150m OD at Gorteenakilla townland, before climbing again to the county boundary at approximately 450m OD. It is not unusual for electricity cables, telephone cables or water pipes to be buried within roads/verges or tracks. Excavation will be 1.2m below existing road/verge or track level, and will not have any significant impact on soils or geology – even where rock-breaking may be required.

10.6 **Water**

10.6.1 General

Section 7 of the EIS deals with this issue. A site visit was undertaken on 11th December 2015. The wind farm site and most of the grid connection route are entirely located within the Lee River hydrometric area (HA19) catchment. Approximately 2km length of the grid connection route within

Co. Kerry drains to the Roughty River. The southwestern portion of the site drains to Lough Allua on the Lee River – whilst the larger remaining part drains to the Toon River – a tributary of the Lee River. There are numerous man-made drains on the site for coniferous forestry plantations, agriculture, tracks, and small areas of peat cutting. The surface water body status of the Toon River is 'Good', whilst that for the section of the Lee River to which the wind farm site drains has a status of 'Good' also. EPA water quality monitoring indicates Q4 for both the Lee and Toon River catchments in the vicinity of the site. Tests for pH, temperature and electrical conductivity were undertaken in streams in December 2015 – during a wet period. Values for pH indicated slightly acidic water in drains following a period of heavy rain. The highest risk to water quality arising from the development would be from accidental spills of hydrocarbons or concrete. Siltation of watercourses would also be of concern.

10.6.2 Surface Water Drainage

Details of site drainage are indicated at Appendix 3-3 of the EIS (within the Construction Environmental Management Plan) – with provision for 50m buffers from watercourses (indicated on Figure 7.6), new collector drains, swales, stilling ponds, silt fences, check dams and level spreaders for outfall to vegetated ground. Additional information submitted to Cork County Council on 12th April 2016, further elaborated on surface water drainage issues. Surface water flow monitoring was carried out at four points FML01-FML04 on three dates in March 2016 – illustrated on Figure no. 2 of the additional information submission. These four points – two draining to the Upper Toon River catchment, one to the Aghnakinneirth Stream (To Lough Allua on the main Lee River), and one to an un-named stream (To Lough Allua on the main Lee River), will be used for measuring pre-development and post construction flow rates – based on monthly measurements following completion of construction. The ground on this site is rough, and difficulty might be experienced creating the necessary gradients and conditions for discharge to vegetated ground. However, in the context of the earthworks which will be required to create the turbine bases, crane hard stands, and access tracks, there is no reason why an appropriately engineered outfall from an attenuation pond could not be realised on this extensive site.

The 10.5ha site footprint is estimated to increase site run-off by 833m³ per month. This represents an increase of 0.09% over current 'greenfield' run-off rates. Natural run-off from the site is high (estimated at 95%) - due to extensive rock outcropping and limited soakage of shallow peaty soils. All access tracks will be constructed of permeable materials and will not be tarmacadamed. The 1st Party response to the 3rd Party appeals, supplied additional information in relation to surface water drainage. Calculations for maximum peak surface water run-off rates were made. Annual rainfall is 1,643mm. A 20% increase was factored into calculations to allow for

global warming. Peak storage required for a 1-in-100 year one-hour storm event was estimated at 14.12m³ per turbine base – an attenuation pond of 16m³ being proposed for each turbine base and for each 180m length of new access road. The exact location of these ponds has not been indicated, and will be dictated by local ground conditions when excavation commences. This is reasonable in the context of the nature of the ground on the site – particularly where rock outcrops occur. Additional attenuation will be provided within roadside drains which will be fitted with check dams. The area of the Lee River catchment upstream of The Gearagh SAC is estimated at 106km². The run-off from the wind farm site could cause a 0.0043% increase in inflow into The Gearagh (without any drainage mitigation measures in place). This figure is not significant. Cork County Council engaged the services of O'Callaghan Moran & Associates to comment, *inter alia*, on drainage matters. The Consultants were satisfied with the proposals (as originally outlined in the EIS and additional information submission to Cork County Council) to deal with the issue of site drainage, where the Construction Environmental Management Plan included descriptions of the proposed mitigation measures, particularly in relation to hydrology and water quality. It includes drawings and schematic figures for the various surface water control features – swales, stilling ponds, check dams, level spreaders and silt curtains. I would be satisfied that the mitigation measures proposed will serve to attenuate surface water flows from this site. Claims by appellants that surface water attenuation measures at other wind farms do not work, as not a relevant consideration. The applicant has put forward a suite of measures to deal with the issue of surface water run-off from new hard-stand areas.

10.6.3 Bedrock Aquifer

The aquifer beneath the site is classified as Locally Important (LI) moderately productive in local zones only for the northern area and a poor aquifer for the southern area. The vulnerability of the aquifer is 'Extreme' due to the shallow subsoils and rock outcrops. There are no karst features identified in this area of sandstone bedrock. The groundwater body status of the aquifer beneath the site is not known. There is no proposal to extract water for this development, and the proposal will have no significant impact on ground water within the bedrock underlying the site.

10.6.4 Wells & Water Supply

The EIS assumed every house in the area was served by a well. Having regard to the separation distance from turbine bases/borrow pits/sub-station to dwellings (456m at the closest), there is unlikely to be any hydrogeological connection that could impact on any wells surrounding the site. The well at the Farmhouse, Rathgaskig is estimated by the applicant to be 2.2km to the west of the wind farm and 200m from the grid

connection route, and I would be satisfied that it will not be impacted by the development. The assessment for the wind farm proposals at Derragh (significantly closer to this spring/well) concluded that this water source would not be impacted. The grid connection route runs along public roads and a forestry track of 1.6km length in Coomlibane townland (used by public vehicles) as far as Lackabaun townland on the Kerry boundary. The Carraignadoura source protection zone is located some 570m from the closest point of the grid connection route. The source is uphill of the grid connection. The excavation of a trench to lay the grid connection will not have any impact on the source protection zone. The line of the grid connection has a groundwater vulnerability of 'extreme' or 'high'. As it is located mostly within disturbed ground beneath roads or tracks, the impact of excavation of the necessary trench would not pose a significant threat to groundwater.

10.6.5 Grid Connection Route

There are 13 no. water crossings (nine within Co. Cork) on the 15.6km grid connection route which follows public roads and agricultural/forestry tracks. An additional four new watercourse crossings have already been created within the Roughty River catchment within Co. Kerry (as part of the construction works for Coomataggart sub-station). Crossings on roads will be either within the road base/verge or beneath the watercourses using directional drilling. In-stream work will not be required at any crossing. Mitigation measures are outlined in section 7.4.2.2 of the EIS, which generally relate to adherence to best practice during construction works.

10.6.6 Flooding

No areas of flooding were identified from OPW maps, either within the wind farm site or along the route of the grid connection. Run-off from the site is already high (estimated at 95%) because of rock outcrops and lack of soakage within thin soils and peat. All surface water will be treated and attenuated on site during construction.

10.6.7 Mitigation Measures

The Construction Environmental Management Plan outlines mitigation measures proposed, included within which are the following-

- Any new drains to mimic the existing hydrological regime, thereby avoiding any increase in flow volumes leaving the site.
- 50m buffer zone from streams within the site (excluding forestry drains) will be maintained – except at limited points where the proposed access track either encroaches on or crosses existing watercourses.
- Attenuation of site run-off during construction at existing levels – January being identified as the wettest month.

- In the case of new access tracks, upstream interceptor drains will discharge over check dams to level spreaders within buffered outfalls to vegetated ground.
 - In the case of new access tracks, downstream collector drains will discharge over check dams into attenuation and settlement ponds before discharge via level spreaders within buffered outfalls to vegetated ground.
 - Tree-felling will be carried out in a manner to limit sedimentation of watercourses and nutrient release from brash.
 - Refuelling of vehicles will not be carried out within 100m of a watercourse. Spill kits will be available on the site. A double-skinned bowser will be used. Fuel storage areas, if any, will be bunded. The electrical control building will be bunded, as lubricants and chemicals will be stored here during the operational phase.
 - Interceptor drains will be excavated up-slope from all development elements – to divert clean water run-off away from excavation works.
 - Installation of transverse drains on steeper sections of access road will reduce velocity of surface water run-off and the potential for erosion.
 - 16m³ capacity attenuation ponds at each turbine base and for each 180m length of access track.
 - Buffered outfalls over vegetated ground from all attenuation ponds.
 - Removed silt will be deposited away from watercourses.
 - Surface water monitoring (at four identified points) will be carried out before, during and after construction works, to allow for comparison of run-off rates and to show whether mitigation measures are working.
 - Large excavations and movements of peat/subsoil or vegetation stripping will be suspended or scaled-back if heavy rain is forecast.
 - If required, a 'Siltbuster' will be brought to the site for treatment of areas of the site which may need dewatering (turbine foundations or borrow pits).
 - A chemical toilet will be used on site (with integrated tank) during the construction phase.
- Water for use in canteen/toilets during construction will be imported into the site.
- No cement batching will be carried out on site.
 - Pre-cast concrete elements will be used where possible.
 - Concrete washing water will be removed from the site.
 - Use of floating roads in areas of deep peat, so as not to affect shallow surface water flows.
 - Porous base for roads in areas of acid flush, so as not to impede shallow surface water flows (Plates 7.3 & 7.4 of the EIS).
 - No discharge of surface water into acid flush areas.

- Adherence to Forestry Service Guidelines in relation to development less than 6.0km upstream of known Freshwater pearl mussel populations.
- Construction stage mitigation measures to be put in place during decommissioning.

10.6.8 Cumulative Impact

The hydrological cumulative impact with other wind farm developments will not be significant having regard to the limited footprint of this development for 11 wind turbines, and the fact that the site drains to two different sub-catchments – the Upper Lee and the Toon Rivers. The nearby proposed Derragh wind farm drains to the same two catchments (principally the former). The Shehy More and Carrigariern proposed wind farm developments drain mostly to the Bandon River with smaller sections draining to the Upper Lee River. The catchment area for the Lee River (including the Toon River) within a 20km radius of the site is 662km². Within that area, existing and proposed wind turbines could amount to 60 – giving a possible density of one turbine per 13km². This number of turbines would not be significant in terms of impact on surface water drainage. Appellants blame excessive surface water run-off from wind farms for damage being caused to the anastomosing river network of the Lee/Toon Rivers at The Gearagh SAC. [This issue is addressed in the Appropriate Assessment section of this Inspector's Report].

10.7 Air & Climate

Section 8 and Appendix 8 of the EIS deal with these associated issues. The development will have no significant impact on air quality in the area. There may be some dust nuisance caused during construction, depending on how dry the weather is, but this will be of limited duration. The development of a wind farm will improve the national position in relation to emissions of greenhouse gases. Electricity generation from renewable sources is the most effective way of reducing the contribution of power generation to Ireland's greenhouse gas emissions. Having regard to the scale of the proposed development, there will be no significant impact on climate in the immediate area, and a small impact nationally. During wind farm construction, carbon is lost as a result of peat excavation and peat drainage. Carbon is similarly lost from felling of coniferous plantation – however this will be compensated for by new planting in Co. Clare.

Carbon is a principal input in the construction of wind turbines. It is estimated that CO₂ equivalent losses will be 44,373 tonnes over the 25-year lifetime of the project (and based on the fact that the site would be restored after that period of time). These figures are set out at Table 8.9 of the EIS, and are worst case figures. Peat stripped from the site will be deposited within the worked-out borrow pits. The generation of electricity, it is claimed, will displace 1,016,622 tonnes of CO₂ if produced by burning

fossil fuels. This figure is stated to more than offset the carbon losses as a result of construction of the wind farm. However, there are questions relating to how precise these figures can be. Alternative means of electricity generation are available – such as the nuclear option – which do not result in the creation of greenhouse gases. The development is not justified for planning purposes by a demonstration that it would, by itself, lead to a reduction in greenhouse gas emissions. It is justified by its compliance with national policy to reduce greenhouse gas emissions.

10.8 Noise & Vibration

10.8.1 General

Section 9 of the EIS deals with these issues. Appendix 9 of the EIS contains supplementary information in relation to noise. A noise contour map was included, amongst other noise information, in the additional information submission to Cork County Council of 12th April 2016. Further information in relation to noise was provided by way of 1st Party appeal.

10.8.2 Wind Energy Guidelines Noise Standards

The 2006 Guidelines contain a list of noise standards for the protection of human health. At p.30 it is stated- "In general, a lower fixed limit of 45dB(A) or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations is considered appropriate to provide protection to wind energy development neighbours. However, in very quiet areas, the use of a margin of 5dB(A) above background noise at nearby noise sensitive properties is not necessary to offer a reasonable degree of protection and may unduly restrict wind energy developments which should be recognised as having wider national and global benefits. Instead, in low noise environments where background noise is less than 30dB(A), it is recommended that the daytime level of the LA90, 10min of the wind energy development noise be limited to an absolute level within the range of 35-40dB(A)". The Guidelines go on to state- "Separate noise limits should apply for day-time and for night-time. During the night, the protection of external amenity becomes less important and the emphasis should be on preventing sleep disturbance. A fixed limit of 43dB(A) will protect sleep inside properties during the night".

The 2006 Guidelines are based on the UK Department of Trade & Industry, Energy Technology Support Unit (ETSU) publication "The Assessment and Rating of Noise from Wind Farms" (1996). Claims by objectors that this ETSU publication is out-dated and not fit for purpose is not a relevant planning consideration. The 2006 Guidelines are as they are, and remain in force. Proposed changes to these Guidelines, outlined in the Department of Environment, Community & Local Government "Proposed Revisions to Wind Energy Development Guidelines 2006 – Targeted Review in relation to Noise, Proximity and Shadow Flicker"

(December 2013), have not yet been adopted. The applicant notes that the 2013 revision proposes a noise limit of 40dB LA90, 10 min which should be applied to noise-sensitive properties – as measured outside such properties. The limit would apply either day or night, and would not apply at properties of those with a financial interest in the wind farm.

The applicant has adopted the following standards for this development-

- 43dB LA90, 10 min for day-time environments or a maximum increase of 5dB(A) above background noise (whichever is the higher).
- 43dB LA90, 10 min for night-time periods.
- 45dB LA90, 10 min for both day-time and night-time at the houses of participating landowners.

10.8.3 Background Noise

The sources of noise associated with wind farms are mechanical and aerodynamic. A fixed limit of 43dBA, it is stated, will protect sleep within residential units. For the purpose of measuring background noise – three monitoring points A-C were used (indicated at Figure 9.2) with measurements taking place in March 2015. Measurements at Point C were lost due to instrumentation being tampered with. This shortfall was supplemented by way of additional survey work for a new location Point C (further to the southeast) – submitted by way of additional information on 12th April 2016. The additional survey work at the new Point C was carried out between November 2015 and January 2016. An updated table is presented at Table 4 of the 1st Party response to the 3rd Party appeals (received by the Board on 4th August 2016). Wind speeds were measured using the existing monitoring mast to the south of T5 – 80m height, standardised down to 10m. The number of monitoring points are sufficient to give an indication of background noise levels in the vicinity of the wind farm site. It has been claimed that one of the noise monitoring points was not representative, as it was located next to a saw mill and working farmyard. I would be satisfied that such uses are not untypical of uses which exist within rural areas. Monitoring points B & C are located within clusters of houses, and background noise measurements would, therefore, be typical of the noise levels experienced by the occupants of a number of houses within this rural area.

10.8.4 Noise Monitoring Equipment

I would be satisfied that those carrying out noise monitoring and modelling are suitably qualified. The applicant has stated that periods in the data affected by rainfall were removed from the dataset used for deriving the typical background noise levels at each location. It is open to participating residents to install additional measures at houses to screen unwanted noise. The applicant has submitted calibration certificates at Appendix 9.2 of the EIS. It has not been the practice of the Board to require such detailed information in relation to equipment used by professionally

qualified individuals/companies who carry out survey work for a proposed development – not just in relation to noise, but also in relation to photography, land surveying, hydrology, ecology or air quality (and this list is not exhaustive). Such might only be required where it was felt that the individual/company involved with measurement was not suitably qualified, or where the results were such that they raised questions of credibility by those assessing them. The applicant has indicated a willingness to comply with noise control conditions which the Board might see fit to attach to any grant of planning permission.

10.8.5 Construction Phase Noise

This phase will last 12-18 months. The principal sources of noise will be from HGVs and excavators/rock crushers – particularly at the borrow pits. The closest house to a borrow pit is H23 – located some 700m south of Borrow Pit 2. This distance is more than sufficient to ensure that there will be no noise nuisance from this feature of the development. The excavations will take place during normal working hours (07.00-19.00). Blasting will result in a lower requirement for rock breaking/crushing, and hence lower noise emissions. Noise from the excavation for laying the grid connection cable will result in some short-term nuisance for adjacent residences – particularly if rock has to be broken to excavate the 1.2m deep trench. This will be of limited duration and will occur during normal working hours. The impact on humans will not be significant.

10.8.6 Construction Phase Mitigation Measures

Significant mitigation measures proposed include the following-

- Limiting hours of construction and hours during which noise could cause nuisance
- Monitoring of noise levels so as to guide future activities on the site.
- Internal road maintenance to reduce vibration from HGVs.
- Maintenance of all plant and vehicles in good working order – including use of exhaust silencers.
- Pumps or plant to be operated outside of daytime hours will be surrounded with an acoustic barrier.

10.8.7 Operational Phase Noise

Whilst a definite turbine type has not been selected for this wind farm, for the purposes of noise modelling a Nordex N117 was used (hub height 120m and power output 2.4MW). It is not quite clear why this model was used, given that the proposed power output is 3.0MW and the hub height is 91.5m maximum. The six-turbine, permitted wind farm at Derragh was factored into operational noise predictions. For the purposes of all predictions presented in the EIS, and to account for various uncertainties in the measurement of turbine source levels, a factor of 2dB has been added to the manufacturer's values in line with best practice wind turbine noise assessment. Noise sensitive locations were assumed to be houses

within 10 rotor diameters of any turbine – numbered R001-R071 in Table 9.15: of these, three are participating landowners. Noise modelling predictions for all 71 are presented at Table 9.17. A threshold of 40-45.9dB was used for daytime (depending on wind speed) with a flat night-time threshold of 43dB being used. In the event that the lower threshold of 40dB is used, then exceedances would occur at receptors R014, R015, R018, R019, R020, R021, R022, R023, R024 & R028. Of these receptors R018, R022 & R028 are participating landowners. The maximum exceedance for a non-participating landowner, would be 2.2dB at wind speeds in excess of 7m/s. These figures are further reduced if wind direction is taken into consideration – the maximum exceedance being 1.4dB for R021 for wind speeds in excess of 7m/s. Noise levels from the substation will not have any impact on residences – arising from the low level of noise and the separation from houses. The additional information submission of 12th April 2016, included cumulative noise predictions with the proposed Derragh wind farm for all 71 noise receptors (Table 5 of Appendix 4). This cumulative assessment results in no increases over and above results in section 9 of the EIS – there being no houses located within the 2km separation area between the two wind farm sites.

10.8.8 Infrasound & Amplitude Modulation

There is no evidence that infrasound from wind turbines results in harmful effects on human health. Infrasound was identified in the past with passive yaw 'downwind' turbines. Modern active yaw turbines result in rotation of blades upwind of the support tower. The separation distances of turbines from residential properties should ensure that infrasound is not perceptible to humans. The applicant notes that if future studies do identify problems with specific turbines and low frequency noise, then mitigation measures could be employed through curtailment of turbine operation.

The issue of Amplitude Modulation (AM) is addressed in the EIS. Normal AM is characterised by a swish sound as blades pass the hearer. Other AM can result in a periodic 'thumping' or 'whoomphing' sound at relatively low frequencies, and often at greater distances from turbines (particularly downwind). Occurrence depends on atmospheric factors including wind speed and direction, topography and blade design. It is concluded that it is not possible to be prescriptive as to whether any particular site or wind farm design is more or less likely to give rise to Other AM (OAM).

Occurrence is the exception rather than the rule – based on studies of existing wind farms. Even at sites where it did occur, studies show it was likely to occur 7-15% of the time. The only mitigation measure is the cessation of operation of offending turbines during those conditions under which OAM is found to occur. This can only be established after monitoring and measurement to establish the extent of the problem. It is

possible that improvements in blade design and changes in operational parameters can lessen the incidence of OAM.

10.8.9 Operational Phase Mitigation Measures

Significant mitigation measures proposed include the following-

- Curtailment of turbine operation in certain wind conditions using the SCADA system.
- Noise monitoring to confirm if Amplitude Modulation is a problem once turbines have been commissioned; and then control and regulation of the operation of turbine unit(s) in certain atmospheric and meteorological conditions, if required, using the SCADA system.

10.8.10 Vibration

Vibration may result from excavation at borrow pits. The closest house (H23) is approximately 700m from Borrow Pit no. 2. The use of blasting to facilitate extraction of rock has not been excluded. A mobile drilling rig is to be used. Peak Particle Velocity (PPV) at houses should not exceed 8mm/s at less than 10Hz, 12.5mm/s at between 10 and 50Hz and 20mm/s between 50 and 100Hz and above. EPA guidance indicates acceptable air overpressure limits as 125dB(Lin)_{max peak}. Prior notification of blasts will be given to residents. The Notification of Decision to grant planning permission, issued by Cork County Council did not include a condition relating to control of vibration. Vibration levels from blasting should be limited to Peak Particle Velocity of 12mm/s, or 8mm/s if blasting occurs more than once a week. Air overpressure values should not exceed 125 dB (Lin)_{max peak} with a 95% confidence limit. Blasting should not occur outside of the hours of 11.00-17.00 Monday to Friday – in line with the Quarry Guidelines (April 2004).

10.8.11 Decommissioning Phase Noise

Turbines will be removed, but not concrete foundations. Tracks, cabling and the sub-station will not be removed. The disassembly of turbines for transport off-site will be a limited operation, and noise generation will not have a significant impact on the environment.

10.9 Landscape & Visual

10.9.1 General

Section 10 of the EIS deals with this issue. Blade tip height of 150m was used for assessment purposes. A Zone of Theoretical Visibility Map is attached at Appendix 10-1. Five concentric rings of 5km, 10km, 15km, 20km & 25km are indicated. Not surprisingly, some part of turbines will be visible from almost all areas within 5km – diminishing as distance increases to 25km. This is to some extent explained by the elevated nature of the site on Derrineanig Hill. The ZTV map does not take into

account screening vegetation/structures or weather and atmospheric conditions. Mountains on the Cork/Kerry boundary largely restrict views of the proposed development from adjoining County Kerry. The principal views from the site are to the east and south/southwest. Visibility will obviously decrease with distance. Some 27 points were selected for photographs and photomontages – mostly from within 10km of the site. These are indicated in Volume 2 of the EIS.

10.9.2 Baseline Assessment

The site is within a relatively remote upland area, characterised by coniferous forestry and marginal agricultural land. There are no hedgerows around site boundaries and fields are often divided by a mixture of low mounds/drains/stone walls/post & wire fences. Settlement in the area is dispersed. The Shehy Mountains and Derrynaghatta Mountains are the dominant landscape features in the area. Whilst planning permission has been granted for a number of wind farm developments in the wider area, there is no perception at present of an area dominated by wind turbines. The Wind Energy Strategy for the county indicates that the site is not within any important landscape or heritage area. Wind farms are open for consideration in this area of the county where the proposal can avoid adverse impacts on the visual quality of the landscape and the degree to which impacts are highly visible over wider areas. Cork county Landscape Character Assessment indicates that the site is largely located within 'Rolling Marginal Middleground' (12b) with a small section to the southwest located within 'Ridged and Peaked Upland' (15a). The landscape value of the former is 'Medium', whilst that of the latter is 'High'. The landscape sensitivity of the former is 'Medium', whilst that of the latter is 'High'.

10.9.3 Visual Impact

Turbines proposed on site are large structures, and there is no disguising them in the landscape. Poor weather will serve, on occasion, to disguise the turbines in daylight hours. Mountains to the west and northwest will limit the visual impact of the development. The proposed colour is matt-gray – the generally accepted colour in Ireland. Aviation warning lights, if required, will result in the presence of the turbines being announced in the night sky. Cumulative visual impact has been considered with other built, permitted and proposed wind farms in the wider area (particularly the proposed wind farm of six no. turbines at Derragh to the west). Maps submitted indicate that if all proposed wind farms were constructed, the addition of 11 turbines at Cleanrath would not significantly add to the areas within 20km for which any wind turbine would be visible. Photomontages attempt to illustrate the impact of the turbines on the landscape. Photomontages are not the same as scaled drawings. In assessing the visual impact of this development on the visual amenities of the area, I have not relied on photomontages submitted, other than as an

indication of what turbines might look like in the landscape. The turbines will be visible over a wide area. However, the limited number of turbines proposed, the separation distances between them, in conjunction with the folding nature of the landscape, and presence of screening vegetation, will result in the development being acceptable in this area and not having a significant impact on landscape character. I would note that it is usual to condition the life-time of a wind farm to 25 years, after which time turbines may be removed. There is a separation distance of approximately 2.0km from the closest turbine in the proposed Derragh wind farm development – ensuring that the two wind farms will not appear as one – except in limited distant views. The visual impact of the construction phase of the development within a partially forested site will not be significant. There will be no visual impact arising from construction of the grid connection.

The location of houses in the vicinity of the site has been indicated in the EIS. The EIS, quite correctly, concentrates on houses which are located close to the wind farm site. Notwithstanding that turbines will be erected on elevated ground relative to houses, I would be satisfied that the separation distance would be sufficient to ensure that turbines would not appear to loom over houses. There are no houses within the cluster of 11 turbines on this site. There are no listed or protected views from individual houses. It is open to property owners to undertake screening/planting within the curtilage of houses or adjoining lands in their ownership in order to increase privacy or to obscure/screen outside developments (of whatever nature). It is not reasonable to expect that a visual *cordon sanitaire* can be placed around particular types of development, particularly where land for proposed development is in the ownership/control of others. In relation to the issue of capacity of certain landscapes to accommodate a finite number of wind turbines, I would comment that such is more properly the domain of the Development Plan, which in this instance has indicated that the area is 'Open to Consideration'. The applicant has referenced wind farms within a 20km radius of the site (both existing and proposed), and I would consider that this extent is more than sufficient in considering the cumulative visual impact of any development at Cleanrath. I would not agree with the contention of appellants that there will be an over-concentration of wind turbines in this area. The density of turbines to the northwest, across the county boundary in Kerry, is far higher. The perception of visual impact is, necessarily, a subjective one. This section of the EIS does not purport to be entirely scientific, dealing as it does with subjective emotions.

10.9.4 Scenic Routes

Scenic Routes S26, S32, S34 & S35 are located in the vicinity of the site. Scenic Route S26 runs along county road (L3402) through Reananerree to the north of the site – approximately 1.75km at its closest. The site will clearly be visible from gaps in the roadside hedgerow. The S32 runs

along the southern shore of Lough Allua to the south of the site – part of the S32 being a sign-posted cycling route. There are limited views from this route – mostly at the eastern end – roadside hedgerows and trees obscuring the view of both Lough Allua and the wind farm site beyond to the north. The S34 on the R584 between Inchigeelagh and Ballingeary offers limited views of the wind farm site due to the elevated nature of intervening topography. This route is approximately 2.0km south of the site. S35 runs along a county road to the east of the village of Inchigeelagh: the site will be visible to traffic travelling west along this route, but not to traffic travelling east. The separation distances and the intermittent nature of the views will have the effect of lessening the impact of the development. The impact on these Scenic Routes will not be significant. The wind farm will be visible from limited lengths of other Scenic Routes located at greater distances from the wind farm site. The separation from these latter would result in no impact from the wind farm on their amenity value.

10.10 Archaeology, Architecture & Cultural Heritage

Section 11 and Appendix 11 of the EIS deal with these related issues. The additional information submission of 12th April 2016, to Cork County Council further elaborated on these issues.

10.10.1 Archaeology at Wind Farm Site

The study area was visited in 2010, 2011 and 2015. Archaeological testing was carried out under Licence in the vicinity of T6 in 2011, on foot of discovery of a stone enclosure, hut sites and associated stone walls. Testing revealed no archaeological material. Test trenches were still in evidence during site inspection by this Inspector. Forestry in the northern and central portions of the site limited the extent of field survey possible. There are scattered dry-stone walls throughout the site – vestiges of former field boundaries. There are no recorded monuments within the wind farm site boundary, indicated on aerial photograph Figure 11-3 of the EIS.

10.10.2 Archaeology on Grid Connection Route

The Development Applications Unit of the Department of Arts Heritage and the Gaeltacht noted the presence of Recorded Monuments along the grid connection route. Three recorded monuments are indicated on Figure 11-6 of the EIS, as being located close to the route – two within Co. Cork and one within Co. Kerry – viz-

- CO069-072 – bullaun stone, associated with Augeris church.
- CO069-084 – ritual site – holy well, associated with Augeris church.
- KE095-005 – anomalous stone group at Grousemount, co. Kerry.

The two recorded monuments within Co. Cork are located 19m and 23m respectively from the grid connection route. The grid connection route is

within a public road at these locations – where ground has already been disturbed. Movement of machinery in the vicinity of these recorded monuments is identified as potentially requiring mitigation. Section 11.5.1 of the EIS identifies the necessary mitigation measures, and includes ensuring that the cable route is located on the east side of the road (as far as possible from the recorded monuments), pre-development archaeological testing along the road, archaeological monitoring to be carried out along the grid connection, and assessment by a structural engineer of two old stone bridges prior to commencement of excavation for the cable trench. Recorded monument KE095-005 is located approximately 160m from the cable route. Planning permission has been granted by Kerry County Council for the section of the grid connection route within Co. Kerry.

10.10.3 Potential Impacts of Wind Farm Development

There are potential impacts on unknown archaeological remains arising from the extensive soil stripping and trenching that will be required for this development. Archaeological monitoring is proposed for site works. The application was referred for comment by Cork County Council to the Development Applications Unit of the Department of Arts Heritage and The Gaeltacht: which indicated that it had no objection in principal to the proposed development. The settings of National Monuments will not be significantly altered by this development, and whilst turbines may be visible from such monuments, the slight impact is capable of being reversed in the future. The Development Plan does not refer to any archaeological or protection zones in the wider area around this wind farm site, as is the case in respect of landscapes of archaeological importance elsewhere in the country – such as Lough Gur in Co. Limerick. It would appear that none such are designated in Co. Cork. I would be satisfied that there will be no cumulative impact on the wider archaeology of the area, arising from the development of other wind farms – such being the separation distances involved. The construction of a wind farm comprising six turbines at Derragh to the west of the site will not result in any cumulative impact on archaeological heritage.

10.10.4 Architectural Heritage

There are no Protected Structures located within the wind farm site. There are the remains of some old stone field boundaries within the site. There are no Protected Structures along the grid connection route. Old maps indicate that there are/were a number of items of cultural heritage interest such as lime kilns. Most of these have no above-ground presence. There are a number of older stone bridges (identified as CH2 & CH8 in the EIS) and one set of stepping-stones (at CH8) across a river. These will not be impacted by the excavation of a trench in the road base or road verge. There are no structures of architectural/heritage merit which could be impacted by outsize loads being hauled to the site.

10.10.5 Ceantar Gaeltacht/Gaeltacht Area

Tá an suíomh ina n-íomlán lonnaithe i nGaeltacht Mhúscraí. Ní bheidh aon tionachar, a bheag nó a mhór, ag an fhorbairt beartaithe ar an nGaeltacht. Tá sé mar sprioc go mbeidh aon fógraíocht dhá-theangach.

The entire site is located within the Muskerry Gaeltacht. The proposed development will not have any impact, large or small, on the Gaeltacht. It is stated that any signage will be bi-lingual.

10.10.6 Mitigation Measures

The principal measures proposed are indicated at section 11.5.1 of the EIS as follows-

- Area of archaeological potential to the northwest of T6 will be fenced-off during the construction phase – 30m buffer zone.
- Archaeological monitoring of the cable route in the vicinity of bullaun stone CO069-072.
- Archaeological monitoring of the cable route in the vicinity of ritual site CO069-084.
- Archaeological monitoring of all ground works within the wind farm site and along the cable route.

The report of the Archaeologist for Cork County Council indicated satisfaction with the level of detail provided with the application. I would be satisfied that if mitigation measures as outlined in the EIS are adhered to, the proposed development will not have any significant impact on the archaeological/architectural/cultural heritage of the area.

10.11 Traffic & Transport

Section 12.1 & 12.2 of the EIS and Appendix 12 deal with these issues. For developments of this nature, the construction phase is the critical phase in relation to traffic.

10.11.1 Baseline Traffic

Traffic counts were undertaken in December 2015, at four points along the delivery route. In addition, Transport Infrastructure Ireland (TII) traffic counts for the N22 were utilised. Annual Average Daily Traffic (AADT) figures were estimated for points along the delivery route between the N22 and the site. Allowances were made for annual increases in traffic volumes based on TII projections. The estimated HGV component of AADT was put at 6.5%. AADT for 2017 was estimated at four points – from a high of 6,785 on the N22, to 279 on the county road (L7435) to the south of the sawmill. The county road network south from the Gortanaddan road (L3402) is not wide enough to permit two vehicles to pass along most roads. The road network is not heavily trafficked, but is

used for local access. The construction of two new sections of access road will relieve pressure on the local road network.

10.11.2 Construction Phase Traffic for Wind Farm

The construction period is estimated to last 12-18 months. Poured concrete for the bases of each of the eleven turbines will be over a 12-hour period in one day – requiring 75 concrete loads each. This will result in approximately 12 HGV trips per hour (full & empty) on each of the eleven days in question – resulting in an increase of 150% on traffic volumes on the local road network. This increased volume of traffic will be of limited duration (11 days in total out of a construction period of up to 18 months). The delivery of other materials to the site such as steel, ducting and cables, will be spread over the construction period and will result in a 24% increase in traffic volumes on the local road network (which will include staff traffic). Stone will be won from borrow pits on site, thereby significantly reducing the volume of HGV traffic to and from the site. Workers on site will largely travel by private car/van – with the maximum estimated to be on site at any one time being 65 – reducing to a maximum of 40 during the erection of turbines.

The principal impact from construction will be on the N22 junction with the Gortanaddan road at the Mons Bar public house. This junction has significant spare capacity – increasing from 12.7% to 12.9% arising from construction traffic for the wind farm. Other junctions on the local road network have sufficient capacity to cater for additional traffic volumes associated with the development.

It is proposed to create a new construction access to the site from a county road on the northern boundary (L7433) – indicated as Location 8 on drawings submitted. This access for construction is in addition to the new one to be created for outsize loads (on the northern boundary of the site – L7433). Further, a dedicated access for the proposed sub-station is to be created from a narrow county road to the southwest of the site (unnumbered road). All roads in the area are narrow – most with grass growing along their middles. It is not possible to pass two vehicles along most of them. The EIS does not include proposals for passing bays. It is assumed that existing gateways and road junctions will have to be utilised for passing vehicles. No indication has been given of any proposals to operate a one-way system for construction traffic – particularly HGVs.

10.11.3 Outsize Loads

Outsize loads such as turbine towers, blades and nacelles (77 in total) will be delivered from Ringaskiddy, Co. Cork. The critical transportation involves blades (63m transporter length) and tower sections (50m transporter length). The route will be along National Primary Routes as far as Lissacressig on the N22; from thence onto the Gortanaddan road

(L3402). This road is wide enough for two vehicles to pass. The N22 junction will facilitate outsize loads. [I note that some of the photographs included within this section of the EIS have descriptions which are incorrect]. Temporary junction realignment will be required at six locations to facilitate outsize loads-

- Junction of Gortanaddan road (L3402) with L7435 at timber yard – Location 2 – Part of the timber yard is to be used.
- New link road (230m) – Locations 3 & 4. This new section of road is to remain in place to facilitate future road users and will link the L7435 with the L7434.
- Junction of county road L7434 with forestry entrance – Location 5
- Junction of new forestry road with county road L74332 – Location 6 (close to bridge on Toon River).
- New 50m length of county road (L74332) to take cut bends and create a new access to wind farm site – Location 7.

It is likely that outsize loads will be delivered at night with Garda escort. A Traffic Management Plan for delivery of such loads will be submitted to Cork County Council for agreement. Such arrangements would not be unusual for outsize loads, and are acceptable. There will be some benefit for future road users – particularly on the L7435.

10.11.4 Operational Phase Traffic

Traffic volumes generated by up to three permanent staff will be minimal in terms of roads capacity. It is expected that the wind turbines will initially attract some small amount of visitor traffic.

10.11.5 Structural Stability of Roads & Bridges

The report of the Area Engineer for Cork County Council states that the L3402 Gortanaddan road is in reasonable condition, but that other county roads to serve the development are in fair-to-poor condition. The surface of some county roads in the area has been completely washed/worn away in places. The report identifies the lengths of county road which would need to be upgraded to facilitate the development and the cost of this which could be apportioned to the proposed development (allowing that roads are used by others). The figure arrived at is €128,250. It is recommended that any HGVs greater than 7.5 tonnes should use the northern access (L74332) and not the L7433. A full condition survey of roads would be required prior to commencement of development. A follow-up survey would be required upon completion of construction works. The structural stability of the concrete bridge over the Toon River at Location 6 on the L74332 was questioned by the Area Engineer, but it was noted that the Board had previously granted planning permission for a wind farm on this site. It will likely have to be widened, at the very least to facilitate outsize loads. It would be appropriate to attach a condition requiring payment of a Special Development Contribution for any damage to roads caused during construction.

10.11.6 Grid Connection Route

Where possible, the trench for the grid connection will be excavated within the roadside verge or else along the edge of the carriageway. The EIS outlines the route of the grid connection – to be underground within public roads and farm tracks for a distance of 15.6km. Approximately 3.5km of this length is within farm tracks in Co. Cork and Co. Kerry. Kerry County Council has already granted planning permission for the 2.0km length of the grid connection within Co. Kerry. Therefore, approximately 12.1km of public roads will be utilised. The EIS underestimates this distance – referring to approximately 9.0km within public roads. The public roads in Co. Cork vary in width from 6m down to 3-4m. Two teams will work from east and west – constructing an estimated 150m length per day each – total 300m per working day. Traffic counts for the local road network have not been submitted. Traffic will include excavators and HGVs bringing in fill material and removing unwanted excavated material. In addition, cables and other construction material will have to be brought into the area. Traffic management – particularly on narrow cul de sac roads would be required – in the same manner as for any pipe/cable-laying within the county road network. Temporary Road Closure and Road Opening Licences would be required from Cork County Council. For the eastern portion of the grid connection route, alternative access is available – even if road sections are entirely closed. However, the western portion from Gurteenowen townland westwards into Lackabaun townland (approximately 2.1km) is a narrow cul de sac, with no alternative access available. The EIS does not include any mitigation measures for how difficulties in this area will be overcome. Licences from Cork County Council will deal with access issues – as would be the case with any other pipe/cable-laying within the public road network. A Traffic Management Plan would be required for this aspect of the project. It would be possible to attach a condition to any grant of planning permission requiring agreement of a Traffic Management Plan with Cork County Council, prior to commencement of any work on the grid connection. Normal construction management will ensure that the trench works do not pose a danger to pedestrians, cyclists or others using the public road. Having regard to the poor quality of the road surfacing along minor county roads – particularly a 1.6km length flanked by coniferous plantation in Coomlibane townland, the resulting resurfacing of roads may result in a positive benefit for other road users.

10.11.7 Decommissioning

The same roads will be utilised for decommissioning – removal of turbines and towers. Traffic volumes will necessarily be lower. There is no indication of whether parts would be broken up on site, but it is likely they would be transported whole (as they had arrived). The mitigation measures to be put in place for delivery of outside loads would be the

same as for collection. Traffic disruption would be limited, and would not result in any significant impact on the environment.

10.11.8 Cumulative Impact

There will be no cumulative impact on roads arising from construction of other wind farms in the area. Access to the proposed Derragh wind farm will utilise the same section of county road from Lissacressig to the timber yard at the junction with the L7435. In the unlikely event that outsize loads were being delivered at the same time – arrangements would have to be made to ensure that the two did not arrive simultaneously. The grid connection from the Derragh and Cleanrath wind farms is to be shared.

10.12 Interaction of the Foregoing

Section 13 of the EIS deals with this issue. Table 13.1 provides a matrix table of possible interactions between the foregoing sections of the EIS for both construction and operational phases of the development. Both positive and negative impacts are identified, as well as those where there is no impact or a neutral impact. The EIS addresses possible interactions between human beings and noise; human beings and traffic; human beings and landscape; flora & fauna and hydrology. The interaction of the above has been considered within the relevant sections of this environmental impact assessment.

10.13 Conclusion

I would be satisfied that the EIS submitted, as supplemented by additional information to Cork County Council, submissions from the 1st Party to the Board (both by way of 1st Party appeal and 1st Party response to 3rd Party appeals and responses), comprehensively addresses the likely significant impacts of the proposed development on the environment, taking into consideration cumulative impact with other wind farm developments. Baseline surveys have been carried out, likely impacts identified and mitigation measures put forward. Having regard to the foregoing, and following a review of the available information, including the consideration of alternatives as set out in the submitted EIS, I would be satisfied that the applicant has complied with the requirements of the Regulations. The proposed development will not have any significant impact on the environment.

11.0 Appropriate Assessment

11.1 General Comment

11.1.1 The application was accompanied by a Natura Impact Statement (NIS) – dated December 2015. The NIS addresses the potential impact of the

wind farm and the grid connection on European sites. The layout of the proposed development has been 'constraints led' – with the objective of avoiding environmentally sensitive parts of the site and the surrounding area. A preliminary screening assessment determined that an NIS was required. The site is partly occupied by coniferous forestry at various stages of development. The wind farm site naturally drains to the Lee River catchment to the southwest and the Toon River catchment to the northeast – most of the drainage catchment is to this latter river – a tributary of the Lee River. The grid connection route is located almost entirely within the Lee River catchment – that portion within Co. Kerry draining to the Roughty River.

11.1.2 Appropriate assessment of the application was undertaken by the Cork County Council Ecologist. Provision has been made in the Construction Environmental Management Plan for the sensitive management of excavations and ground clearance; for the appropriate storage of equipment and materials; for the implementation of emergency procedures in the event of accidental spills or releases to watercourses; for the attenuation of surface water run-off; for the maintenance of water quality protection infrastructure; as well as for the supervision of site works; and for monitoring of water quality throughout the construction phase.

11.1.3 Appeals, observations and responses elaborate on issues of concern in relation to European sites.

11.2 European Sites within 15 km Radius of Wind Farm Site

11.2.1 No part of the wind farm site is located within or immediately abutting a European site. Neither is any part of the grid connection route located within or immediately abutting a European site. The identified sites which may be impacted by the proposed development were as follows-

- Mullaghinish to Musheramore SPA (Site code 004162) – some 7.3km (from the closest wind turbine), to the northeast.
- Mullaghanish Bog SAC (Site code 001890) – some 11.0km (from the wind farm site entrance for outsize loads on the L74332), to the northeast.
- The Gearagh SPA (Site code 004109) – some 8.3km (from the closest wind turbine), to the east.
- The Gearagh SAC (Site code 000108) – some 7.9km (from the proposed new bridge on the Toon River), to the east.
- St. Gobnet's Wood SAC (Site code 000106) – some 6.3km (from the wind farm site entrance for outsize loads on the L74332), to the north.

I would be satisfied that this list incorporates all sites likely to be impacted by the development.

11.2.2 St. Gobnet's Wood can be excluded from consideration, arising from the nature of the conservation objectives of the site, the separation distance of 6.3km from the appeal site, and the absence of any hydrological connectivity between the two. Mullaghanish Bog SAC can be excluded from consideration, arising from the nature of the conservation objectives of the site, the separation distance of 11.0km from the appeal site, and the absence of any hydrological connectivity between the two.

11.2.3 The SACs have generic conservation objectives to maintain or restore the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected. The exception is The Gearagh SAC, for which Conservation Objectives were produced on 15th September 2016 [subsequent to the EIS, NIS and all of the technical reports prepared for this application and appeal]. I have included a copy of the Conservation Objectives for this SAC in the photograph pouch which accompanies this Inspector's Report. The SPAs have generic conservation objectives to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA; and to maintain or restore the favourable conservation condition of wetland habitat at The Gearagh SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

11.3 European Sites which may be impacted by the Development

11.3.1 Mullaghanish to Musheran Mountains SPA

The qualifying species are-

- Hen harrier (*Circus cyaneus*).

The closest turbine to this European site is 7.3km. The turbine delivery route which is much closer will not have any impact on the SPA. It has an area of 5,011ha, and also supports a breeding population of Merlin. The Natura 2000 form indicates that the main threat to Hen harrier is afforestation. The site has been specifically designated for Hen harrier (3-4 breeding pairs). Whilst Hen harrier has been observed flying over the site during bird surveys, the sightings were limited to periods outside the breeding season. The proposed wind turbine development will not have an adverse impact on the conservation objectives of this SPA.

11.3.2 The Gearagh SPA

The qualifying species are-

- Wigeon (*Anas Penelope*).
- Teal (*Anas crecca*).
- Mallard (*Anas platyrhynchos*).
- Coot (*Fulica atra*).
- Wetland & Waterbirds.

The site covers an area of 323ha (smaller than the SAC of the same name). The site supports an important population of wintering waterfowl – including some waders. There are important populations of Mute swan (*Cygnus olor*), Wigeon (*Anas penelope*), Northern shoveler (*Anas clypeata*), Coot (*Fulica atra*) and European golden plover (*Pluvialis apricaria*). The site is located some 8.3km from the closest wind turbine. The main threat to birds is indicated as illegal shooting.

11.3.3 The Gearagh SAC

The qualifying interests are-

- Otter (*Lutra lutra*).
- Watercourses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation.
- Rivers with muddy banks with Chenopodion rubric p.p. and Bidentation p.p. vegetation.
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles.
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicon albae). [Annex I habitat].

This site covers an area of 558ha. Part of the wide alluvial forest was destroyed by tree-felling and flooding in the mid-1980's for the construction of the Lee River Hydroelectric Scheme (although the site would not have been a European site at that time). The wind farm site is hydrologically linked with the SAC via streams which flow into Lough Allua and the Lee River to the southwest and via the Toon River – a tributary of the Lee River (which flows into the Lee River just to the east of Toon Bridge (within the SAC). The wind farm site (as measured from the proposed new bridge on the Toon River) is 7.9km from the SAC as the crow flies, and approximately 10.4km via watercourse connection (Toon River): the watercourse connection via the Lee River is considerably further – approximately 15.0km. The entire wind farm site, turbine delivery route and grid connection is located within the catchment of the Lee River (apart from 2.0km of the grid connection within the catchment of the Roughy River in Co. Kerry). I note that Kerry County Council has already granted planning permission for the section of the grid connection route within its borders. Conservation Objectives for this SAC were produced on 15th September 2016.

11.3.4 European Sites Screened In

The NIS screens in certain habitats/species for European sites based on the source/pathway/receptor model and NPWS-identified pressures and threats for different habitats and species. Only The Gearagh SAC and The Gearagh SPA were screened in for the purposes of this NIS. This would appear to be reasonable. The application was referred to the Development Applications Unit of the Department of Arts Heritage & the Gaeltacht, by Cork County Council. The Department expressed concern in relation to 'in-combination' downstream erosion effects on The Gearagh

cSAC, the method used to calculate surface water run-off from the site, impact on Kerry slug, impact of river crossings on Otter, and collision risk with turbines for Merlin.

11.4 Identification of Likely Direct, Indirect or Secondary Impacts

11.4.1 The NIS identifies likely potential impacts on European sites from the following-

- Some 13.5ha of coniferous plantation to be felled to facilitate the development; of particular importance in protection of downstream Freshwater pearl mussel populations.
- Construction phase activities on site could result in siltation of watercourses or pollution through accidental spillages of hydrocarbons.
- New drainage channels within the site could result in siltation of watercourses.
- New drainage on site could result in increased run-off of surface water.
- Turbine blades could result in bird-strike.
- Turbines blades could result in mortality for bats.
- Turbines could discourage the use of the site by certain bird species for breeding or hunting.
- Barrier effect of wind turbines (particularly in conjunction with other wind farms) for birds commuting from one area to another.
- Works required at water crossings on the turbine delivery route and grid connection route could impact on Otter.

11.4.2 Objectors to the development identified a number of likely threats to the Europeans sites, particularly in relation to increased surface-water run-off and the impact this might have on the anastomosing features of the Lee and Toon Rivers at The Gearagh SAC. Other concerns related to the impact on White-tailed sea eagle, bat species and Freshwater pearl mussel.

11.5 Impact on Avifauna at The Gearagh SPA

Clearrath Lough to the east of the proposed wind farm site is a small water body and does not support any significant populations of waterbirds. The bird surveys carried out for the EIS on this site do not indicate any connectivity between the site and the waterbird populations of the SPA. Teal and Coot have not been observed on site. Mallard and Widgeon have been observed on site during the breeding season (the birds at the SPA being of conservation interest for wintering). Of these four species, only Widgeon is 'red' listed on the Birds of Conservation Concern in Ireland (BoCCI) study 2013. The proposed wind farm and grid connection route will not have any impact on the objective to maintain or restore the

favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA; or on the objective to maintain or restore the favourable conservation condition of wetland habitat at The Gearagh SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. Mitigation measures to control surface water outfall and quality from the wind farm site, and the distance downstream of the SAC, will ensure that there will be no impact on this objective relating to wetland habitat.

11.6 Impact on Freshwater pearl mussel

The Annex II Freshwater pearl mussel is not a qualifying interest of any of the European sites downstream of this wind farm site. Notwithstanding this, there are known populations within both the Toon and Lee Rivers downstream of the wind farm site – some 2.0km and 3.0km respectively. The major threat to this species is the release of sediment during construction and also possible eutrophication arising from felling of trees. It must be pointed out that felling of coniferous plantation at Cleanrath will be carried out regardless of whether this development proceeds or not, and as such, there is no likelihood of increased eutrophication. The principal concern relates to phosphorous release. Felling is subject to licence from the Forest Service which currently limits clear-felling to not greater than 25ha. The 13.5ha to be felled is small in relation to the area of the catchment of the Toon and Lee Rivers upstream of the closest Freshwater pearl mussel sites. Best practice Forestry Service Guidelines and Freshwater Pearl Mussel Guidelines will be observed during felling. Principal mitigation measures include suitable aquatic buffer zones, minimisation of soil disturbance, blocking of drains during felling, sediment traps, brash mats to support heavy machinery, timber stacked in dry areas, and no operations during periods of heavy rainfall.

11.7 Impact on Otter

The range of this species in Ireland is favourable. Threats to this Annex II species include roads, pollution of waterways and fishing. This species is a qualifying interest of The Gearagh SAC – located approximately 7.9km downstream of the proposed new bridge on the Toon River, and hydrologically linked via both the Toon and Lee Rivers. The NPWS Conservation Objectives indicate that there is no significant decline in the distribution of this species or the riverine habitat available within the SAC. The grid connection route is located almost entirely within the upstream catchment of the SAC. It will be located within public roads and tracks for its entire length. The Toon River in the vicinity of the site was surveyed for Otter in December 2015 as part of the survey work for the EIS. High flows in the rivers and streams in the area may have accounted for the absence of any evidence of Otter usage. Arising from concerns expressed by the

Department of Arts, Heritage and the Gaeltacht, the applicant undertook a survey for Otter in March 2016, and submitted the results by way of additional information to Cork County Council on 12th April 2016. The survey covered the wind farm site, the grid connection route and the turbine delivery route. Water crossings on the turbine delivery route and construction access route are identified at Figure 7.1. There are nine water crossings on the grid connection route within Co. Cork and a further four within Co. Kerry (these latter now constructed). Those which were considered suitable Otter habitat were surveyed for 150m upstream and downstream, whilst those not considered suitable were surveyed for 20m upstream and downstream. Otter sightings were observed at a number of locations and potential holts identified (100m upstream of the proposed crossing on the Toon River and 40m upstream of GC6 on the grid connection route). No in-stream works are proposed for the grid connection. Works along any particular stretch will be of limited duration – a few days at most. Any bankside vegetation to be removed to facilitate crossings on the Toon River or its tributary streams does not contain any holts or couches. Given the distance of otter holts from proposed works within the wind farm and along the grid connection route, there is no potential to cause disturbance to this species. Neither the wind farm nor the proposed grid connection will impact on this qualifying interest of The Gearagh SAC – regard being had to the distance downstream of The Gearagh Otter population and drainage mitigation measures to be put in place on the wind farm site. A pre-construction survey would be required to identify any new Otter activity in the area, and any necessary Derogation Licence(s) obtained.

11.8 Impact on White-tailed sea eagle

The applicant has carried out vantage point surveys for this proposed development and has consulted vantage point surveys for other wind farm developments in the area. Whilst White-tailed sea eagle has been infrequently spotted on Lough Allua, the incidence of flight activity on surrounding upland areas would appear to be low. The eagles likely disperse from a communal roost at Sillahertane just inside the Kerry border to the northwest of Lough Allua: the appeal site is to the north of Lough Allua. The closest nesting area is Garnish Island, Glengarriff, Co. Cork. The species ranges over the entire country and up to Scotland. Because of the range of the bird, there is no designated SPA within Ireland. There are already a number of wind farms within 20km of the proposed site, as indicated in the EIS. Whilst there have been bird fatalities at wind farms at nearby Sillahertane, the principal threat to the species remains poisoning. The re-introduction programme for this species from Norway is now completed. The development of 11 no. turbines at this location will not have an impact on this Annex I species.

11.9 Impact on Bat Species

The EIS submitted included details of bat surveys carried out. No bat roosts were identified on the site. Bat activity and species of bats is indicated in surveys. I would note that the Annex II Lesser horseshoe bat species is not listed as a conservation interest of any of the nearby SACs. The principal mitigation measure to protect bats is the felling of trees up to 70m from turbine bases – to ensure that the treeline is located at least 50m from the closest point of rotating blades. This will minimise the risk of bat collision with blades and the risk of barotrauma. The proposed mitigation measures are acceptable.

11.10 Impact on Kerry Slug

The Annex II species Kerry slug is present on this site. Appendix 5-5 of the NIS comprises details of the Kerry slug survey carried out on this site in 2011. The additional information submission of 12th April 2016, included details of a Kerry slug Derogation Licence issued by the Department of Arts Heritage and the Gaeltacht – dated 8th April 2016. The Licence allows for disturbance of habitat and damage or destruction of breeding sites or resting places, subject to certain conditions. Given the availability of similar habitats to that which the development proposes removing, both within the immediate area and in southwest Ireland as a whole, it is considered highly unlikely that this development (with a footprint of 10.5ha – and not all of which comprises suitable habitat for this species) will have a significant impact on this species or on its conservation status. Suitable habitat for this species will be recreated on embankments within the development and roads created of crushed siliceous rock (quarried on the site) will remain suitable habitat.

11.11 Impact on Lepidoptera

Marsh fritillary was not encountered in any of the ecological surveys and is not, in any event, a qualifying interest of any of the nearby European sites.

11.12 Impact on Annex I Floating River Vegetation Habitat

This is one of the qualifying interests of The Gearagh SAC – in the Lee River channel, but not the Toon River. The NPWS Conservation Objectives indicate that the habitat area is stable or increasing. It is an objective to "maintain appropriate hydrological regime necessary to support the typical species and vegetation composition of the habitat". Having regard to the mitigation measures to be put in place for drainage and to the distance downstream of this habitat, it is considered that the proposed wind farm development and grid connection route will not have any impact on this habitat.

11.13 Impact on Annex I Oak Woods with Holly Habitat

This habitat within The Gearagh SAC is not linked to hydrological factors. It is located north of the R584 at Toon Bridge on rising ground to the northwest. The NPWS Conservation Objectives indicate that the habitat area is stable or increasing. The proposed development will not have any impact on this habitat.

11.14 Impact on Annex I Rivers with Muddy Banks Habitat

The NPWS Conservation Objectives for this habitat indicate that it is located at the eastern end of The Gearagh SAC – where the Lee and Toon Rivers have merged and the open waters of the Lee Reservoir are more in evidence. The habitat area is stable or increasing, subject to natural fluctuations. It is an objective to “maintain appropriate hydrological regime necessary to support the typical species and vegetation composition of the habitat”. The proposed development will not have any impact on this habitat.

11.15 Impact on Annex I Alluvial Forest Habitat

11.15.1 This habitat occurs in both the Toon and Lee River channels within the SAC. The NPWS published Conservation Objectives for this SAC on 15th September 2016, and the following is of note-

- The habitat area is stable or increasing, subject to natural processes (at least 101.2ha – indicated on Map 4) – [copy included in the photograph pouch which accompanies this Inspector's Report].
- Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
- Periodic flooding is essential to maintain alluvial woodlands along river flood plains.

11.15.2 It is stated that favourable conservation status of a habitat is achieved when:

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

11.15.3 It is the contention of objectors that the development, in combination with other developments will adversely affect the integrity of this Annex I habitat within The Gearagh SAC. It is claimed that there is continued

degradation of the hydrology of the Lee and Toon Rivers, primarily caused by agricultural reclamation and blanket afforestation. This, in turn, has an impact on hydrological features of the rivers such as alluvial forest; caused through flash-flooding and its consequent erosive effects. The sponge-like nature of the upland heaths and bogs of the Shehy and Derrynasaggart Mountains help attenuate and stabilise the hydrology of the Lee and Toon Rivers – preventing highly erosive flash-flooding from occurring. The damage already done, and the ongoing threats posed to The Gearagh SAC, is no longer a case of reasonable scientific doubt but one of hard scientific evidence. It is claimed that no amount of soak pits, vegetation filters or artificial drainage ditches will replace the mitigating effects that the ecological habitats of uplands naturally provide. It is further claimed that surface water drainage mitigation measures implemented at other wind farm sites have been ineffective. In particular, a significant amount of material has been presented in relation to damage caused on the Toon River inflow to The Gearagh SAC, where a significant channel has been formed by erosion within the anastomosing river at this point.

11.15.4 The appeal from the West Cork Ecology Centre contains a number of appended documents-

- Opinion Statement on Current State of The Gearagh from Prof. David Harper of the University of Leicester (13th April 2015).
- Report on Damage to The Gearagh Alluvial Forest from Mr. Niall Cussen of the Department of the Environment, Heritage and Local Government (dated 30th April 2015).
- Extract from report on Site Damage Assessment at The Gearagh – from Jervis Good, Regional Ecologist, National Parks & Wildlife Service, Department of Arts, Heritage and the Gaeltacht (dated 17th April 2015) – [First two pages only].

11.15.5 The report of Prof. Harper indicates that he undertook research at The Gearagh some 12-15 years ago. The report states "The evidence that is written in this document is based upon my experience and reading of the Gearagh. It has not been produced with intensive study, which would require greater time and examination of raw sources, such as river discharge hydrographs of the Toon and Lee and field measurements within the Gearagh to compare channel dynamics between the Toon and Lee sections". The Report continues- The Gearagh is unique for its anastomosing river channels. Alluvial woodland exists around the core oak woodland on stable islands. Alluvial woodland has semi-aquatic species such as willow, alder and ash. Flood regimes create a range of island types and stabilities, upon which a mosaic of understory vegetation grows. The channels have enormous varieties of flow and depth. Some two thirds of The Gearagh was destroyed with the creation of Lee Hydroelectric Scheme in the 1950's. In the past 30 years, changes in the Toon River catchment have resulted in greater and more powerful flood

events, eroding the formerly stable islands in the northern part of The Gearagh. This process must have started with the straightening of the Toon River some decades ago to make its floodplain amenable to intensive agriculture (hence unavailable for temporary flood storage). The concern is that the Toon River inflow will continue to push a single channel through The Gearagh to the detriment of the anastomosing features. The Lee inflow to The Gearagh has greater flood retention in upstream lakes, and even though a larger river, it is not forcing a single channel through The Gearagh. Drainage from wind farms will only exacerbate the problem.

11.15.6 The report of Mr. Niall Cussen, whose visit was undertaken following representations from the European Commission, was undertaken in the company of Jervis Good, Regional Ecologist from the NPWS, and Kevin Corcoran of the West Cork Ecology Centre. Mr. Cussen states- "Without the benefit of detailed longitudinal and hydrological assessment, it is hard to be definitive about Mr. Corcoran's contention". The author is not in a position to say whether the Toon and Lee channels have altered in recent times. It is claimed that local landowners have engaged in dredging the Toon River to alleviate flooding of lands – although the author could not confirm if damage was as a result of works carried out or severe flooding events. There are no wind farms upstream of The Gearagh, so there can be no grounds to the claim that wind farms are causing damage at The Gearagh. The report concludes that "Taking account of all of the above and Mr. Jervis Good's report, causality between the evolution of local land use patterns and what may or may not be happening to the catchment of the [word(s) missing?] cannot be proven on the basis of the evidence presented by Mr. Corcoran". The referenced report of Jervis Good clearly states- "The site was examined by NPWS regional staff on 15 April 2015 with the complainant, Mr. Kevin Corcoran, who has over 30 years of detailed experience of the ecology of the site, and would have a subtle understanding of early warnings of structural changes in the system. However, if an independent assessment is required, the changes are yet too subtle for this ecologist, who lacks the fluvial geomorphological understanding necessary to definitively determine if such changes have occurred in the system as a result of works in the upstream floodplain, as opposed to the general increase in erosion due to the increase in magnitude of rainfall events".

11.15.7 There are no wind farms within the catchment of the Lee and Toon Rivers upstream of The Gearagh SAC at present. Planning permission has been sought for a number of such developments, but grants of planning permission have been subject to appeal to the Board and appeal decisions have been subject to Judicial Review. Whilst it is claimed that 'agriculture and blanket afforestation' have resulted in increased flash-flooding, there is no evidence submitted to support this contention, and it

remains an hypothesis. Indeed, the report of Prof. Harper indicates that the source of the problem at the inflow of the Toon River into The Gearagh SAC may have been caused by the straightening of the Toon River to improve agriculture on the banks some decades ago. Mr. Cussen concluded that there was insufficient evidence of what factors were contributing to damage to The Gearagh. The Regional Ecologist for the NPWS correctly states that "the changes are yet too subtle for this ecologist, who lacks the fluvial geomorphological understanding necessary to definitively determine if such changes have occurred in the system as a result of works in the upstream floodplain, as opposed to the general increase in erosion due to the increase in magnitude of rainfall events". This statement goes to the heart of the matter. There simply is not enough evidence to establish what the magnitude of the problem is, what caused it, and what could contribute to improvement or dis-improvement in the future. The claim, that canalisation of the main channel of the Toon River as it flows into The Gearagh is a matter of hard scientific evidence, may be true, but is not borne out by any evidence submitted with this appeal, and certainly no evidence is submitted as to the cause(s) of this canalisation effect.

11.15.8 The report of the Department of Arts, Heritage and the Gaeltacht to Cork County Council (dated 2nd February 2010), states- "It is technically difficult to disassociate the effects of climate change (increased magnitude rain events) from increased surface runoff due to better land drainage, and the extent of the latter can also depend on soil properties. Separating the effects of near-receptor site runoff from drainage further up the catchment is also difficult". The report further states, when commenting on 'in-combination' effects, that baseline knowledge of the erosion state of the habitat within the CSAC, is not included within the NIS submitted by the applicant. I would not consider that it is the responsibility of an applicant to provide such information – particularly as such could require years of study within an SAC. The Department/NPWS would be better placed to provide such information to applicants – although clearly in this instance such information is not available.

11.15.9 The claim that man-made drainage attenuation within wind farm sites has not worked is not borne out by any evidence submitted. The applicant has proposed a suite of drainage attenuation measures for this wind farm development site which will attenuate 1-in-100 year one-hour storm events to current 'greenfield' rates (already high due to rock outcrops and poor drainage of thin soils on site) through the use of swales, check dams, attenuation ponds and level spreader discharge to vegetation. The calculations allow for a 20% increase in run-off due to climate change in the future. I would be satisfied that such measures, if correctly constructed and maintained, will be effective in maintaining 'greenfield'

run-off rates, with the result that there will be no increased run-off which could contribute to down-stream flash-flooding in The Gearagh SAC.

11.15.10 Most of the grid connection route (all but 2.0km) is located within the Lee River catchment. Having regard to the nature of the work proposed for the grid connection – the excavation of short lengths of trench within an existing road/agricultural/forestry access track, and the subsequent infilling of this trench – I would not consider that this aspect of the development has any potential to impact on the qualifying interests of The Gearagh SAC. The applicant has outlined measures to control silt at the trench works and there will be no permanent drainage impacts.

11.16 Mitigation Measures

The Construction and Environmental Management Plan sets down measures necessary to ensure works are carried out in accordance with the mitigation measures set out in the EIS, and also sets out monitoring and inspection procedures and frequency of same. Of particular note are the following measures-

- Tree felling will be carried out around turbine bases so as to discourage bat activity along tree lines or forest edges in proximity to rotating blades.
- Management of forestry felling in accordance with terms of Felling Licence(s). Forestry in this area will ultimately be felled with or without this wind farm development. The control of release of nutrients into watercourses will be one of the best practice mitigation measures observed when felling is taking place.
- Sediment traps will be installed on forestry drains during felling.
- Working areas will be maintained as small as possible.
- Use of 'Ready mix' concrete only on the site. Impermeably-lined, contained area for washing concrete chutes on trucks constructed.
- Dust suppression measures used during sustained dry periods.
- Location of turbines and other elements of the development at least 50m away from any watercourse.

No direct discharges to any watercourse within the site.

Clean surface water will be diverted around excavation areas within the site using interceptor drains.

All clean drainage water will be discharged via swales with check dams.

- Outfall from worked area drains will be through attenuation ponds (1-in-100 year one-hour return period) and settlement ponds with final outfall via level spreader over vegetated ground.
- Silt traps will be placed in forestry drains downstream of the site.
- 'Siltbuster' or equivalent to be used on outfall in the event of pumping being required to dewater elements of the development during the construction phase.

- Re-fuelling of machinery and plant will be by way of mobile, double-skinned bowser, with emergency spill kits. Refuelling will not be undertaken within 50m of a watercourse.
- Brush mats will be used to limit soil erosion by heavy machinery.
- Increased site run-off will be controlled through use of permeable surfaces on access tracks and hard-stand areas around turbines and through use of attenuation ponds on new drainage outfalls. [It should be noted that the recharge co-efficient of the site is already low (estimated at 5% only) due to the presence of poor permeability rock on or close to the surface and limited absorption of shallow peaty soils and subsoils].
- Borrow pits will not be connected to any drain or stream. Silt fences, straw bales and biodegradable geogrids will be used to control outflow of water from borrow pits during deposition of peat. Excess flow will be to constructed swales and settling ponds with use of 'Siltbuster' or equivalent, if required.
- Excess peat will be deposited within borrow pits.
- Chemical toilets will be used during construction phase.
- Scaling back or suspension of construction works during wet weather - >10mm per hour or >25mm in a 24-hour period or half monthly average in any 7 days.
- Drainage network will be inspected and maintained regularly during construction phase.
- Any works to be carried out close to watercourses within the site will be during the months of May-September inclusive when streams will likely be dry or exhibit low-flow characteristics.
- Construction of silt fences downgradient of areas within which soil is to be moved.
- Use of 'Clearspan' concrete bridge structure on Toon River crossing just off the L7433 – constructed off-site and supported on foundations set back from banks.

11.17 Further Considerations

11.17.1 Delivery of Outsize Loads

The delivery of outsize loads to the site (77 in total) will utilize existing national and local roads. Some alterations will be required at junctions which drain to the Toon River. No significant mitigation measures will be required outside of the drainage mitigation measures to be observed during the construction phase. There will be no impact on the integrity of any European sites arising from these works.

11.17.2 Grid Connection Route

The 15.6km long 38kV grid connection between the site and the permitted sub-station at Coomataggart will be entirely underground within public roads or agricultural tracks. Where watercourses interpose (9 no. have

been identified within Co. Cork), the cables will be laid either above the culvert (or where there is insufficient room) will be laid beneath the watercourse using directional drilling so as not impact on the watercourse). This will ensure minimum opportunity for siltation of watercourses which ultimately flow into European sites, and minimum disturbance of aquatic and riparian habitats and species, particularly Otter. The underground grid connection will be laid using two teams working from east and west, proceeding at the rate of approximately 150m per day each. The route is located entirely within the Lee River surface-water catchment. The grid connection route does not encroach on any European site. The closest European site (for which there is an hydrological link) is The Gearagh SAC – some 15.0km downstream of the closest part of the grid connection route (at the point where it exits the wind farm site). Thereafter the distance increases as the grid connection heads towards the boundary with Co. Kerry. The county boundary marks a watershed at 460m OD. The grid connection route within Co. Kerry (2.0km) drains to the Roughty River – and permission has already been granted for this part by Kerry County Council. Principal mitigation measures include-

- Surface water contaminated with sediment will not be discharged to local drains or watercourses.
- Construction materials will not be stockpiled close to watercourses.
- Works will be scaled-back or suspended during forecast periods of heavy rainfall.
- Silt fencing will be erected on sloping ground downstream of trench works.
- Area around handling zone for 'ClearBore' drilling fluid will be bunded using terram and sand bags.

11.17.3 Decommissioning

It is estimated that the wind turbines will be in place for 25 years. The sub-station and grid connection will remain in place, even if turbines are removed. Above-ground elements will be removed off-site for recycling. Turbine bases would be covered with earth and re-seeded. Site tracks will be used for forestry or agriculture. Such disassembly work will not have any significant affect on the qualifying interests of European sites.

11.18 In-combination Impacts

There are no other wind farms in the immediate vicinity of the site. Planning permission for the Derragh wind farm of six turbines, some 2.0km to the west of the appeal site at its closest; and the Shehy More wind farm of 12 turbines (but only seven within the Lee River catchment), some 6.5km to the south, are the subject of appeals and Judicial Review. In addition, the permitted wind farm of five turbines at Carrigariern (ref. PL 04. 246353) some 7.0km to the south has a very small area located within

the catchment of the Lee River (but none of the turbines) – almost the entire site draining to the Bandon River catchment. The separation of the Cleanrath and Derragh wind farms will ensure that combined, they would not present a barrier to movement of avifauna. In-combination impacts relating to surface water drainage are likely to be the greatest threat to European sites. The hydrological assessment undertaken by the applicant would indicate that if the proposed development were to be constructed at the same time as other permitted or applied-for wind farm developments in the catchment of the Lee and Toon Rivers upstream of The Gearagh SAC, the proposed mitigation measures would ensure that there would be no cumulative impacts – either from the wind farms themselves or the grid connections supporting them. This is a reasonable conclusion, based on the information submitted with the application/appeal. There are no other projects or plans, the in-combination impacts of which, when taken together with the proposed wind farm, would adversely affect the integrity of any European site.

11.19 Conclusion

The development will not result in pollution of water courses which could affect the qualifying interests of European sites, during either the construction, operational or de-commissioning phases – regard being had to measures incorporated into the design of the wind farm, and to the measures which will be implemented during the construction phase to prevent (and mitigate) any pollution events or increase in surface water run-off to the Lee and Toon river catchments. The Construction Environmental Management Plan sets out the proposed mitigation measures, in particular with regard to risks to hydrology and water quality. It includes drawing /schematic figures of the various surface water control features, swales, collector drains, stilling ponds, check dams, level spreaders, silt curtains, concrete washout and 'Siltbuster'. The roles and responsibilities of various site operatives are outlined in the Construction Environmental Management Plan. I would not accept the contention of objectors that 'Reasonable Scientific Doubt' remains as to the impact of this wind farm development on European sites. I consider it reasonable to conclude on the basis of the information on the file, which I consider adequate in order to carry out a Stage 2 Appropriate Assessment, that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of European sites 000108 or 004109, or any other European site, in view of the Conservation Objectives for the sites in question.

12.0 Recommendation

I recommend that permission be granted for the Reasons and Considerations set out below, and subject to the attached Conditions.

REASONS AND CONSIDERATIONS

Having regard to-

- (a) national policy with regard to the development of alternative and indigenous energy sources and the minimisation of emissions of greenhouse gases,
- (b) the provisions of the "Wind Energy Development Guidelines – Guidelines for Planning Authorities" issued by the Department of the Environment, Heritage and Local Government in 2006,
- (c) the policies set out in the Regional Planning Guidelines for the South-West Region 2010-2020,
- (d) the policies of the planning authority as set out in the Cork County Development Plan 2014-2020,
- (e) the location of the wind farm site in an area which is identified in the Cork County Development Plan 2014-2020 as an area 'Open to Consideration' where it is the policy of the planning authority to facilitate the development of appropriate wind energy proposals,
- (f) the character of the landscape in the area and the absence of any ecological designation on or in the immediate environs of the wind farm site, and the character of the landscape through which the proposed grid connection would be provided,
- (g) the characteristics of the site and of the general vicinity,
- (h) the pattern of existing and permitted development in the area, including other wind farms,
- (i) the distances from the proposed development to dwellings or other sensitive receptors,
- (j) the range of mitigation measures set out in the documentation received, including the Environmental Impact Statement, the Natura Impact Statement and further submissions from the applicant to the Board,
- (k) the planning history of the site and its surrounds, and

- (l) the submissions and observations made in connection with the planning application and the appeal, including submissions in relation to the environmental and Natura impacts of the proposed development.

CONDITIONS

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application to Cork County Council, as amended by further plans and particulars submitted on the 12th day of April 2016, and as received by An Bord Pleanála by way of First Party appeal (on the 29th day of June 2016) and First Party response submissions to Third Party appeals and responses (on the 14th day of July, 4th day of August and 10th day of October, 2016), except as may otherwise be required in order to comply with the following conditions. In this regard,

(a) Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to commencement of development, and the development shall be carried out and completed in accordance with the agreed particulars.

(b) Specifically, the mitigation measures described in the Environmental Impact Statement, Natura Impact Statement and other details submitted to the planning authority and to An Bord Pleanála shall be implemented in full during the construction, operation and decommissioning phases of the development.

Reason: In the interest of clarity.

2. The period during which the development hereby permitted may be carried out shall be ten years from the date of this order.

Reason: Having regard to the nature of the proposed development, the Board considered it reasonable and appropriate to specify a period of validity of the permission in excess of five years.

3. This permission shall be for a period of 25 years from the date of the commissioning of any wind turbine. The wind turbines and related ancillary structures shall then be decommissioned and removed unless,

prior to the end of the period, planning permission shall have been granted for their continuance for a further period.

Reason: To enable the planning authority to review its operations in the light of the circumstances then prevailing.

4. (a) The permitted turbines shall have a maximum tip height of 150 metres. Details of the turbine design and height shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. The wind turbines, including tower and blades, shall be finished externally in a light-grey colour.
- (b) Cables within the site shall be laid underground.
- (c) The wind turbines shall be geared to ensure that the blades rotate in the same direction.
- (d) No advertising material shall be placed on or otherwise be affixed to any structure on the site without a prior grant of planning permission.
- (e) The access tracks within the site shall be surfaced in gravel or hard-core, either from the borrow pits on site or imported to the site from nearby quarries, and shall not be hard topped with tarmacadam or concrete.
- (f) Roads, hard-standing areas and other hard-surfaced areas shall be completed to the written satisfaction of the planning authority within three months of the date of commissioning of the windfarm.
- (g) Soil, rock and other materials excavated during construction shall not be left stockpiled on site following completion of works. Excavated areas including the borrow pits and areas of peat placement shall be appropriately restored within three months of the date of commissioning of the wind farm, in accordance with details to be submitted to, and agreed in writing with, the planning authority.

Reason: In the interest of visual amenity, traffic safety and orderly development.

5. Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of

development, following consultation with the Irish Aviation Authority. Prior to the commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the co-ordinates of the as-constructed tip heights and co-ordinates of the turbines.

Reason: In the interest of air traffic safety.

6. Wind turbine noise arising from the proposed development, by itself or in combination with any other permitted wind energy development in the vicinity, shall not exceed the greater of:

- (a) 5 dB(A) above background noise levels, or
- (b) 43 dB(A) L90,10min

when measured externally at dwellings or other sensitive receptors.

Prior to commencement of development, the developer shall submit to and agree in writing with the planning authority a noise compliance monitoring programme for the subject development, including any mitigation measures such as the de-rating of particular turbines in the event of noise exceedances or complaints in relation to Amplitude Modulation. All noise measurements shall be carried out in accordance with ISO Recommendation 1996 "Acoustics – Description, measurement and assessment of environmental noise". The results of the initial noise compliance monitoring shall be submitted to, and agreed in writing with, the planning authority within six months of commissioning of the wind farm.

Reason: In the interest of residential amenity.

7. (a) Blasting operations at the borrow pits shall take place only between 1000 hours and 1700 hours, Monday to Friday, and shall not take place on Saturdays, Sundays or public holidays. Monitoring of the noise and vibration arising from blasting and the frequency of such blasting shall be carried out at the developer's expense by an independent contractor who shall be agreed in writing with the planning authority.

(b) Prior to the firing of any blast, the developer shall give notice of the intention to the occupiers of all dwellings within 500 metres of the borrow pit concerned. An audible alarm for a minimum period of one minute shall

be sounded. This alarm shall be of sufficient power to be heard at all such dwellings.

Reason: In the interests of public safety and residential amenity.

8. (a) Vibration levels from blasting shall not exceed a peak particle velocity of 12 mm/second, when measured in any three mutually orthogonal directions at any sensitive location. The peak particle velocity relates to low frequency vibration of less than 40 hertz where blasting occurs no more than once in seven continuous days. Where blasting operations are more frequent, the peak particle velocity limit is reduced to 8 millimetres per second. Blasting shall not give rise to air overpressure values at sensitive locations which are in excess of 125 dB (Lin)_{max peak} with a 95% confidence limit. No individual air overpressure value shall exceed the limit value by more than 5 dB (Lin).
- (b) A monitoring programme, which shall include reviews to be undertaken at annual intervals, shall be developed to assess the impact of any blasts. Details of this programme shall be submitted to, and agreed in writing with, the planning authority prior to commencement of any quarrying works on the site. This programme shall be undertaken by a suitably qualified person acceptable to the planning authority. The results of the reviews shall be submitted to the planning authority within two weeks of completion. The developer shall carry out any amendments to the programme required by the planning authority following this annual review.

Reason: To protect the residential amenity of property in the vicinity.

9. (a) The proposed development shall be fitted with appropriate equipment and software to suitably control shadow flicker at nearby dwellings, in accordance with details which shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.
- (b) Shadow flicker arising from the proposed development, by itself or in combination with other existing or permitted wind energy development in the vicinity, shall not exceed 30 hours per year or 30 minutes per day at existing or permitted dwellings or other sensitive receptors – with the exception of participating landowners.

(c) A report shall be prepared by a suitably qualified person in accordance with the requirements of the planning authority, indicating compliance with the above shadow flicker requirements at dwellings. Within 12 months of commissioning of the proposed wind farm, this report shall be submitted to, and agreed in writing with, the planning authority. The developer shall outline proposed measures to address any recorded non-compliances, including control of turbine rotation if necessary. A similar report may be requested at reasonable intervals thereafter by the planning authority.

Reason: In the interest of residential amenity.

10. Prior to commencement of development, the developer shall agree a protocol for assessing any impact on radio or television or other telecommunications reception in the area. In the event of interference occurring, the developer shall remedy such interference according to a methodology to be agreed in writing with the planning authority, following consultation with other relevant authorities.

Reason: In the interest of residential amenity and orderly development, and to prevent any interference with such services.

11. A pre-construction and post-construction monitoring and reporting programme for birds (particularly Hen Harrier and Merlin) shall be submitted to and agreed in writing with the planning authority prior to commencement of development. The surveys shall be undertaken by a suitably qualified and experienced bird specialist. Surveys shall be completed annually for a period of five years following commissioning of the wind farm and copies of the reports to the planning authority shall also be submitted to the National Parks and Wildlife Service.

Reason: To ensure appropriate monitoring of the impact of the development on the avifauna of the area.

12. (a) Prior to commencement of development, details of the following shall be submitted to, and agreed in writing with, the planning authority:

(i) a Transport Management Plan, including details of the road network/haulage routes, the vehicle types to be used to transport materials on and off-site, and a schedule of control measures for exceptionally wide and heavy delivery loads,

(ii) a condition survey of the roads and bridges along the haul routes and grid connection route to be carried out at the developer's expense by a suitably qualified person both before and after construction of the wind farm development. This survey shall include a schedule of required works to enable the haul routes to cater for construction-related traffic. The extent and scope of the survey and the schedule of works shall be agreed with the planning authority prior to commencement of development,

(iii) detailed arrangements whereby the rectification of any construction damage which arises shall be completed to the satisfaction of the planning authority/authorities,

(iv) detailed arrangements for dealing with invasive species which are growing along the turbine delivery route and which may be disturbed to facilitate delivery of outsize loads,

(v) detailed arrangements for temporary traffic arrangements/controls on roads, and

(vi) a programme indicating the timescale within which it is intended to use each public route to facilitate construction of the development.

(b) All works arising from the aforementioned arrangements shall be completed at the developer's expense, within 12 months of the cessation of the use of each road as a haul route or grid connection route for the proposed development.

In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: To protect the public road network and to clarify the extent of the permission in the interest of traffic safety and orderly development.

13. Prior to commencement of development, a detailed reinstatement programme providing for the removal of all turbines and ancillary structures (but not turbine bases, access roads/tracks, cabling or the sub-station) shall be submitted to, and agreed in writing with, the planning authority. On full or partial decommissioning of the windfarm, or if the windfarm ceases operation for a period of more than one year, the masts

15. All clear-felling of forestry associated with the development shall be undertaken in accordance with the appropriate Forest Service Guidelines. All necessary licences shall be obtained from the Forest Service for any felling operations on site.

Reason: In the interest of orderly development and to protect the amenities of the area.

16. The construction of the development shall be managed in accordance with a Construction Environmental Management Plan, which shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. This Plan shall provide details of intended construction practice for the development, including:
- (a) location of the site and materials compound including areas identified for the storage of construction waste,
 - (b) location of area for construction site offices and staff facilities,
 - (c) measures providing for access for construction vehicles to the site, including details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include, in particular, proposals to facilitate and manage the delivery of over-sized loads,
 - (d) measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network,
 - (e) alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road during the course of site development works or the laying of the grid connection,
 - (f) details of appropriate mitigation measures for construction-stage noise, dust and vibration, and monitoring of such levels,
 - (g) containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained; such bunds shall be roofed to exclude rainwater,

and turbines concerned shall be dismantled and removed from the site. The site shall be reinstated in accordance with the agreed programme and all decommissioned structures shall be removed within three months of decommissioning.

Reason: To ensure satisfactory reinstatement of the site upon full or partial cessation of the project.

14. The developer shall facilitate the archaeological appraisal of the site and shall provide for the preservation, recording and protection of archaeological materials or features which may exist within the site or along the grid connection route. In this regard, the developer shall

(a) notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development, and

(b) employ a suitably-qualified archaeologist prior to the commencement of development. The archaeologist shall assess the site and monitor all site development works.

The assessment shall address the following issues:-

(i) the nature and location of archaeological material on the site, and

(ii) the impact of the proposed development on such archaeological material.

A report containing the results of the assessment, shall be submitted to the planning authority and, arising from this assessment, the developer shall agree in writing with the planning authority details regarding any further archaeological requirements (including, if necessary, archaeological excavation) prior to commencement of construction works.

In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: In order to conserve the archaeological heritage of the area and to secure the preservation (in-situ or by record) and protection of any archaeological remains that may exist within the site or along the grid connection route.

- (h) appropriate provision for re-fuelling of vehicles,
- (i) off-site disposal of construction waste and construction-stage details of how it is proposed to manage excavated soil/peat,
- (j) means to ensure that surface water run-off is controlled in accordance with the mitigation measures proposed in the submitted documents, and
- (k) details of the intended hours of construction.

Prior to the commencement of construction, proposals for the environmental monitoring of construction works on site by an ecologist and by an environmental scientist or equivalent professional, including the monitoring of the implementation of construction-stage mitigation measures, and illustrating compliance with the requirements set out above, shall be submitted to, and agreed in writing with, the planning authority, together with associated reporting requirements.

Reason: In the interest of protection of the environment and of the amenities of the area.

17. Borrow pits shall be excavated to a depth not exceeding 5m below existing ground level. Rock from the borrow pits shall be won only for the purposes of road/hard stand construction on the site, and shall not be sold or transported off site without a prior grant of planning permission.

Reason: In the interest of clarity and of orderly development.

18. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of public roads which may be damaged by the transport of materials to the site or by works carried out in relation to the laying of the grid connection, coupled with an agreement empowering the planning authority to apply such security or part thereof to the satisfactory reinstatement of the public road. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

Reason: In the interest of traffic safety and the proper planning and sustainable development of the area.

19. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the satisfactory reinstatement of the site upon cessation of the project, coupled with an agreement empowering the planning authority to apply such security or part thereof to such reinstatement. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

Reason: In the interest of orderly development.

20. The developer shall pay to the planning authority a financial contribution as a special contribution under section 48(2)(c) of the Planning and Development Act 2000, as amended, in respect of works to the public road in the vicinity of the site which are required to facilitate the proposed development and which are undertaken by the local authority. The amount of the contribution shall be agreed between the planning authority and the developer or, in default of such agreement, the matter shall be referred to An Bord Pleanála for determination. The contribution shall be paid prior to the commencement of the development or in such phased payments as the planning authority may facilitate and shall be updated at the time of payment in accordance with changes in the Wholesale Price Index – Building and Construction (Capital Goods), published by the Central Statistics Office.

Reason: It is considered reasonable that the developer should contribute towards the specific exceptional costs which are incurred by the planning authority which are not covered in the Development Contribution Scheme and which will benefit the proposed development.



Michael Dillon,
Inspectorate

18th November 2016.