An Bord Pleanála

Inspector's Report PL03.248008

Development	Construction of a wind farm comprising 11 no. turbines of up to 131m tip-height, onsite electrical substation including two control buildings and welfare facilities and associated ancillary infrastructure, underground MV electrical cabling and associated communications cabling, underground HV electrical cabling and associated communications cabling between onsite substation and the permitted Slieve Callan substation (planning reference 13/558), temporary developments. A ten-year planning permission.
Location	Doolough, Booltiagh, Glenmore, Carncreagh, Furroor, Slaghbooly, Tullaghboy, Kinturk, Glenletternafinny, Knocknalassa, Cloonlaheen East, Cloonlaheen Middle and Shanavogh East, Co. Clare

Planning Authority	Clare County Council
Planning Authority Reg. Ref.	Ref.15860
Applicant(s)	Brookfield Renewable Ireland Ltd
Type of Application	Permission
Planning Authority Decision	Grant subject to 27no. conditions.
Type of Appeal	Three Third Party appeals

Appellant(s)	Conserve Kilmaley Group (c/o Eoghan McGuane), Peter Sweetman, An Taisce
Observer(s)	Doolough Protection Group
Date of Site Inspection	10/05/17, 11/05/17
Inspector	John Desmond

Contents

1.0 Site Location and Description

1.1. The application site is located in southwest County Clare, south of the R474 approximately midway between Ennis and Miltown Malbay. The site is situated c.15km southwest of the centre of Ennis, c.7.25km west-southwest of the settlement of Kilmaley, c.3.3km southwest of the settlement of Connolly, c.8.5km southeast of the village of Miltown Malbay, c.10km east of Spanish Point, c.11km east of Quilty West and Tromra East, c.10km east-northeast of Mullagh and c.8km northeast of Kilmihil and c.6.5km northwest of the linear settlement of Liscasey.

1.2. The area is rural in character but with a significant one-off housing developed on the surrounding road network within the immediate vicinity (c.1.5km), concentrated to the east, north and northwest of the application site (see Figure no.12.1 of the EIS). In contrast the lands to the south and southwest are very sparsely settled. The nearest dwellings are to the east, within less than 600m of T8 (e.g. H45, as identified in the aforementioned figure). In general, the population density is relatively low, ranging from 7.6 people per sq.km in the southern section of the proposed wind farm and 13.7 in the north.

1.3. In terms of topography the application site forms part of a spine of hills centrally situated within southwest Clare. The highest peak belongs to Slievecallan, 391m OD, c.4.5km to the northwest of T3 (1.5km northeast of the proposed grid connection), the next being Ben Dash, 267m OD, c.2.8km southeast of T10. Within close vicinity of the site, the land reaches a peak (unnamed) of 226m OD[1] just east of T11, in Slaghbooly townland, and c.245m OD at the proposed grid connection.

1.4. The application site has a stated area of 187.7ha. The site boundary encompasses quite a discrete area, extending c.200m from the centre of each turbine and c.20m from the edge of proposed borrow pits and temporary construction compounds, with c.50m corridors pertaining to the access track routes, encompassing the width of the public road along the proposed HV cable route or a c.20m wide corridor where the HV cable route crosses private lands. The site is predominantly afforested with plantations of coniferous trees, or has been subject of recently felling, reflecting the extensive plantations carried out in the wider area. The balance of land would

[1] OIS Discovery Series 1:50,000 http://abpgis01.abp.local/interimmapviewer/ (accessed 20/04/17)

appear to consist of poor agricultural grassland and / or blanket bog, again reflective of the land cover in the wider vicinity.

1.5. There are significant water features located within the vicinity: Kinturk Lough and Slaghbooly Lough fall within the site boundary within c.85m of T4 and 150m of T5, respectively; Lough Naminna, Cloonmackan Lough, Lough Narnutaun and another, smaller, unnamed lough to the south of T9, the closest proposed wind turbine (c.310m from the unnamed lake and c.850m from Cloonmackan Lough). Doo Lough, the largest lake in the vicinity, is within c.3km of T11 and Lough Acrow is c.3.15km to the south of T9. The site would appear to drain to Doo Lough and thence to the Annageeragh River (and the sea) to the west and apparently to the Furroor River (and to the River Fergus and the Shannon) to the east.

1.6. The road network in this area is dominated by third class local roads of unfavourable vertical and horizontal alignment. As noted, the R474 runs east/west to the north of the site, along which the proposed grid connection will aligned for a length of c.3km. The Mid-Clare Way walking route passes within c.550m of the application site (c.650m east of T11), on the eastern side of the hill peak at Slaghbooly.

1.7. There is an existing operational wind farm (Booltiagh I and II), to the southwest of the proposed development, comprising 19no. wind turbines (13no. at c.92m and 6no. at c.120m, respectively). The application site overlaps Booltiagh wind farm which is within the blue line boundary indicating lands under the control of the applicant. The proposed development will share some of the existing internal access track and gain access to the public road (L4229 to the south) through the Booltiagh wind farm.

1.8. In addition, within the wider area there are several wind energy developments currently under construction to the south and north of the site, the details of which are set out under section 4.0 of this report, below.

1.9. There are 8no. European sites (2no. Special Protection Areas and 6no. Special Areas of Conservation) and 4no. Natural Heritage Areas within 15km of the site, the details of which are set out under sections 5.0 and section 9.0 of this report.

2.0 Proposed Development

2.1. In the interest of clarity and to ensure compliance with the requirements concerning Appropriate Assessment having regard to EC guidance[2] (s.3.1.3), the proposed development may be described as follows:

- 10-year permission, with 25-year operational period (after turbine commissioning and grid connection);
- Erection of 11no. 2-3 MW wind turbines (maximum 33 MW wind farm) of up to 131m tip height (typically 4-5m at base, tapering to 2-3m at nacelle attachment), including the construction of foundations (25m X 25m X 1-2m typical depth);
- Hardstanding areas of 30m X 50m, plus two set-down / assembly areas (totalling c.80m X 30m) for each turbine to accommodate a main crane and an assist crane during assembly and maintenance during operation[3].
- 8no. clear-span stream crossings;
- Upgrade of existing (c.2.3km) access tracks (to 5m) and provision of new 5m-wide access tracks (c.10.15km) comprising excavated (c.4.36km) and floating (c.5.79km) road structures and associated drainage, with access via an existing access junction to the public road. The depth of excavated track is indicated as a minimum of 500m. Floating roads will comprise a layer of combined geotextile and geogrid laid directly on the existing surface with a layers of stone and additional geogrid reinforcement applied above as required;
- 3no. borrow pits (c.26,733m^2 total area) to an average depth of 4m; 2no. material storage areas (140m X 80m; 201m X 51m) for up to 45,000m^3 peat storage and associated ancillary infrastructure;
- Onsite electrical substation compound (96.5m X 66m) including 2no. control buildings and welfare facilities, a wastewater holding tank (10m^3; proposed to

[2] European Commission, 'Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC' (2001)

[3] Contrary to s.2.3.3.4 of the EIS, the additional set-down areas are not indicted on the submitted plans. Also, the hardstanding areas indicated on the site plans are smaller than that stated.

be emptied by licensed waste disposal contractor on 6-monthly basis or as required), groundwater well, fencing (2.6m high steel palisade) and associated infrastructure, including lighting on poles and wall-mounted, screened with planting of native species;

- Approximately 9.74km underground MV (20/33kV) electrical cabling and associated communications cabling between turbines and proposed onsite substation;
- Approximately 10.28km underground HV electrical cabling and associated communications between proposed onsite substation and permitted Slieve Callan substation (ref.13/558); HV cabling will include joint bays of 6m X 2.5m X 2m to comply with ESB and Eirgrid requirements; Cables will be installed in the road within the parapet of bridges at existing crossings, or by trenchless technology (directional drilling) were this is not possible;
- Temporary development / works associated with construction phase including 1no. construction site compound and associated ancillary infrastructure;
- 138.9ha tree-felling (infrastructure tree felling of 31.7ha; turbulence tree felling of c.94.6ha; 12.55ha tree felling for Habitat and Species Management Plan) and replanting (c.107ha within the site; c.42.4ha offsite);

3.0 Planning Authority Decision

3.1. Decision

GRANT permission (21/01/17) subject to 27no. generally standard conditions. I consider the following conditions to be of particular note:

No.2 – Omits proposed wind turbine T8, in the interest of visual and residential amenity.

No.3 – 10-year permission.

No.4 – 25-year operational period.

No.10 – Road traffic and transport condition

No.11 – Noise limit of 43dB(A)$_{LA90}$ applies externally at dwellings and sensitive receptors, including H-6, H-28 and H53, Fig.2.2Rev A 'EIS Listed Derelict Properties.

No.12 – Shadow flicker limits to also apply at H-6, H-28 and H53, Fig.2.2Rev A 'EIS Listed Derelict Properties.

No.19 – Details of fencing to be agreed.

No.23 – Shear strength of peat to be established, to prevent slippage in the interest of public safety.

No.25 – Review of floating road to prevent barrier to subsurface water flows.

3.2. Planning Authority Reports

3.2.1. Planning Reports

Subsequent to the report of 15/02/16 seeking further information on 7no. points, the report of 20/01/17, as amended by the Senior Executive Planner (who added condition no.2, omitting T8), recommended a **GRANT** of permission subject to 27no. conditions.

Regarding the applicant's response to the individual items of further information requested 15/02/16, the Planner's report concludes as follows:

Item no.1(a) - potential shadow flicker impact, particularly on house nos. 21, 24, 27, 43, 45 and 46, and mitigation of same: Having regard to the response received, in the context of adequate mitigation measures being available to the applicant, the Planning Officer considered the issue could be managed by condition.

Item no.1(b) - the scope of shadow flicker assessment in the EIS, particularly with regard to 'derelict' dwellings: Having regard to the nature of structures H-6, H-28 and H53, shadow flicker mitigation measures should apply thereto by way of condition.

Item no.1(c) – potential exceedance of Wind Energy Development Guidelines 2006 noise limits and over-reliance on mitigation: The Planning Officer considered the information submitted, which included an analysis of 4no. noise sensitive locations, resolved the issues and that same could be managed by condition.

Item no.2(a) – regarding ex-situ impact on European sites and potential impact on Hen Harriers: Having regard to the report of the Council's Environmental

Assessment Officer, the information available, submissions and observations, the Planning Officer considered the further information adequately addressed these concerns.

Item no.2(b) – discrepancy between EIS and the Irish Hen Harrier Breeding Survey and DAU report: Having regard to the report of the Council's Environmental Assessment Officer which accepted there was no discrepancy, the information available, submissions and observations, the Planning Officer considered the further information adequately addressed these concerns.

Item no.2(c) – Hen Harrier Winter Survey records: Having regard to the report of the Council's Environmental Assessment Officer which accepted there was no discrepancy, the information available, submissions and observations, the Planning Officer considered the further information adequately addressed these concerns.

Item no.2(d) – Revised monitoring proposals to protect FWPM from potential impact of peat fines: Having regard to the report of the Inland Fisheries, which considered the relevant mitigation measures to ostensibly be comprehensive, and to the report of the Council's Environmental Assessment Officer which recommended conditions concerning same, the information available, submissions and observations, the Planning Officer considered the further information adequately addressed these concerns, subject to managing of outstanding issues by condition.

Item 2(e) – Planting of 42ha of compensatory forestry planting off-site has not been assessed as part of the EIS contrary to the EIA Directive: Having regard to the submission of a Replanting Impact Assessment, the information available, the reports, submissions and observations, the Planning Officer considered the further information adequately addressed these concerns, subject to managing of outstanding issues by condition.

Item no.3(a) – Potential impacts on group water schemes which use nearby lakes as a water source: Having regard to the report of the Environment Department's Executive Scientist who concluded that stringent conditions in relation to monitoring and management of runoff should be included in the event of a grant of permission, and the conditions recommended by the Inland Fisheries Ireland, submissions and observations, the Planning Officer considered the further information adequately addressed these concerns, subject to managing of outstanding issues by condition.

Item no.3(b) – Stilling pond calculations and best practice: Having regard to the revised calculations and assertions that the proposed discharge limit can be met without additional mitigation measures, to the report of Inland Fisheries Ireland, the third party observations, the report of the Environment Department, the Planning Officer considered the further information adequately addressed these concerns, subject to managing of outstanding issues by condition.

Item no.3(c) – Management of peat fines: A Drainage Inspection and Maintenance Plan was proposed in addition to the SDMP which formed part of the CEMP. Having regard to the Inland Fisheries Ireland report which recommended an additional turbidity meter be installed on the stretch of river between SWN2 and sampling location S2, the report of the Environment Department's Executive Scientist advising necessary monitoring measure to protect water quality, the information available, reports, submissions and observations the Planning Officer considered the further information adequately addressed these concerns, subject to managing of outstanding issues by condition, in addition to conditions addressing monitoring and management of stilling ponds and silt build up.

Item no.3(d) – Site access to and management of peat storage areas: The details were note and the Planning Officer considered that any issues could be managed by condition.

Item no.4(a) – Road Safety Audit: The RSA raise five issues. The Planning Officer was satisfied that issue 1 (boulders at entrance to site) can be addressed by condition; that issue 2 (pinch points on haul route), the option preferred by the RDO would require a larger footprint of lands and sufficient legal interest, and that the haul route should follow that as originally proposed as the alteration was not requested as part of the further information request; that issue 3 (public safety during delivery) can be managed by conditions and the Roads Acts 1993, subject to agreement as advised by the RDO; and that appropriate mitigation is proposed to address issue 4 (access to third party lands along haul route and public safety concerns) and issue 5 (safety on internal access routes).

Item no.4(b) – Passing bays within the site: Having regard to the RDO report which considers sufficient passing bays are proposed, the Planning Officer is satisfied that

concerns regarding the commitment to provide same (marked ‘indicative’) can be managed by condition.

Item no.4(c) – Auto track for pinch point on L4188 and on internal access roads: The Planning Officer considered the submission acceptable and that the issue of the pinch point may be managed by condition.

Item no.4(d) – Wheel wash locations: The RDO and the Planning Officer considered the proposed dry wheel wash to be acceptable. The Planning Officer considered that the disposal of debris possibly containing invasive species be removed offsite to a licensed facility or subjected to treatment and eradication if disposed of on site.

Item no.4(e) – Details of HV cable route design: The RDO and the Planning Officer considered the submitted details to be acceptable, including as pertaining to the crossing of Barony Bridge.

Item no.4(f) – Alternative track routes in lieu of floating roads through peat: Having regard the report of the IFI and submissions and observations, the Planning Officer considered the response to justify the proposed floating roads and that the issues raised by the IFI could be managed by condition.

Item no.5 – Method statement for prevention of spread of Japanese Knotweed from R474: The Planning Officer, noting the report of the RDO which asserted that the 7m exclusion zone should be applied at all times, considered the removal of affected material to a licensed facility or the treatment and eradication of same on site to be preferable, and was satisfied that these issues could be managed by condition.

Item no.6 – Potential impact on air traffic control communications, navigation and surveillance systems: The Planning Officer noted that the applicant liaised with the IAA and SAA and was satisfied that issue would be managed by condition.

Item no.7 – Demonstration of sufficient legal interest – The Planning Officer was satisfied that the applicant has clarified the issue concerning an adjoining landowner (observer no.47 to the application) and noted that the blue line east of the site entrance had been corrected to exclude an area where no works were proposed.

EIA – The Planning Officer considered the submitted EIS, accompanying details, including the further information response (e.g. Replanting Impact Statement) to be

in accordance with the provisions of Schedule 6 of the Planning and Development Regulations 2001.

AA – The Planning Officer considered the applicant to have demonstrated in the NIS that there are no implications for the conservation objectives of the identified European sites within the zone of influence or risk of significant adverse effects on the integrity of any European site in accordance with A.6(3) of the Habitats Directive, and that the Local Authority has had regard to the NIS in accordance with S.177U of the Planning and Development Act 2000 and has determine that there is no risk of significant adverse effect on the conservation objectives or the integrity of any European site.

Conclusion – The Planning Officer, having regard to national policy regarding sustainable energy resources, the policies in the Clare CDP 2011 and the identification of the subject lands as a 'strategic' area for wind energy development in the Clare Wind Energy Strategy, the prevailing land uses in the area and the contents of the EIS and NIS, concluded that the proposed development would not seriously injure the amenities of the area or landscape and visual amenities, would not create an unacceptable risk of environmental pollution and would not have an adverse impact on ecology, on traffic safety or otherwise be contrary to the proper planning and sustainable development of the area.

3.2.2. **Other Technical Reports**

Environment Section – The report (16/01/17) of Executive Scientist, Maeve Ryan, considered: i) the response to FI item 3(a) does not adequately address concerns regarding management of silt-laden water from borrow pits; ii) the response to FI item 3(b) does not satisfactorily address concerns relating to the effectiveness of the proposed settlement ponds for settlement of suspended solids (peat) due to the use of a peat settling velocity of 2.2mm/sec, but given the absence of protected vulnerable species (e.g. Fresh Water Pearl Mussel (FWPM)) in downstream surface water bodies, the ES was satisfied that this could be addressed by condition. No objection subject to 7no. conditions.

Environmental Assessment Officer – The report (10/01/17) was satisfied with the response to item nos.2(a), (b) and (c) concerning Hen Harrier, 2(d) concerning FWPM (the severely impoverished population of FWPM on the Annageeragh River is

nearing extinction and location some 15km downstream) and 2(e) concerning Replant Impact Assessment (the officer determined that EIA not required). No objection subject to two broad conditions.

Roads Design – The report (16/12/16) raised no objection subject to conditions regarding the location of stone boulders at the site entrance, provision on an increased land parcel to the south of R474 at Inch More Bridge at junction with L4188 to accommodate turning movements, the agreement of the CEMP and TMP with the local authority area engineer, the construction of tracks of adequate width at all areas (with reference to '*drawings numbered P0209-0100-001 to P0209-0100-001* [sic]'), that the ducting to Barony Bridge should be constructed in a concrete surround to the underside of the carriageway surfacing as per *Drg.P0209-1401-002*, and the strict enforcement of 7m exclusion to avoid invasive species.

Chief Fire Officer (28/11/16) – No objection subject to compliance with Building Regulations 1997 to 2014.

Architectural Conservation Officer (05/02/16) – No objection subject to the proposed carrying out of condition surveys and method statement for repair work and strengthening of bridges along access and cable route to be by a recognised structural / conservation engineer in order to protect same.

3.3. **Prescribed Bodies**

Inland Fisheries Ireland – The report (12/12/16) raised a number of concerns regarding site drainage, particularly regarding the location of construction within an area of peat, and recommends detailed conditions pertaining to, inter alia, design and operation of stilling ponds (including a requirement that discharges be licensed under the Local Government (Water Pollution) Acts 1977 and 1990), including use of turbidity meters, compliance with proposals in 4.3 item 3C, agreement of details with the Council's Environment Section and the IFI, the provision of a temporary weather station, monitoring by grab samples, the use of buffer zones for protection during clear felling (in this regard academic literature was attached to the IFI report), the design of drainage to floating roads. The IFI accept that Doolough provides an extensive settling zone protecting FWPM and that the proposal does not pose a significant threat to same and agrees with the findings of the NIS.

Report of 26/01/16 – No objection subject to consideration of the following: determination of the presence of salmon, trout and sea trout; requiring the preparation of a WQMP, in consultation with IFI, by condition; requiring that IFI be consulted in the preparation of methodologies for carrying out underground cabling, having regard to the closed-season for in-stream works; consider the provision of buffer areas for clear-fell operations; the finishing of all tracks with a good depth of limestone or sandstone; consideration of relocation of tracks avoiding deep peat to avoid land slippage; require the provision of a temporary meteorological station to measure rainfall; the classification of the watercourses should not be compromised by construction activities at the site.

DAU (DAHRR&GA) ecology (15/12/16) – The report makes no recommendation but raises numerous issues, including concerning EIA and of the associated compensatory afforestation proposed offsite at five locations and the nature of the submitted RIS AA (statutory compliance, subthreshold development and project splitting, cumulative impacts, and full characterisation of the sites); potential effects on Hen Harrier and breeding Curlew; potential effects (and cumulative effects) on FWPM; the likely significance of effects on bats, including Lesser Horseshoe Bats; questions whether there is sufficient data and information concerning peat depth in the vicinity of proposed turbine base excavations to analyse risk (e.g. at T1); ecological and environmental monitoring and mitigation measures (submission of details as compliance to LA in the first instance); and the outline detail of community benefits proposals, which may include changes to land use (and potentially require planning permission).

The initial report of 04/02/16 raises similar concerns, including the carrying out of EIA on replant land and more detailed concerns specified with regard to the information provided on Hen Harrier (breeding pairs within 5km, location of breeding pair on site, understanding of Hen Harrier ecology, proposed habitat management and winter roosts).

DAU (DAHRR&GA) archaeology (27/01/16) – Concurs with EIS proposed archaeological mitigation measures. No objection subjection to 5no. conditions.

TII (12/12/16 and 22/01/16) – No objection subject to compliance with the DoECLG SP&NR Guidelines (2012) and the implementation of the RSA recommendations

concerning the proposed new entrance to the nation road, at the applicant's own expense.

HSE (09/12/16 and 19/01/16) – Lough Naminna is an abstraction point for Kilmaley / Inagh GWS. Doo Lough lake is the drinking water source for WC Regional Water Supplies serving c.14,000 permanent population plus summer visitors.

Shannon Airport Authority (20/01/16) – Advises that there may be implications for operations of commons, navigation and surveillance systems used by ATC and for the flightpaths of aircraft. Regard must be had to IAA's *Obstacles to Aircraft Flight Order, 2002 (S.I. no.14 of 2002).* Views of IAA should be sought. Mandatory deployment of obstacle avoidance lighting on each wind turbine should be stipulated. Proposal must not contaminate ground water or cause public nuisance. Shadow flicker must not exceed WEDG standards and used of SCADA or similar technology as mitigation should be implemented as necessary. Noise limits to apply for construction and operation noise. Noise assessment is inadequate regarding background noise and cumulative impact. Noise or shadow flicker limits should apply based on criteria to protect health, regardless of owner / occupiers financial interest.

HSA (07/01/16) – No observations as the proposed development is outside the scope of the Regulations pertaining to the Authority.

Monitoring and Compliance Unit (DAFM) (06/01/16) – No observations as the proposed development does not encroach on the State foreshore.

3.4. **Third Party Observations**

53no. observations were received to the application, plus 3 observations (repeat observers) received on receipt of further information, made by the following parties:

Valleri Switzer and Marcus Kunst
Sallyann and Michael Marron
Mr and Mrs J. O'Brien
David Dillon
Lisa and Terry Byrne
Philip Lucas
Con and Breda O'Donoghue

Margaret Anne Monaghan
Mary Nugent, Chair of Wind Aware Clare
Noel and Maura McGuane
Gerard and Helen Healy
Patrick Reidy
Linda Robinson and others (Residents of Tullaghboy)
Clare Lynch
Michael and Mary Murphy
Frank and Marion Gleichmann
Gerard and Monica Moloney
Ann and Flannan Lynch
Tom and Mary Barry
Sr. Theresa McGuane
Jimmy and Mary Reidy
Seamus Vaughan
Joe Lynch
Paul and Mary McGuane
Teresa Gavin
Martin and Phil McGuane
Patrick Lynch
Anne R. Johnson
Brenda and Vera McGuane
Tony and Breda Healy
Noel and Geraldine Mungovan
Nuala Haren and Geraldine Foudy
Micha Murphy
Pat Joe and Marion McMahon
Conserve Kilmaley Group
Carina Connellan
Tony Connellan
Malgorzata and Marcin Czybszak
Peter Vincent c/o Fidelma Killeen
Kevin Connellan
Catherine and Thomas Cooper

Kevin Moloney
Peter and Mary Murphy and others
Kevin Moloney and Sally Hughes
Mary Reidy and Mary Reidy Senior
Denis P. Murphy
Patrick Murphy
Peter and Noreen McGuane
Michael and Marie Waters
Alan Keane
Helena Healy
Peter Sweetman and Associates
Doolough Protection Group

The main points made were summarised in appendices B and C to the report of the Council's Planning Officer. The areas of concern are generally repeated in the grounds of the appeal or by the observers and relate to the following broad areas:

- Noise impact from operations and construction – loss of forestry as an acoustic barrier; increase existing noise impacts
- Visual and landscape impacts – height, numbers of turbines (109no. within 20km), visual industrialisation, breaches visual shield of Slaghbooly Hill
- Shadow flicker
- Impact on property value
- Proximity and inadequate separation distance from sensitive receptors; separation distance does not meet 1.5km recommended by the WHO
- Inadequacies of the EIS – noise assessment; impact on Hen Harrier; water assessment; shadow flicker; visual impact; flood risk (bogs as flood alleviation measures)
- Inadequate assessment of impact on NHAs
- Impact on Hen Harriers
- Impact on FWPM
- Impact on wildlife / ecology / flora and fauna

- Impact on drinking water supplies, water quality concerns (Doo Lough and Naminna lakes)
- Impact on water ecology
- Over development of wind farms in this area – cumulative impacts
- Potential for landslides
- Impact on health (sleep disturbance)
- Wind Energy Guidelines 2006
- Disruption during cabling works; traffic disruption; cumulative damage to road network; excessive length of diversion routes; emergency access concerns; access to farmland
- Inadequate consultation
- Hindering future development potential of surrounding lands
- Civil rights issues
- Policy documents place no restrictions on wind energy development; inadequate policy approach; wind energy strategies are biased towards commercial demands; material contravention of County Development Plan
- Cumulative loss / erosion of blanket bogs
- Inadequate information on 110kV line from Slieve Callan to Ennis
- Flooding – Kilclogher Bridge, Kilmaley Road; of farmlands
- Impact on tourism
- Cost issues for residents in proximity to turbines – insurance
- Decommissioning
- Impact on farmers working the land (e.g. from direct shadow flicker)
- Safety issues – turbine fail
- Carbon saving offset by loss of bogs as carbon sink
- Inadequate NIS – Hen Harrier and FWPM
- Questions applicant's sufficient legal interest in land to make application

- Impact on cultural heritage and archaeology

4.0 Planning History

PL03.PC0184 – The Board determined (24/11/14) that the proposed development, comprising Slaghbooly wind farm project of up to 16no. turbines with a maximum output of 3MW, is not strategic infrastructure.

Overlapping current appeal site - Booltiagh Wind Farm I & II - total 19no. turbines at 92m and 120m tip height, constructed.

PL03.120616 / P00/567 – Permission **GRANTED** by the Board (**08/03/01**) for 15no. turbines (reduced from 26no. by condition omitting 11no. turbines) of up to c.92m in height. PL03.PC0184 (see above) indicates that only 13no. were built and that that development was complete and operational.

P07/2900 – Permission **GRANTED** (**17/10/08**) by Clare County Planning Authority for the erection of 6no. wind turbines of 120m tip height.

P08/1678 - Permission **GRANTED** (**24/01/09**) by Clare County Planning Authority for modification of Condition 2 of permission PA.ref.07/2900 to extend the permitted lifetime of the wind farm to a twenty-year operational lifetime from the date of commissioning.

PL03.236950 / P09/828 – Permissioned **REFUSED** by the Board (**18/10/10**) for the erection of 2no. wind turbines of 115m tip-height and associated works at Booltiagh, Co. Clare. The two reasons related to contravention of policy CDP53 of the CCDP 2005-2011 and ENV 3 of WCLAP 2009-2015, and inadequate information contained in the EIS.

PL03.245273 / P14/761 – Permission **GRANTED** by the Board (**09/12/15**) for the extension of Booltiagh 110kV electricity substation and associated works (including the removal of c.12,000m^3 of subsoil and peat, adjacent the site entrance to the current application under appeal.

South - Letteragh Wind Farm – total 6no. turbines at 136.5m tip height, under construction

PL03.239933 / P11/361 – Permission **GRANTED** by the Board (**21/02/13 – 10-year permission**) for the erection of six wind turbines of 136.5m tip-height and all associated site works, all in the townlands of Letteragh, Booltiagh and Boolyneaska, Kilmaley, c.0.875km south of the current application site.

South High Street – 5no. wind turbines at 107m tip height - expired

P09/248 – Permission **GRANTED** by Clare County Council (08/05/09) for extension of the appropriate period of validity of planning permission P03/80 for five years to 16/03/14).

PL03.204911 / P03/80 – The Board decided to overturn the decision of Clare County Planning Authority and **GRANT** permission (**18/03/04**) for the erection of five wind turbines (ten proposed and five omitted by condition), at Furroor North and High Street, Lissycasey, c.2.5km to the south of the current application site.

Southeast – Boolynagleragh Wind Farm – 16no. turbines at 107m and 126m tip height, does not appear to have commenced

PL03.244095 / 13/681 – Permission **GRANTED** by the Board (**13/06/16 - 10-year permission**) for the extension of Boolynagleragh Wind Farm with 7no. wind turbines of 126m tip height at Boolynagleragh, Lissycasey, c.3.6km southeast of the current application site.

P14/545 - Permission **GRANTED** by Clare County Planning Authority (**31/05/15**) for c.7.1km 38kV overhead line connecting the Boolynagleragh wind farm with the existing 110 kV substation at Booltiagh.

P14/76 – Permission **GRANTED** by Clare County Planning Authority (**16/05/14 - 10-year permission**) for an amended Electrical Transformer Station (38 kV) at Boolynagleragh Wind Farm (PL03.236376 / P09/479) and associated works.

PL03.236376 / P09/479 – Permission **GRANTED** by the Board (**07/12/10 – 10-year permission**) for 9no. turbines of 125m tip height and associated works (subject to omission of two of the 11no. turbines proposed) at Boolynagleragh, Lissycasey, Co. Clare.

P03/79 – Permission **GRANTED** (**13/10/03**) by Clare County Planning Authority for 17no. wind turbines (2no. omitted by condition) of 107m tip-height at BBoolynagleragh, Lissycasey c.3.6km southeast of the current application site. Superseded.

Southwest – Glenmore Wind Farm – 12no. turbines at 136.5m tip height, not commenced

PL03.245392 / P14/575 – Permission **GRANTED** by the Board (**24/10/16 – 10-year permission**) for the erection of 12no. turbines of 136.5m tip height and all associated site works in the townlands of Glenmore, Boonamweel, Boolynaknockaun, Furroor, Kilmihil, c.1.3km south of the current application site.

P14/618: Permission **GRANTED** by Clare County Planning Authority (**12/06/15 – 10-year permission**) for the construction of an electricity substation (previously granted under P02/2228) at Kilmihil, c.2km southwest of the current application site.

P14/309 – Permission **GRANTED** (**21/07/14**) by Clare County Planning Authority to extend the Appropriate Period of Planning Permissions **P02/2228** and **P09/438** to 26/06/17 for the construction of Windfarm consisting of 11 turbines, access roads, cabling and substation compound. Superseded by **PL03.245392 / P14/575.**

P13/122 – Permission **REFUSED** (**25/09/13**) by Clare County Planning Authority for the erection of 13no. wind turbines and associated works in the townlands of Glenmore, Boolynamweel and Illaunatoo (or Sorrel Island) near Kilmihil largely overlapping site subject of PL03.245392 / P14/575), c.1km southwest of the current application site.

P09/438 – Permission **GRANTED** (**19/06/09**) by Clare County Planning Authority for extension of the period of validity of planning permission **P02/2228** by 5 years to 27/06/14.

P02/2228 – Permission **GRANTED** (**26/05/04**) by Clare County Planning Authority for the erection of 11no.wind turbines of 115m tip-height (reduced from 14no. proposed) and associated works at Glenmore, Boolynamweel and Sorrel Island townlands c.1.3km southwest of the current application site.

Southwest – Kiltumper – 2no. turbines constructed at 120.5m

PL03.234010/ P09/358 – The Board decided to uphold the decision of Clare County Planning Authority and **GRANT** permission (**20/10/10**) for 2no. wind turbine of 120.5m tip height and associated works at Kiltumper, Kilmihil, c.5-6km top the southwest of the current application site. Appropriate period extended to 18/10/20 (reg.ref.14/754).

West - Coor West – 4no. at 126m tip height, apparently not commenced.

PL03.239378 / P11/360 – Permission **GRANT** permission (**06/06/14**) for 4no. wind turbines (reduced from 6no. on appeal) of 126m tip-height and all associated works, at Coor West, Shanavogh East and Shanavogh West, c.5km west of the wind farm application site proper.

Reg.erf.14/754 - Permission **GRANTED** (09/02/15) by Clare County Planning Authority to extend the appropriate period of reg.ref.P09/358 to 18/10/20.

West – Cahermurphy – 4no. at 131m tip height.

PL03.245189 / P14/551 – Permission **GRANT** by the Board (28/07/16 - 10-year permission) to erect 4 no wind turbines of 131m tip-height and associated works, replacing an existing planning permission for a six turbine wind farm under P03/2071 (extended by P09/267 and P13/507 which is valid until 2019), at Cahermurphy, Kilmihil, c.5km west of the proposed windfarm site.

P13/507 – Permission **GRANTED (28/11/13)** by Clare County Planning Authority to extend the appropriate period of planning permissions P09/267 and P03/2071 for a 6mw Windfarm and associated facilities.

P09/267 – Permission **GRANTED (08/05/09)** by Clare County Planning Authority to extend the of duration of planning permission P03/2071 granted on 23/07/2004.

PL03.205692 / P03/2071 – Permission **GRANTED** by the Board (23/07/04) for the erection of 6no. wind turbines of 82.5m tip-height, and associated works at Cahermurphy, Kilmihil.

North – Slieve Callan Wind Farm – 29no. at 125m tip height, currently under construction

PL03.237524 / P10/9 – Permission **GRANTED** by the Board (18/08/11 – 10-year permission) for 29no. wind turbines of 125m tip height and associated works (subject to omission of two of the 31no. turbines proposed) at Slieve Callan area, including townlands of Boolynamiscaun, Boolinrudda, Coor East, Doonsallagh East, Glennageer, Knockalassa, Letterkelly, Magherabaun and Shanvogh East, c3km northeast of the currently proposed wind farm site proper, but the two site overlap due to the proposed grid connection being located within the site of 237524.

PA14/615 – Permission **GRANTED** (12/01/15) by Clare County Council for upgrade of tracks to facilitate construction of **PL03.237524 / P10/9.**

PA13/567 - Permission **GRANTED** (12/01/15) by Clare County Council for alteration to substation in Knockalassa permitted under **PL03.237524 / P10/9.**

Other

P16/1011 – **UNDECIDED** (to date 14/07/17) application by Eirgrid PLC, with the consent and approval of the Electricity Supply Board, for works associated with the refurbishment of the existing Moneypoint - Oldstreet 400 kV overhead line within the various townlands. The line traverses the proposed HV grid connection route of the current application site, running from southwest to northeast to the northwest of the proposed windfarm, roughly parallel to the adjacent local road.

5.0 Policy Context

5.1. European Energy Policy

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

sector that applies to all Member States. There is flexibility for each country to choose how to achieve their individual target across the sectors. Ireland's overall target is to achieve 16% of energy from renewable sources by 2020.

2030 Climate and Energy Policy Framework **(European Council, 24/10/14).** The European Council endorsed a binding EU target of at least 40% reduction in GHG emissions by 2030 and a binding EU target of at least 27% is set for the share of renewable energy consumed in the EU in 2030.

A policy framework for climate and energy in the period from 2020 to 2030 (European Commission, 22/01/14).

Energy Roadmap 2050 (European Commission, 15.12.11)

5.2. **National Energy Policy**

National Renewable Energy Action Plan -

Ireland's National Renewable Energy Action Plan (NREAP) sets target of 40% electricity consumption from renewable sources by 2020 (financially supported by REFIT).

Strategy for Renewable Energy 2012-2020 **(DCENR, May 2012)** - Strategic Goal 1 - Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets.

Key action include to support the delivery of the 40% target for renewable electricity through the existing GATE processes and to implement REFIT 2 for onshore renewable energy and maintain a predictable and transparent REFIT support framework for onshore wind which is cost competitive.

Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure **(DCENR, 17/07/12).** Ireland needs to deliver a world class electricity transmission system in all the regions to enable Ireland to meet its renewable energy targets and reducing the country's dependence on imported gas and oil and reduce CO2 emissions.

Ireland's Transition to a Low Carbon Energy Future 2015-2030 (Policy Whitepaper, DCENR, 2015)

***Draft Renewable Electricity Policy and Development Framework - Draft Strategic Environmental Assessment Scoping Report* – 2016 (DCENR).** It is intended that the Renewable Electricity Policy and Development Framework will, *inter alia*:

- set out a clear national policy context to facilitate renewable electricity developments at large scale on land;
- broadly identify a limited number of suitable, strategic areas in Ireland for renewable electricity generation of scale (these can be incorporated into a revised National Spatial Strategy, Regional Guidelines and development plans subsequently) having regard to considerations of amenity, heritage and efficacy;
- provide guidance to planning authorities, including An Bord Pleanála, when considering proposals for renewable electricity generation, supplementing the guidance contained in the existing Wind Energy Development Guidelines for Planning Authorities, 2006;

***Wind Energy Development Guidelines* (DoEHLG, 2006)** -

Constitutes statutory guidance for wind energy development, including the provisions of development plans and in the development management process, concerning considerations of design, siting, spatial extent and scale, cumulative effect and spacing, layout and height of wind turbines having regard to its location within one of six landscape character types and their particular sensitivities.

NOTE: The guidelines are currently subject of review, the public consultation process for which commenced June 2017.

5.3. Regional Energy Policy

***Mid-West Area Strategic Plan 2012-2030: Planning, Land Use and Transportation Strategy* (MWRA, 2013) –**

S.2.1 The Mid-West today – Green energy generation potential is identified as a key strength.

Table 3.5 Key Opportunities - The Mid-West has the highest potential generating capacity of renewable energy in the country.

S.3.5.2 Key Growth Sectors for the Region: Energy and Environmental Sector: There are opportunities for the Region in the development of energy related activities. For example, the Region is well served with natural assets in wind and wave (Sustainable Energy Ireland's report "Tidal and Current Energy Resources in Ireland). … The Shannon Energy Valley initiative will create a national hub for Energy research and development, industry and commerce with a view to attracting international investment and generating high-end employment in the region.

S.4.3 Strategic Objectives: That the high potential of the region for the provision of renewable energy and other green technologies be harnessed to the benefit of the economy and the environment alike.

s.5 The Strategy: Environment – improve security of energy supply by reducing dependency on imported fossil fuels.

Economic Strategy - Table 5.2 Likely locations for the potential growth sectors. Energy is identified as a potential growth sector located outside of the population / development nodes.

S.7.1 Economics – The identification of energy and environmental sectors as a growth sectors are acknowledged.

5.4. **Local Policy**

Clare County Development Plan 2017-2023 – Effective 25/01/17 (post decision date of the Planning Authority).

Chapter 8 Physical Infrastructure, Environment and Energy:

Objective CDP8.40 Renewable Energy -

a) To encourage and to favourably consider proposals for renewable energy developments and ancillary facilities in order to meet national, regional and county

renewable energy targets, and to facilitate a reduction in CO2 emissions and the promotion of a low carbon economy;
b) To assess future renewable energy-related development proposals having regard to the Clare Renewable Energy Strategy 2017-2023;
c) To assess proposals for wind energy development and associated infrastructure having regard to the Clare Wind Energy Strategy [which identifies optimum locations for wind energy developments in the county having regard to environmental and geographical constraints and the protection of the amenities of local residents and comprises Vol. 5 & 6 of this plan] *and the associated SEA and AA, or any subsequent updated adopted Strategy;*
d) To prepare an updated Wind Energy Strategy for County Clare during the lifetime of this evelopment plan;
e) To strike an appropriate balance between facilitating renewable and wind energy-related development and protecting the residential amenities of neighbouring properties;
f) To support and facilitate the development of new alternatives and technological advances in relation to renewable energy production and storage, that may emerge over the lifetime of this Plan;
g) To ensure that all proposals for renewable energy developments and ancillary facilities in the county are in full compliance with the requirements of the SEA and Habitats Directives and Objective CDP2.1;
h) To promote and market the county as a leader of renewable energy provision;
i) To support the implementation of 'Ireland's Transition to a Low Carbon Energy Economy 2015-2030'.

Chapter 10 Rural Development and Natural Resources

10.1 The strategic aims include '*To ensure that key assets of rural areas such as the natural and built environment are protected and enhanced, and rural areas with resources such as wind energy, water sources, and aggregates are sustainably developed;*'

10.4.4. …*the development and siting of wind energy projects must be balanced with the potential impacts on the landscape, ecology and the amenities of local communities. Areas that are considered suitable for commercial wind energy developments are set out in Volume 5 of this plan.*

Objective 10.11 It is an objective of the development plan: *To facilitate the development of renewable energy developments in rural areas in accordance with the adopted Clare Wind Energy Strategy and Renewable Energy Strategy and the associated SEA and NIR (and any subsequent strategies).*

Chapter 18 Climate Change Adaptation, Flood Risk and Low Carbon Strategy

18.3 …*Having regard to the county's significant available renewable resources, Clare County Council will seek to take a lead role in respect of renewable energy technology to assist in meeting national, regional and county targets in energy consumption and CO2 reduction.*

Table 18.1 Renewable Energy Resource Targets for County Clare for 2020: *Onshore wind – 1,590.0 GWh/y (total all electric 2,479.2); 550MW (total all electric 720.8MW).*

Map E - Renewable Energy Designations – Strategic Areas (Wind Energy); Acceptable in Principle (Wind Energy)

CDP Vol.5 – Clare Wind Energy Strategy – S.3.0 Wind Energy Objectives; Figure A: Distribution of Significant Wind Energy Developments Granted Planning Permission in County Clare; Figure D: Strategic Windfarm Development Areas; Map: Wind Energy Designations; Figure E: Wind Resources within Landscape Character Areas.

6.11 Cumulative Impacts of Wind farms:

The cumulative impact of wind farms throughout the County and in particular, in areas identified as 'Acceptable in Principle', has been considered. The key focus is on how many developments may be acceptable, where are the best locations and what scale and design is most fitting.

In areas identified as 'Strategic or 'Acceptable in 'Principle', baseline fieldwork assessed the capacity of these areas to accommodate wind farm development and all were considered to have capacity for medium wind farm developments. This will be monitored over the lifetime of the Strategy as further development and environmental information becomes available.

CDP Vol.6 - Clare Renewable Energy Strategy 2017-2023 - Chapter 9 Onshore Wind.

5.5. **Natural Heritage Designations (within c.15km)**

Special Protection Areas

Site no.004182 Mid-Clare Coast SPA

Site no.004077 – River Shannon and River Fergus Estuaries SPA

Special Areas of Conservation

Site no.000036 Inagh River Estuary SAC

Site no.001021 Carrowmore Point to Spanish

Site no.002091 Newhall and Edenvale Complex

Site no.002165 Lower River Shannon SAC

Site no.000047 Pouladitig Cave SAC

Site no.002318 Knockanira House SAC

Natural Heritage Areas

Site no.002367 Lough Naminna Bog NHA

Site no.002397 Slievecallan Mountain Bog NHA

Site no.002400 Cragnashinguan Bogs NHA

Site no.002421 Lough Acrow Bogs NHA

6.0 The Appeal

6.1. **Grounds of Appeal**

Conserve Kilmaley Group, c/o Eoghan McGuane, Kinturk, Connolly, Co. Clare. The main grounds of the appeal against the decision of the planning authority can be summarised as follows:

- **Policy issues** - The designation of this area as '*strategic*' for wind energy development in a plan led approach unduly influenced the decision of the planning authority, without full consideration of all data submitted in the application. Rather than the potential cumulative impact of multiple, piecemeal wind farm developments (90no. turbines permitted) on the local

community, the achieving of renewable energy targets is the main consideration.

Protection of residential amenity is provided for under the Council's Wind Energy Strategy (CWES) and the Wind Energy Development Guidelines 2006 (WEDG). The WEDG is out of date and doesn't take account of the increased turbine tip heights now current. The CWES sets unrealistic targets / thresholds for development and, as repeatedly advised by the DEHLG (correspondence of 11/04/14), cannot comply with the Birds Directive or the Habitats Directive, having been adopted prior to changes to European sites in County Clare.

Conflicts with the government's 273-point Action Plan for Rural Development.

- **Impact on residential amenities** - Conserve Kilmaley Group did not object to the extension of Booltiagh wind farm extension or amendments as the topography of the Slaghbooly hills provided visual screening (recognised in planner's report to PL03.120616 / P00/567). Potential for significant impacts in terms of visual, noise, shadow flicker and destruction of natural amenity arise from the proposed development, with implications for quality of life and sustainability of the area, and contrary to Objective CDP 10.3(b) and Objective 16.2 of the Development Plan.

  Properties particularly concerned include H21, H18, H27, H29, H43, H49, H30, H32 and (land east of) H28 from T3, T4 and T5.

- **Project splitting** - The piecemeal development and extension of the Booltiagh Wind Farm (the applicant can be considered Booltiagh Stage III) is contrary to the requirement of CWES to avoid piecemeal development of the strategic designated lands.

- **Water Quality** - Poses an unacceptable risk to water quality standards in the receiving watercourses contrary to the Water Framework Directive (2000/60/EC) and to the national objectives expressed in the European Communities Environmental Objectives (Surface Water) Regulations, 2009 (S.I. No.272/2009), contrary to objective CDP 8.3 of the CDP 2011, due to the scale of excavation, the nature and extent of works, the peaty and poor

draining nature of soils and the absence of adequate information on the capture and settlement of solids.

- **Public water supply** - impact on Doolough Lake as a water supply for West Clare Regional Water supply; Aughaglanna which is a high water status body; and River Fergus, designated salmonid water body.

  The proposed development is likely to be prejudicial to public health due to the discharge of elevated amounts of total organic carbon to the surface waters in the Doolough Lake catchment, which already has recorded elevated levels of Trihalomethane (possibly carcinogenic), arising from the significant construction and excavation works (T11 and borrow pit 1 to received 22,600m^3 peat) in the Annageeragh catchment.

- **Potential impact on Marsh Fritillary**. Concerns regarding inadequacies of EIS survey for this species at the site (found on adjoining lands at Barony Bridge in survey under P07/2900) and inadequate habitat mapping at proposed replanting sites not evidently taken into account by the Planning Authority and therefore an adequate assessment of protected habitats and species did not take place contrary to the requirements of A.3 of the EIA Directive.

- **Peat instability** - The site location, design and layout was not informed by the full risk assessment peat stability, submitted subsequently as Appendix K of further information, at the latter end of the planning process. Concerns about the data in Appendix K were raised in s.6 and 7 of the appellant's third party observation on file. Peat slippage will have a detrimental impact on surface water quality in Kinturk and Slaghbooly loughs.

- **Peat as carbon sink** - Wind farms located on peatlands can greatly increase overall carbon losses, undermining expected carbon savings, through loss of peat during construction and from arresting peat growth during operational period. Overall carbon loss not taken into account in the EIS, EIA or the CWES.

- **Cumulative impacts** - The cumulative impacts of permitted wind farms (and also forestry and industrial development) have not been taken into account in the EIS, EIA or the CWES, including on Birds Directive Annex I species, the

Hen Harrier. The bird mortality (from collision) resulting from several wind farms may exceed the capacity for population regeneration, in addition to habitat loss and fragmentation, which will have a significant adverse ecological impact on the habitat and / or foraging grounds of Hen Harrier, contrary to objectives CDP 17.8 and 17.9 of the CDP 2011. EU (C418-04) found Ireland breached the Birds and Habitats Directives through insufficient implementation measures to protect wind birds within and outside the SPA network, citing the example of Hen Harrier decline speculatively attributed to wind farm development in Hen Harrier habitat.

- **Mitigation measures** - not site specific. The mitigation measures to entrap suspended solids are not site specific, the maintenance and management of a significant number of ponds presents a significant risk to water quality and the extent of sediment capture required on site (given the extent of construction, excavation and movement of 84.715m^3) is not addressed in the EIS or in the further information submission.

  The cumulative impact with intensive tree felling activity (the severe impacts on headwaters of Aughaveena catchment have been noted by the Local Authority) is not taken into account, with mitigation measures proposed only within the vicinity of the proposed wind turbine construction areas.

  Contrary to objective CDP 8.3 Protection of Surface Waters.

- **Monitoring mitigation measures** - A proven track record of the effectiveness of such mitigation measures, with independently validated real time monitoring data is required to demonstrate that they will work on this site.

  The existing wind farms must have records of monitoring data, as is proposed under the current application, but none of this is evidenced in the EIS. The storing of this data, which is not accessed or referenced is a bizarre approach to environmental protection.

  There is no regulatory structure for ongoing monitoring of contamination from wind energy projects and the vast site areas, multifaceted works program, diffuse sources and long term run off present an ongoing and unresolved difficulty for monitoring. The regulatory and enforcement system is not adequate to deal with the issue, as evidenced by the incremental deterioration

in Doolough Lake water quality and the apparent reduction in Hen Harrier numbers.

Even is all mitigation measures are fully implemented, there would be a net negative impact on Annageeragh river system, which status has failed to improve since 2004. No further deterioration can be permitted.

Residents have already tried to complain about noise, and nothing was registered either in the Local Authority or with the developer.

The opportunity was there for the developer to provide good data on monitoring of Booltiagh I & II but nothing was provided.

- **Noise** – the random selection of noise sensitive sites is not a representative noise impact assessment.

  The noise from existing Booltiagh wind farm is amplified by the topography of the area, as in an amphitheatre affect, under certain conditions, causing considerable discomfort during outside work, particularly at night during temperature inversions.

  Reliance on compliance with simple decibel limit values does not address the impact and changes in baseline noise environment of the area.

  Some members have experienced painful pressure effects on their ears and some have indicated the effect on their sleep patterns and general wellbeing.

  The noise impact arising from the combined wind farm developments will give rise to dramatic, negative change in the amenity of the area.

- **Grid connection** – The connection via the Slieve Callan grid connection, which was deemed to be exempted development by Clare County Council, cannot be permitted as it is not permissible to add further development to an exempted development.

  The Slieve Callan grid connection should not have been exempted.

  The Slieve Callan to Tulla Road station connection was not included in the scope of projects outlined by the Electricity Network provider and was not subjected to SEA contrary to SEA Directive 2001/42/EU.

- **Scope of site inspections carried out they the Local Authority** – No evidence of inspections, including sites proposed for replanting, to enable preparation of an EIA report.

  The EIA report of the Planning Authority does not provide an evaluation of the direct and indirect effects of the proposed development, contrary to s.171A of the Planning and Development Act 2000, as amended.

I note attachments 1 (fig 12.2 of the EIS) and 2 (NPWS perspectives on locally-led environmental schemes, including Hen Harrier case study and total number of wind turbines mapped within the area), and the CD of extensive supporting documentation, including copy of the NPWS presentation (Andy Bleasdale), the observations (and attachments thereto) on the application in December and January, supporting photographic survey and water monitoring results for County Clare for 2004-2010 and 2012-2015, inclusive.

Peter Sweetman and Associates. The main grounds of the appeal against the decision of the planning authority can be summarised as follows:

- The decision does not comply with the Judgement in Connolly-v-An Bord Pleanála [2016] IEHC 322 (14/06/16), petitioned to the Supreme Court by the Board.
- As there is conflict in the manner in which the Board should carry out EIA and AA, it is not possible to make an informed appeal at this time.

An Taisce. The main grounds of the appeal against the decision of the planning authority is in respect of **the potential impact on Hen Harriers**. The main points made in support of the grounds of appeal may be summarised as follows:

- **Policy** – the designation of an area as a 'strategic' location for wind farms does not solely justify such development, which must comply with EU, national and local policy objectives, including s.5.2.2 of the Wind Energy Development Guidelines 2006 concerning impacts on birds.
- **Hen Harrier** – The species is protected under Annex I of the Birds Directive. Although not located within an SPA, Member states are required to strive to avoid pollution or deterioration of habitats of interest outside SPAs.

Hen Harrier is Ireland's rarest declining resident breeding Annex I bird species (decline evident in survey of 2010 and 2015). 15% decline in breeding pairs in last 5 years, 33% breeding population decline over last 15 years, 52% decline in estimated breeding pairs over last 40 years.

The 2010 and 2015 National Breeding Hen Harrier Survey data indicates that this area is extremely important for Hen Harrier.

The area has undergone one of the greatest declines in breeding pairs, corresponding to loss of foraging and breeding habitat, the maturation of commercial forestry and the construction of wind farms.

Annex I Scientific Research for Slieve Callan concludes that in the absence of conclusive evidence to the contrary regarding adverse impacts on Hen Harrier, the precautionary principle must be applied.

- **EIS and site potential for Hen Harrier** - The EIS and surveys for breeding and foraging Hen Harriers is fundamentally flawed, as the assessment was based on a period of closed canopy commercial forestry[4], which current makes up 96% of the total forest area (first rotation) which covers 91% of the site. 138.9ha of forestry is to be felled through the proposed development. Given the presence of adult and sub-adult Hen Harriers on the site found in the applicant's surveys and their preference for pre-thicket forestry as nesting habitat, it is highly likely that the site would support breeding Hen Harrier and foraging Hen Harrier during later stages in the forest rotation cycle.
- **Potential outcomes** – In the do nothing scenario, the forestry will be felled, providing foraging and habitat for Hen Harriers

  If constructed, the wind farm may result in i) loss of habitat on site and on adjacent lands due to disturbance; ii) increased mortality of Hen Harriers due to collisions with turbine blade, as the felling of forestry is likely to attract foraging Hen Harrier, which have not been taken into account in the Council's decision, in the context of the seriousness of the national and regional decline of the species, contrary to objective 17.8(a) and 17.9(a) of the CDP 2011.

[4] A habitat actively avoided for breeding or foraging by Hen Harriers, which favour foraging in open non-afforested habitats (51.3%) compared with afforested habitats (40.6%), but recorded more frequently to nest in second rotation forest (59.3%) that heather moorland (25.9%) according to the National Hen Harrier Breeding Survey 2015.

- **Hen Harrier activity** – The applicant's further information response concerning foraging distances was inadequate and did not have regard to site specifics and the influence of suitable foraging habitat.

  Based on the 2015 National Hen Harrier Breeding Survey data, 6 or potentially 2/3 of the total breeding population (3-8 pairs) of one of the most important areas for breeding Hen Harrier in the country (as identified by the NPWS – see annex II to the appeal) are located within foraging distance of the site, including one breeding pair on site according to the DAU (DAHG) and two confirmed nesting attempts within 5km according to the 2015 NHHB survey.

  The 2015 NHH survey found North and West Clare had among the highest levels of recorded cumulative pressures in the country (see annex III to the appeal), which would be added to be the proposed development.

  The 2015 NHHB survey recorded 34 slight lines across the EIS project area (27 males), with 16 recorded in the Winter Season Survey and the short duration of sighting noted in the EIS is typical of Hen Harrier commuting through closed canopy commercial forestry. The EIS is insufficient in providing details relating to the duration of sightings of Hen Harriers when forestry is cleared, creating more suitable foraging habitat.

  The proposal will have a negative impact on the local Hen Harrier population, and cumulatively displacement effects are likely to be significantly negative taking existing wind farms into account.

  The 12.55ha habitats and species management plan lands as a habitat enhancement measure to benefit Hen Harriers is inadequate considering the overall footprint of the subject proposal and cumulative impact.

- **Peat Displacement & Water Quality** – The site is primarily peatland or modified blanket bog, mostly under commercial conifer plantation. Peat stability and loss of important habitats and species are of concern.

  Present standard methods for testing the engineering properties of soils do not work in peat, having been developed for mineral soils.

The correct estimation of shear strength is critical to assessing risk of landslip in blanket peat but reliable values are difficult to obtain due to the fibrous structure.

The indirect impact is generally far greater that the immediate footprint of construction as it results in the lowering of the water table and the drying out of this annexed priority habitat.

Where floating roads have sunk, they easily flood and channel water flow, increasing erosion, as can vehicle tracks, with huge potential for negative impact on water quality locally or downstream.

- **Traffic and Access** – Does the road network have the capacity to accommodate the 25,726 vehicle movements (RDO report). Exact sourcing of resource materials may entail use of other haul routes.

Note: The appellant, as a charitable organisation, is applying for the expense of this appeal under s.145.

6.2. **Applicant Response**

The main points of the response received 16/03/17 may be summarised as follows:

General -

- It is evident from the plans, particulars and documentation provided to the Planning Authority, including that a full and complete assessment could be carried out by Clare County Council in accordance with statutory requirements.
- The further information requested related to technical and design measures to ensure no significant adverse effects were likely, alone or in combination.
- Significant planning policy at national, regional and local level support the proposed development, with the location designated a '*Strategic Area*' under the County Clare Wind Energy Strategy, with a target of 400MW (242 permitted to date) adopted in the County Development Plan 2017-2023.

Response to Conserve Kilmaley Group (CKG) -

- Plan led approach – it is appropriate and the Planning Authority is obliged to follow the plan led approach under the Planning and Development Act 2000-2016 and the Local Government Reform Act (2014).
- Chapter 2 of the EIS sets out Ireland's obligations under EU law and the planning, economic and environmental policy context for renewable and wind energy development and other policies, objectives and principles having regard to residential, environmental and landscape.
- Plan led approach is advocated under the Wind Energy Development Guidelines and the Clare Wind Energy Strategy 2011-2017 has been adopted into the Development Plan (objective CDP8.39(c)) in accordance with Circular PL20-13.
- Under CWES the site is primarily within the '*Strategic Area*' and partly within areas 'Open for Consideration' under WES Objective 8, which are areas '*eminently suitable for wind far development*' but are required to satisfy specific criteria.
- CWES is complemented by Clare Renewable Energy Strategy (2017-2023) which aims '*to support the attainment of and exceed in County Clare, where possible the National targets and commitments to renewable energy*', confirming the 400MW target for wind energy in the county.
- The CDP, informed by S.28 guidelines and international best practice set-out methods, standards and criteria used to establish how aspects of the built and natural environment must be considered when assessing wind energy projects and such development does not have free rein, even within a '*Strategic Area'* (e.g. EIS requirement).

Adequacy of EIS -

- The EIS was prepared in accordance with Schedule 6 of the Planning and Development Regulations 2001, as amended, EPA guidelines and is fully compliant with the EIS Directives, 2011 and 2014.

- Best available scientific data, information and techniques, supported by site visits and field surveys, informed the relevant sections of the EIS.
- There is no deficiency.

Piecemeal Development & Cumulative Impacts -

- Slaghbooly wind farm is separate to and independent of the adjacent Booltiagh 1 and 2 wind farms and is a standalone project, with its own grid connection and substation.
- Cumulative impacts (and interactions) of adjacent wind farm projects (operational and permitted) have been appraised throughout the EIS.

Water Quality Issues (unacceptable risk to receiving watercourses) –

- Considerable detail addressing potential impacts, prescribing mitigations and defining residual impacts, including compliance with the Water Framework Directive (WFD), including cumulative impacts, within the three catchments, having regard to their ecological status, were included in Chapters 8 (Aquatic Ecology), 9 (Hydrology and Water Quality) and 10 (Forestry Felling).
- Comprehensive catchment-based cumulative assessment, covering impacts 4-years prior to commencement and 5-years post, in relation to forestry felling (16 years in total, based on up to date published literature, concluding that there would be no significant impacts on water quality that would result in a failure to comply with WFD objectives in each of the affected catchments.
- Annageeragh catchment – Modelling of potential P-loss (determinant of trophic status) found there would be no risk of Good Ecological Status not being maintained in Doolough Lake and WFD compliance (maintenance of Good Status) and quality of water supply is therefore not considered at risk (EIS s.8.4.2.7).
- Aughaglanna catchment – The catchment was classified as overall Poor status in 2006, rated, for the purpose of WFD reporting, based on the Q3 Poor status of the upper catchment rather than Q4-5 High status of the lower catchment. The catchment is now officially classified as of Q4-5 High status based on the consistent rating of the lower catchment over 2004, 2006, 2009

and 2012 (the upper catchment has not been monitored by the EPA since 2006. It is the WFD objective to 'Restore to Good Status by 2021'.

The EIS (table 8.36) concluded that even taking account of potential for some harvesting related nutrient loss in the upper catchment, with all mitigations employed the residual impact will be neutral and compliance with WFD objectives will be achieved.

- Furroor catchment – Turbulence felling was phased over 7 years to avoid potential negative effects of nutrient loss to the upper Furroor stream.

  The waterbody (at S13 outlet) is currently of Good status and is very unlikely to be negatively affected by the proposed development, with neutral impacts on salmon habitat and populations at the outlet or downstream in the Limaley River.

  The effect on water quality and conservation objectives for Atlantic salmon of River Fergus, as part of the Lower River Shannon c.SAC (c.18km downstream), will be negligible or nil as only 1km of the (37km hydrological length of the cSAC) habitat, usable by older resident fish (as much of the channel through Ennis is unsuitable for spawning), is downstream of the Claureen / Kilmaley confluence, with the Fergus downstream of Ennis being a migration route only for salmonid species that move to / from the sea.

Drinking Water Quality (impact on Doolough lake from elevated amounts of total organic carbon) –

- There are no limits or standards for Dissolved Organic Carbon (DOC) in Irish freshwater and therefore it is not technically possible to quantify normal or high levels.

  The unique combination of catchment characteristics means the range and average of DOC concentrations on annual cycle differ for each stream, with a wide range of DOC concentrations in Irish waterbodies and are highly variable throughout the year (0.53m/l to 85mg/l in published Irish studies).

  Peat catchments typically have higher DOC concentrations. 18.8mgL^{-1} to 20.7mgL^{-1} measured on Annageeragh Stream (tables 8.15 an 8.16 EIS, Vol.1) would not be considered exceptional for peatland sites, especially as they

were sampled at average-to-above average streamflow in autumn when higher values can typically be expected.

A review of EPA monitoring of DOC levels (and true colour Pt-Co (yellow / brown) as a proxy) at Annageeragh / Doolough (taken every two months 2010-2016) indicates a range of 4.83mg – 16mg L-1 DOC and a range of 9.4 – 150 Pt-Co for the lake. Comparing a review of Pt-Co levels for Annageeragh stream (DOC levels not monitored) indicate that the highly variable levels (34 – 1090 Pt-Co) in the stream (which represents 24% of the lake catchment) is having a minor impact on the DOC levels in the lake.

The proposed works within the Annageeragh catchment comprise 1 wind turbine (T11), the substation, 2 borrow pits and roading, representing <1% of the total Annageeragh catchment.

Accordingly, there is, at worst, a negligible risk of any detectable variation in Doolough lack DOC concentrations arising from the proposed works.

Studies of changes in land management, concerning forestry and peat drainage, on DOC levels, show conflicting results, with the major drivers of recent increases in DOC concentrations considered to be large-scale. i.e. recovery from industrial acidification effects and climate changes.

The potential impacts on DOC –

- Short term localised increase following tree felling may or may not occur;
- Temporary localised decrease on removal of peat from excavated areas;
- Temporary localised reduction in export from peat storage areas;
- Temporary localised increase on restoration of peat to restored borrow pits;
- Return to normal DOC production once borrow pits reinstated and peat has resettled;
- Net effect of potential temporary disturbance is likely to be neutral in terms of changes to DOC concentrations in the catchment.

Recent focus on DOC concentration increases across Europe and North America was prompted by concerns over impacts on quality relating to water colour and THM production.

EPA records show occasional non-compliance with the THM limit of 100 ug L^{-1} is widespread in Ireland and is an issue across Northern Europe.

Out of 98 EPA samples over a 12-year period, Doolough Water Supply has had only 5 exceedences. There is no discernible trend and the records for 2010-2015 do not support the appellant's assertion that DOC levels are rising in the lake. Regarding the two dates referred to by the applicant for THM exceedences, one coincides with a period of relatively low DOC in raw lake water and the other with a period with DOC concentration at around the long term average.

Marsh Fritillary & Hen Harrier (inadequate survey of species and habitat) –

- The details of dedicated Marsh Fritillary surveys are described in chapter 7 of the EIS, and were mapped and the conservation status of invertebrate taxa assessed with regard to the relevant statutory provisions (and Red Lists).

  The presence and distribution of the larval food plant (Devil's Bit Scabious) for the Marsh Fritillary was recorded during detailed habitat and botanical surveys (appendix F1 of EIS and Table 7.4 of EIS) and previously recorded locations of the Devil's Bit Scabious were revisited, recorded where encountered and checked for larval webs. The presence of Devil's Bit Scabious is the best indicator of the presence of Marsh Fritillary according to the NPWS and NBDC national monitoring programme.

  Isolated clusters of the food plant were noted near an old quarry south of the project area at Doolough, small amounts at Furroor forest track, at young forest/clear fell at Tullaghboy and along field margins east of Kinturk school, but no larval webs were recorded. No Marsh Fritillary were recorded.

  S.7.3.6 of the EIS noted the historical records of Marsh Fritillary larval web at Barony Bridge, north of the grid access route, in 2010. Near Liscasey, c.7.5km to the southeast and a single adult on Lough Naminna Bog NHA in 2003 (Booltiagh Phase I EIS). None have been recorded during any recent surveys associated with EIS's.

Replant Areas –

- A detailed ecological assessment of the proposed replant lands was prepared and submitted as further information, including habitat mapping forming part of a Replanting Impact Assessment, based on a desktop survey and a field walkover in October 2016.
- The habitats and local ecology at the replant sites are described and considered in detail as part of the revised NIS submitted as further information.

Peat Stability –

- The independent study on peat stability, submitted as further information in response to concerns in the proposed use of floating road, substantiated the earlier findings presented in the EIS which had concluded that peat landslide hazard at the site was of generally low risk (resulting from avoidance of risk by design).
- Through use of floating roads, the design has inherently reduced the volume of excavated peat, mitigated associated negative impacts and management of same.

Carbon store –

- The carbon losses and gains are described in chapter 17 of the EIS and were modelled using 'Calculating Carbon Savings from Wind Farms on Scottish Peat Lands – A New Approach' (calculations contained in appendix O of EIS).
- Carbon savings are estimated at 52,641 tonnes of CO_2 per annum, with a payback period estimated at 4.4 years of operation to offset carbon released during turbine manufacture and wind farm construction activities.

Cumulative Effect on Hen Harrier –

- The principle objectives of the terrestrial ecology assessment (s.7.1 of EIS) included the assessment of cumulative impacts and potential impacts on Hen Harrier in the wider area.

- The site was not considered in isolation but included an extensive review of other EIA for development in the wider area.
- Consideration of cumulative impacts, on habitats and on associated impacts on key species, such as Hen Harrier, has been provided in the EIS. A dedicated cumulative impact assessment and landscape model (appendix 7 of EIS) looked at the predicted changes in availability of attractive habits for foraging and nesting Hen Harrier within the development site and (by way of GIS analysis) considered the predicted availability of such habitat in the wider hinterland, over the 25 operational period).
- Potential for disturbance and displacement during construction and cumulative changes in available habitat were considered (s.7.4.1) and impacts during operation under s.7.4.2.3.
- Detailed assessment of cumulative impacts on birds, including cumulative displacement and cumulative collision risks were assessed, in particular in relation to Hen Harrier, under s.7.4.4.1.

  As over 99.9% of the lands within 250m (theoretical displacement zone – table 7.15, Appendix F7, EIS) is conifer plantation and transitional woodland-shrub and would not therefore contribute additional cumulative displacement effect on peat bog or pasture habitats which are important for foraging and nesting Hen Harrier (due to the avoidance by design approach used).

  The number of flight-lines over the site, relative to the number of observations made of Hen Harrier outside the EIS project area, confirms that closed canopy forestry within the development footprint is not an important foraging area for the species.

  The proportion of observer Hen Harriers at rotor-swept height was very low (s.7.4.2.3. of EIS refers) and it was concluded that was highly unlikely the erection of the proposed turbines would contribute to a significantly increased collision risk for Hen Harrier occurring in the wider hinterland area.

  The Cumulative Impact Assessment and Landscape Model (Appendix F7 of EIS) concluded that the cumulative magnitude of potential impacts to Hen Harrier and other key bird species would be negligible given the location

largely on afforested lands. With the implementation of mitigation measures and the prescriptions of the Habitats and Species Management Plan (Appendix F8), the impact would be neutral to slight positive the wider land use and development context.

The HSMP identified lands (122.56ha) with a relatively high resource value for Hen Harrier and prescribed detailed land management agreed with landowners to come into place in parallel with the proposed development, and to be managed and closely monitored over the operational period.

Adequacy of Hydrological Mitigation –

- In addition to the details set out in EIS Chapter 9 *Hydrology and Water Quality*, the further information fully addressed the design and methodology and demonstrates it is appropriate for use on the site.

  Stilling ponds do not act on their own to mitigate or abate suspended solids loading, but are part of a combination of Silt Protection Controls and this is discussed in S.2.2.9.2.

Proven Track Record of Mitigation Measures –

- The Silt Protection Controls (SPCs) proposed in combination with mitigation measures are set out under s.9.6.1 of the EIS and are appropriate, site specific and based site surveys in consultation with best practice guidance (see chapter 9 EIS), including *Good Practice during Windfarm Construction* (SNH, 2015) which encourages the use of settlement ponds.

  Similar drainage proposals (a treatment train including separation of clean and dirty water, silt traps, silt fencing and settlement ponds (45no.) to receive drainage from all infrastructure proposed on site) have been accepted and implemented in larger wind farms on similar landscapes (terrain and land uses) such as the 58no. turbine Galway Wind Park (396,000,3 excavation and peat movement), with drainage proposals designed by the same engineer.

  Sizing of settlement ponds is calculated from CIRIA B14, set out in Appendix H of the EIS, which is the industry standard application of Stokes Law for determining the settling velocity of particles.

The existing hydrological regime for overland flow is maintained with the provision of regular cross drains in the floating track construction, located in areas of deeper peat flow.

Monitoring of ongoing maintenance and inspection of ponds is facilitated by a unique identification number at each location (s.9.7.2).

Forest felling covers three catchments, reducing the cumulative impact on each catchment individually; will be phased at <25ha p.a. to minimise cumulative impacts on water quality and aquatic ecology in each year and is subject to best practice and best management practices, and will include pre-felling surveys of all minor drainage channels within the felling area and access routes to ensure avoidance of excessive sediment generation (see table 8.32 also).

Compliance with Clare County Council Objectives (Objective CDP 8.3) –

- S.9.3.1 of the EIS outlines that the location of site infrastructure follows Development Plan guidance (Appendix 5 Development Management and the Riparian Zone) on buffers to the riparian habitats and avoids unknown wetland types identified in the County Clare Wetlands Survey 2008.

Monitoring measures (access to data) –

- Monitoring measures are detailed in the EIS and further information and complies full with the EPA's EIS guidance. Monitoring data is at all times available to the Local Authority and Statutory Authorities.

Monitoring and Control –

- Directive 2014/52/EU has not yet been transposed and the current Directive and current EPA guidance applies.
- Largescale wind energy projects are not a new development within the Irish Planning System.
- Chapters 8, 9 and 10 considers all issues identified in the scoping exercise and potential for contamination, including from defuse and long term runoff and set out detailed mitigation measures and ongoing monitoring. The Outline CEMP describes construction methods and how mitigation measures

are undertaken in practice, including an Environmental Register to identify all environmental aspects associated with activities onsite, all environmental compliance and mitigation measures for construction, any additional control measures to be put in place and identifying the party responsible for implementation.

- The Operation Stage Environmental Management Plan submitted as part of the EIS (Appendix P) is to ensure mitigation and monitoring measures are undertaken and documented throughout the lifetime of the project.
- Conditions 11, 12, 16(a-d), 21, 22, 24 (a-k), 25 and 27 attaching to the permission, reflect the comprehensive understanding of relevant impacts. The applicant is bound to the mitigation measures in the EIS and must comply with the conditions in the decision, therefore the Board can be assured that all monitoring will take place as imposed by the competent authority.

Control and management of mitigation measures –

- Existing planning legislation provides a robust means of ensuring that all adverse effects are prevented and that the Planning Authority is best placed to managed this.
- Enforcement action can be undertaken by any person, not only planning authorities, and non-compliance with a condition can give rise to unauthorised development. The EPA can review environmental concerns as they arise.
- As a major supplier of renewable energy, Brookfield take a very proactive approach to achieving and maintaining planning compliance for all their developments.

Noise Appraisal –

- Condition nos. 29, 30 and 31 relate specifically to noise.
- The noise assessment considered best practice approaches in the WEDG 2006, supplemented by the IOA's *A Good Practice Guide to the Application of ETSU-R-97…'*.
- The noise model presented a cumulative assessment of the existing and proposed developments in the area, in line with best practice, and considered

adjacent wind farms individually, combined with Slaghbooly excluded, and combined with Slaghbooly included.

- The response details compliance with 'good practice', in table 2.5, concerning background data collection, derivation of noise criteria, turbine noise prediction and the assessment of noise impacts.
- The assessment demonstrated that the proposed design achieves the adopted rating of 43dB$L_{A90.}$
- Brookfield have not received notice of a formal noise complaint from Clare County Council and CKG provide no detail about the specific subject of the complaint, when it was made or to whom it was made, and Brookfield has no noise complaints in file for Booltiagh wind farm (phase 1 or 2). Complaints may be made to the County Council or directly to the phone number provided at the wind farm entrance, or to the site manager (on-site every week) and will receive a response.

Grid Connection Route –

- The CKG's reference to Slieve Callan connection refers to the connection to the Ennis 110Kv substation, which will not be connected to directly by Slaghbooly.
- The route and details of the proposed grid connection is an inherent part of the planning application, is described (and potential impacts assessed) in the EIS and NIS and associated documentation, and is not presented as exempt development.

Planning Authority Assessment –

- It is apparent from the technical reports of the County Council, the comprehensive and detailed requirements of the Further Information request, the comprehensiveness of planning reports and assessments of the submitted EIS and NIS that Clare County Council scrutinised details of the application, had regard to all observations and submissions on the application and have provided detailed reasons for their decision.

Response to An Taisce -

County Clare Wind Energy Strategy–

- The EIS demonstrates how the project will comply with national policy and County Development Plan objectives. The NIS sets out how the proposed works would not adversely affect the integrity of the relevant Natura 2000 sites in view of their conservation objectives. The EIS examines impacts on ecology and habitats, including Hen Harrier in detail.

Hen Harrier (as principal ground of appeal) –

- Several times the EIS clearly describes the habitat on site, both in terms of the existing habitat and in terms of the rotational nature of commercial plantation, and considers the suitability of the site for Hen Harrier in detail, explaining that the closed canopy habitat is relatively unsuitable for nesting or foraging for the species.
- EIS Appendix F7 presents a detailed cumulative impact assessment and landscape model that looks at the predicted changes (over the 25-year operation period) in availability of attractive habitats for foraging and nesting Hen Harrier within the development site and, by way of GIS analysis, the predicted availability of same in the wider hinterland. The trend identified for pre-thicket forestry, being the most important habitat for Hen Harrier foraging and nesting, is for a substantial increase over the 25-year period – six times that currently available within 5km. All concerns regarding the effect of loss of habitat, displacement and collision risk are directly addressed in the EIS and NIS, having regard to the scientific literature.
- The available information on local, regional and national Hen Harrier populations is considered in significant detail in the EIS and NIS and in the Further Information response. Habitats at and adjacent to the site are primarily low to moderate ecological value, within a local context, with the closed canopy conifer plantation on site of limited use for foraging and nesting by Hen Harrier.

  With the implementation of the HSMP measures (EIS Appendix F8) and the application of mitigation measures (revised EIS s.5.1.2), there is no likelihood

of any potential impacts on key species and habitats that define the structure or function of the Natura 2000 sites and the proposal will have no adverse impacts on the Natura 2000 sites in the wider hinterland.

The implementation of the mitigation measures in the EIS and the measures proposed in the HSMP, potential impacts on local habitats will be reduced to imperceptible to slight positive compared to the 'do nothing' scenario, with residual slight positive impacts upon ground nesting birds, including Hen Harrier and Curlew.

Points of clarification raised in the RFI –

- Item 2(a) concerning larger foraging distances by Hen Harrier in Ireland – The larger foraging distance referred to was drawn from one very brief survey involving three birds and one study over a small number of days, which speculated that the distance recorded may reflect the closed nature of the habitats (in the Ballyhaura forest) in which the birds were nesting. It is reasonable to conclude that typical foraging distances in more attractive open foraging habitats (within 5km of the application site) would be lower than in commercial forestry dominated uplands of the Ballyhaura study site.
- Item no.2(b) concerning breeding pairs of Hen Harrier – The Ecology Ireland survey team included two of the national coordinators of the 2015 National Hen Harrier Survey (or 2015 Irish Hen Harrier Breeding Survey) Dr Allan Mee and Mr Tony Nagle, co-authoring the 2015 report.

  The number of hours / survey effort for the SNH Survey Methodology, used on Slaghbooly, was far greater (minimum of 36 hours per vantage point, with 5 VPs) than applied in the national survey. The intensive field survey confirmed a total of two nesting attempts within the 5km hinterland, as described in the EIS. The official record of the national survey showed only two confirmed nesting pairs (and four possible pairs) within the three 10km grid square (300km^2) which overlap with the applicant's 5km hinterland survey, which matches the results of the EIS. Often there are early season sightings of birds which may scope various areas and even display over a wider area, but not progress to breed and there is considerable risk of double counting.

Regarding pressures on Hen Harriers noted as part of the 2015 National Hen Harrier Survey, these are a non-scientific descriptive means of evaluating activities which, in the opinion of the observer, could be potentially positive or negative in terms of the continuing presence of breeding Hen Harrier. EIS s.7.3.3.7 noted that Slaghbooly lies in an area identified as being of low to medium sensitivity to wind energy development, as defined by Birdwatch Ireland's bird sensitivity tool.

- Regarding details of duration of sightings of Hen Harrier that would occur on clearing of forestry, these details cannot be produced directly. The observations of Hen Harrier on open habitats off-site were presented and provide some insight into the relative differences of frequency of use. During the 2015 breeding season Hen Harriers were observed within the site for 0.7% of the VP observations and for 1.4% of the off-site observation times, and for 0.6% and 1.4%, respectively, during the winter survey observation periods.
- The appellant's assertion that cumulative displacement effects are likely to be significantly negative are not supported by the detailed ecological assessments contained in the EIS.
- Anyone mitigation measure, such as the proposal to fell 12.55ha for HSMP lands, could be considered less than adequate. The EIS outlines comprehensive mitigation measures to be applied during and post construction and the HSMP commits to manage over 122ha for the benefit of local biodiversity and bird species, including the Hen Harrier. Overall, the measures represent a very comprehensive set of measures that will be monitored and reported upon by the project ecologist.

Peat Displacement and Water Quality –

- The shear strength values obtained during the peat stability assessments, undertaken as recommended in the *Scottish Executive Best Practice Guide for Proposed Electricity Generation Developments,* used the more conservative correction value of 0.4 to take account of the fibrous and heterogeneous nature of peat recommended in published literature (0.4 to 0.6).

- Blanket peat at the site is not currently functioning as a ‘pristine’ bog, with forestry drains and tracks constructed having hydrologically improved drainage and drying out peat deposits to some extent already.

  The factors of safety determined from infinite slope analysis (all above 1.0) confirm that the peat is currently stable. The recommended drainage measures, to maintain the hydrological regime and peat stability conditions during construction, will be out in place in advance. The use of floating roads (50%) will reduce the amount of new roadside drainage.

  Floating roads are designed to accommodate the heavy lift construction plant and the delivery of machinery infrastructure components, whilst not exceeding the maximum settlement or rut depth outline in the detailed design.

Traffic and access –

- The potential impacts of transportation during construction, operation and de-commissioning are considered in the EIS, chapter 18, with routes identified subject of consultation with the roads Department of Clare County Council during the EIS Process and informed by road traffic counts (NRA, Clare County Council and traffic counts).

  The turbine delivery route is anticipated to be from Foynes Port, as was used for Booltiagh and proposed for Letteragh.

  Potential cumulative impacts for all stages were examined, with potential for cumulative impacts were identified for permitted wind farms at Glenmore and Letteragh, if constructed at the same time as they may share haul routes. Letteragh is now under construction and no cumulative impacts will therefore result with Slaghbooly.

  Mitigation measures included the provision of source materials locally on site in identified borrow pits, in addition to Construction Traffic Management Plan and the appointment of a traffic management co-ordinator, the preparation of pre-condition surveys and measures to ensure road safety.

  conditions requiring payment of development and special contributions, deposit of cash securities for protection of public roads, in addition to Condition 10(a-e), will sire road quality and safety is maintained.

The management of the detailed routes can be fully provided for through compliance with proposed mitigation measures and planning conditions.

Response to Peter Sweetman and Associates -

Connolly v An Bord Pleanála –

- The first party's legal advisors advise that there is no basis for the appellant's submission in the manner in which the Board should carry out an appropriate assessment and an environmental impact assessment or that it is not possible to make an informed appeal at this time on those circumstances. The Board should proceed to determine the application in accordance with the Planning and Development Act 2000 to 2016 in the normal way.

6.3. **Planning Authority Response**

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

- Having regard to national sustainable energy policy, Clare County Development Plan policies, the Clare Wind Energy Strategy, the pattern of development and distance to sensitive receptors, the mitigation measures proposed in the EIS, the NIS and Appropriate Assessment concluding statement, the details of the appeals, the Planning Authority considers the proposed development acceptable and that it would not seriously injure the amenities of property in the vicinity, visual amenities or landscape character, create an unacceptable risk of environmental pollution or adversely impact on ecology, adversely impact on traffic safety or otherwise be contrary to the proper planning and sustainable development of the area subject to compliance with the conditions set out in the permission.
- Requests that the Board uphold the decision.
- Directs the Board to have regard to assessment of issues in the Planner's report.

6.4. **Observations**

Doolough Protection Group. The main points raised in the observations in support of the appeals by Conserve Kilmaley Group and An Taisce may be summarised as follows:

- The application for Slaghbooly wind farm as a SID, rejected by the Board, suggests future development and project splitting.
- Cumulative impact on Impact on protected Annex I species, Hen Harrier, outside designated European sites - 98no. turbines have been permitted within10km radius of Connolly, Kilmurry-Ilbrickane, Lissycasey and Kilmihil.
- Supreme Court Judicial Review of 14no. turbine wind farm permitted by the Board, concerning impact on Hen Harrier Annex I species, pending determination of points of European law by the ECJ, is relevant.
- The main suitability of the site is its proximity to the Irish grid system, en route from Moneypoint,. The other criteria and disputed by the observers - the lack of designated lands (which developer adopt as no ecological value), the lack of landscape sensitivity designations (designation of the area as Visually Sensitive and of Outstanding Natural Beauty has been dropped or downgraded since 1999), wind speeds (ignores impacts on Hen Harrier), distance to sensitive receptors (viewer people to loudly object), proximity to other wind farms (there are lots already), the availability of land (pressure on sensitive upland areas which may not have been surveyed for designation under the European law, and the 'green' nature of wind farms results in them being treated differently from other development notwithstanding the significant effects this intensive development has on sensitive environments).
- Impacts on peatland and carbon sequestration. Notes IPCC concerns regarding loss of peatlands, impact of wind farms on peatlands and failure of the Irish Government to complete formal designations of same and to prepare peatland management plans (only 6% of sites 2009) and peatland restoration of sites of conservation importance (only 9% of sites 2009). The European Commission has urged Ireland to take action in this regard, in view of the history of neglect of peatland even since protection was afforded the habitat,

which is one of our most valuable ecosystems, carbon sinks and flood protections.

- Impact on peatland ecology and NHAs. Disputes assertion that there is no hydrological links thereto.
- Disputes the EIS assertions and explanations regarding significance of presence of Hen Harrier and the mitigation proposed (c.122ha of HSMP lands to be protected and managed for foraging and nesting of birds, including Hen Harrier.
- Disputes EIS assertions regarding presence of wells and proportion of properties served by group water schemes. Private water is a huge problem in the area, being sensitive, with high iron content and prone to heavy peat content with forestry. Impact on five river sub catchments.
- Impact on Doolough lake which provides much of the drinking water for west Clare.
- Impact of consequential flooding arising from draining peatland, with EIS relying on preliminary assessment of flood risk.
- Impact on physical structure of small rural roads from construction traffic.
- Impact on archaeological heritage. The previous impacts of afforestation should not be used to justify further impacts.
- Alternatives – wind energy alone seen as a panacea.
- Clare CDP NIS is insufficient as it only looks at designated European sites, not potential European sites.
- Clare CDP does not have a policy on radical cumulative effect or saturation levels within the 'strategic' area.
- The Clare CDP 2017-2023 NIR from Clare Co. Co. (15/02/16) regarding Slaghbooly wind farm indicates that ex-situ impacts cannot be ruled out on European sites and notes provisions in the plan to recognise and protect any new / modified European site.
- Potential impact on Freshwater Pearl Mussel noted in Planner's report.

- Cannot assume that development and mitigation measures will be carried out exactly to resolve concerns regarding impacts on protected habitats and species.
- Potential impact of shadow flicker.
- WEDG 2006 is inadequate in terms of noise impact assessment.
- Piecemeal approach to wind energy across the state and between counties is unacceptable. Some counties have no wind farms.
- Inconsistency in the Board's consideration of wind farm proposals between different counties, including its consideration of aesthetics, environmental and prematurity on policy grounds.
- That there is a plan or wind energy development does not mean reasoned consideration should not be given to the consideration of the merits, etc., of the scheme. Wind energy may be acceptable in principle, not acceptable per se.
- The proposed Clare CDP 2017-2023 continues similar policies regarding the Slieve Callan Upland area.
- Loss of visual amenity and quietness, which are the compensations for not having the benefits of living in a town.
- Craignashingaun Bogs NHA.

7.0 Planning Assessment

7.1 Policy

7.2 Landscape and visual

7.3 Noise

7.4 Shadow flicker

7.5 Health Impacts

7.6 Ecology / flora and fauna

7.7 Hydrology

7.8 Soils, geology and hydrogeology

7.9 Material assets

7.10 Traffic and transport

7.11 Cultural and built heritage

1.12 Telecommunications and aviation

1.13 Air Quality and Climate

7.1 Policy

7.1.1 The policy context for the proposed development is set out in detail in chapter 4 of the EIS. The Board will be aware of the binding obligations on the State under the *EU Renewable Energy Directive 2009/28/EC* to achieve 16% of overall gross energy consumption to be from renewable sources by 2020. Under the National Renewable Energy Action Plan 2010 (NREAP), the Government has set a target of 40% electricity consumption from renewable energy sources (RES-E target) by 2020, with a target of 10% and 12% for consumption from renewable energy sources for transport (RES-T) and heating and cooling (RES-H&C) by 2020 in order to achieve the overall target of 16%. Neither NREAP, nor the Directive, set targets for the proportion of renewable energy from specific sources, such as wind, biomass, etc.

7.1.2 It is evident from EU policy documents published since 2010, including *2030 Climate and Energy Policy Framework* (European Council, 24/10/14) which endorsed a binding EU target of at least 40% reduction in GHG emissions by 2030 and a binding EU target of at least 27% is set for the share of renewable energy consumed in the

EU in 2030, that the targets for renewable energy are likely to significantly increase from 2020.

7.1.3 Under the Government's *Strategy for Renewable Energy: 2012-2020* (DCENR, 2012), it is a strategic goal (no.1) [to provide] '*Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets.*' Key actions include inter alia supporting delivery of the 40% target for renewable electricity through the existing GATE processes; overcoming environmental, permitting and emerging regulatory barriers and streamlining authorisation and planning processes and '*to assist in developing Local Authority Renewable Energy Strategies for renewable energy development commensurate with spatial planning and environmental needs*'. In contrast with the Offshore Renewable Energy Development Plan (DCENR, 2014), there is no spatial dimension in the strategy.

7.1.4 The *Strategy for Renewable Energy* recognises the market possibilities for onshore wind projects of significant scale, including the potential to export to the UK market, possibly facilitated by the development of commercial large scale electricity storage. '*The strategy envisages that Ireland's 2020 renewable electricity target can be met by onshore renewable generation, primarily from wind. This informed the decision in 2012 to confine the Renewable Energy Feed In Tariff (REFIT 2) support scheme to onshore wind*' (p.11). It can therefore be seen that national policy goes beyond existing EU binding targets, with onshore and offshore wind energy considered of broader strategic economic importance to the state. The Board is required to have regard to '*the national interest and any effect the performance of the Board's functions may have on issues of strategic economic or social importance to the State*' under the Planning and Development Act, 2000, as amended (section 143(b)).

7.1.5 The *Draft Renewable Electricity Policy and Development Framework - Draft Strategic Environmental Assessment Scoping Report* (DCENR, 02/02/16) states, '*Following consideration of the submissions made in response to an initial consultation, the Minister has decided to formulate a Renewable Electricity Policy and Development Framework (with a spatial dimension), replacing the previous approach*' (p.7). The framework intended inter alia to:

- ‘*set out a clear national policy context to facilitate renewable electricity developments at large scale on land*
- *broadly identify a limited number of suitable, strategic areas in Ireland for renewable electricity generation of scale (these can be incorporated into a revised National Spatial Strategy, Regional Guidelines and development plans subsequently) having regard to considerations of amenity, heritage and efficacy;*
- *provide guidance to planning authorities, including An Bord Pleanála, when considering proposals for renewable electricity generation, supplementing the guidance contained in the existing Wind Energy Development Guidelines for Planning Authorities, 2006*;’ (p.7)

At time of writing, the final framework document has yet to be published.

7.1.6 The Mid West Strategic Area Plan 2012-2030 is the relevant regional policy document. The plan acknowledges the potential for green energy as a strength for the region and a key growth sector. It notes that the region has the highest potential generating capacity for renewable energy in the country and the creation of a national hub for energy research and development, industry and commerce, in the form of the Shannon Energy Valley initiate. It is a strategic objective of the plan to harness the high potential for renewable energy generation to the benefit of the economy and environment, but no spatial policy in included in this regard (other than referring to the area outside of the main population / development nodes specified under table 5.2 of the plan).

7.1.7 The WEDG 2006 remains statutory guidance for wind energy development, offering advice to planning authorities on wind energy development through the development plan process (e.g. plan-led) and in the determination of applications for permission[5]. It advises that ‘*The development plan must achieve a reasonable balance between responding to overall Government Policy on renewable energy and enabling the wind energy resources of the planning authority’s area to be harnessed in a manner that is consistent with proper planning and sustainable development… within the context of a “plan-led” approach* (p.9), informed by sieve analysis to identify areas

[5] The targeted review (2013) of the WEDG, addressing noise, proximity and shadow flicker, is yet to be published.

suitable for wind energy, and highlights possible conflicts that may arise with natural and built heritage and with tourism and recreation (p.15). Whilst it does not constitute national or regional spatial policy, it includes key considerations in the design approach to wind energy development in terms of siting, spatial extent and scale, cumulative effect and spacing, layout and height of wind turbines having regard to its location within one of six landscape character types and their particular sensitivities. The general principle of wind energy development can be considered acceptable within any of the six landscape character types, subject to the aforementioned design and layout considerations[6].

7.1.8 The WEDG recommends different scales of spatial extent (generally either small or large) and turbines of different heights (short, medium or tall) as appropriate for different landscape character types. The definition of the landscape of the application site setting may warrant more detailed assessment (see s.7.2 *Landscape and Visual*, below).

7.1.9 The Clare County Development Plan 2017-2023 (CCDP) came into effect on 25/01/17, 5 days after the decision of the Planning Authority. The current Development Plan continues the strong disposition of the previous plan towards the development of renewable energy. It incorporates the Clare Wind Energy Strategy (CWES) as vol.5, and the Clare Renewable Energy Strategy (CRES), which supports the implementation of the former strategy, as vol.6. It is an objective of the CCDP (CDP8.40 Renewable Energy) to, inter alia, encourage and favourably consider renewable energy development, to assess proposals for wind energy developments having regard to CWES (which is intended to be updated over the life of the Development Plan), to ensure full compliance with the SEA and Habitats Directives and objective CDP2.1 (taking into account ecological issues and obligations in assessments) and to promote and market the county as a leader of renewable energy provision, in support of government policy. It is the objective (d) to prepare an updated wind energy strategy for the county and (e) '*To strike an appropriate balance between facilitating renewable and wind energy-related development and protecting the residential amenities of neighbouring properties'.*

[6] Table 1 p.78.

7.1.10 It is a strategic aim of the CCDP (s.10.1) to develop wind energy (and other natural resources) sustainably. It provides (s.10.4.4) that the siting of wind energy developments must be balanced with potential impacts on landscape, ecology and the amenities of communities. It is an objective (10.11) of the CCDP to facilitate the development of renewable energy development in rural areas in accordance with the adopted CWES and CRES and associated SEA and NIR. Furthermore, the CCDP indicates (s.18.3) that the County Council intends to take a lead role in renewable energy technology and its sets out specific targets to be attained for renewable energy and for different types of renewables, including onshore wind (*1,590.0 GWh/y (total all electric 2,479.2); 550MW (total all electric 720.8MW))* under table 18.1. Map E of the CCDP clearly defines the intended spatial distribution of wind energy (and renewable energy development, generally) within the county. The application site is located almost fully within that area designated Strategic Area (Wind Energy), with only proposed turbine T4 falling within the Acceptable in Principle (Wind Energy) area (according to fig.4.2 EIS).

7.1.11 One of the grounds of the appeal is that the designation of this area as '*strategic*' for wind energy development in a plan led approach unduly influenced the decision of the planning authority, without full consideration of all data submitted in the application, including consideration of the cumulative impact of the proposed development taken with the existing permissions (implemented and / or extant) amounting to more than 90no. wind turbines. However, the plan-led approach adopted by the County Council is consistent with the approach recommended under the current WEDG 2006 and it is reasonable for the Planning Authority to have regard to same in its arriving at a decision on the applicant.

7.1.12 Whilst I note the submission of the Third Party that the DEHLG advised (correspondence of 11/04/14) that the CWES cannot comply with the Birds Directive or the Habitats Directive, having been adopted prior to changes to European sites in County Clare, the CWES has been adopted into the CDP 2017-2022. The Natura Impact Report on the Clare County Development Plan 2017 (Vol.10a) indicates that the CWES was subject of an Appropriate Assessment as part of its incorporation into the adopted CDP 2011-2017 and submits that the mitigation measures proposed as part of that AA have been checked against the other elements of the CDP 2017-2022 to check for consistency and therefore addresses the impacts of same in

combination with the rest of the 2017 plan. The CDP 2017-2022, inclusive of the CWES, was subject of a Strategic Environmental Assessment (Vol.10b). There is nothing to suggest the Minister has issued S.31 Direction to the Council in respect of the CWES forming part of the CDP 2017-2022.

7.1.13 Having regard to the provisions of the CWES, the proposed development may be considered acceptable in principle in terms of policy context, subject to consideration of the proper planning and sustainable development of the area and to the carrying out of EIA and AA.

7.2 Landscape and visual

7.2.1 The issue of landscape and visual impacts area are addressed in the EIS under chapter 15 Landscape and Visual, with an expansive series of photomontages included as volume 4 of the EIS. I would draw the Board's attention to condition no.2 of the Planning Authority's decision to grant permission which omits proposed wind turbine T8 in the interest of visual and residential amenity.

7.2.2 **Broad landscape character type** – The recommended design response for wind farms under WEDG (section 6.9) differs based on six broad landscape character types: mountain moorland; hilly and flat farmland; flat peatland; transitional marginal land; urban / industrial; and coast.

7.2.3 The site is located within Slieve na Callan Upland LCA (Figure E of CWES) and identified as Upland Hills and Moorland Hills (Figure F) which the CWES equates with Moorland Mountain under the WEDG[7].

7.2.4 S.15.7 of the EIS considers the subject landscape to have characteristics of 'Mountain Moorland' and 'Transitional Marginal'. Having inspected the site and its environs and having reviewed section of the WEDG, I consider the landscape character of the application site to fall more clearly within the Transitional and Marginal Landscape, a landscape character type that is not referred to in the CWES. The key characteristic of the Transitional and Marginal Landscape are:

[7] (s.6.9.1 Mountain Moorland) Key characteristics of this landscape are: Peaked, ridged or rolling mountains and upland with steep sides or gently formed valleys; Generally unenclosed; Land cover comprising blanket bog, a mottling of heather, wild grasses and some rush in wet flushes; and a landscape type of relative remoteness and often comprising pristine, unspoilt and remote landscapes.

• Comprises something of both mountain moorland and farmland, thus involving a mix of small fields, tight hedgerows and shelterbelts;

• May include relatively rugged and rocky terrain, and thus a reasonable degree of spatial enclosure;

• Higher ground tends to be wet and boggy. Lower areas are usually cultivated and managed as fields;

• Houses and farmsteads are usually fairly common; and

• This landscape type bridges the organised and intensively managed farmland and the more naturalistic moorland;

The key consideration is one for respect for scale and human activities, the location of wind turbines should minimise visual confusion (crossing by blade sets of skylines, buildings, etc.) and the spatial extent should be relatively small to achieve a balance with their surrounds (do not bridge two different land covers e.g. moorland and field areas), especially considering that small field and houses are prevalent (see table 1. P.78 of the WEDG). Irregular spacing is appropriate to complexity of landform and the absence of extensive swaths of fields of regular rectilinear pattern. Linear or staggered linear layout will be appropriate to ridges, or clustered / linear on broader hilltops. Taller wind turbines may be appropriate on upper, open and visually extensive lands. Regarding cumulative effects of multiple wind farms, the WEDG indicates that great caution should be exercised as the visibility of two or more such developments within a confined setting might result in a critically adverse effect turbine height, development extent and proximity and table 1 indicates that cumulative effects area generally not acceptable unless the visual presence of the second wind farm is negligible.

7.2.5 The proposed wind energy development would be wholly contained within existing plantation forest and / or recently deforested plantation forest and therefore does not bridge different land covers. I would accept that applicant's submission that the nature of the landscape presents as larger scale compared to the smaller scale associated with agricultural fields. The arrangement of turbines is irregular and the height of turbines is tall, at 131m. I consider this to be acceptable within the landscape of this site and to be consistent with the provisions of the WEDG.

7.2.6 I consider the cumulative impact of wind energy development within this area to be a significant issue. 94no. wind turbines[8] have been permitted within the vicinity (within c.8km of Slaghbooly peak near the centre of the application site), but only a small number have so far been developed or are currently under development to date. Table 15.129 of the EIS indicates that there is a total of 86no. existing and/or permitted turbines within that area[10], although a total of 92no. is arrived at using the information on Fig.12.2 and taking account of permissions granted after this application was lodged. The discrepancy results from only 13no. wind turbines being developed for Booltiagh 1 whereas 15no. had been permitted under ref.120616/ P00567[11].

7.2.7 The CWES addresses cumulative impacts arising from wind energy development under Annex A: Best Practice and General Considerations for wind energy developments in County Clare. It states that 'In areas identified as 'Strategic or 'Acceptable in 'Principle', baseline fieldwork assessed the capacity of these areas to accommodate wind farm development and all were considered to have capacity for medium wind farm developments. It also indicates that this will be monitored over the lifetime of the Strategy, although it is not evident that any formal monitoring mechanism has been provided. It indicates (table 4a) that the subject area is of medium to low sensitivity to wind farm development and that the large turbine numbers would be appropriate (s.1.4 defines large as 11 to 25no. wind turbines as per WEDG) and that the Slieve Callan Strategic Area has potential for 250 MW energy generation. The Acceptable in Principle Area for the county has a target of 150 MW.

7.2.8 The proposed 11no. turbine development has a maximum capacity of 33 MW, assuming 3MW turbines (proposed to be 2-3 MW). A review of the permitted wind farms within the Strategic Area indicates that approximately 164 MW[12] has been developed or is subject of a live grant of permission. The proposed development

[8] Excluding expired High Street wind farm which does not appear to have been developed.
[9] Chapter 15 Landscape and Visual.
[10] Table 15.12 actual refers to 106no. wind turbines, but it includes more distant wind farms - Moanmore 7no. wind turbines 16km SW; Crossmore 7no. wind turbines 9km S; and Tullabrack 6no. wind turbines 15km SW.
[11] From Site Layout Plan (dwg.no.20432-01) P07/2900, it would appear that T10 and T11 of ref.120616/ P00567 were not developed.
[12] Some of the permitted wind turbines in existing permitted schemes fall outside of the Strategic area.

would bring the total to c.194 MW (T4 falls outside the Strategic Area according to Fig.4.2 of EIS), on which criterion the Strategic Area can be considered not overdeveloped for wind energy development. This is similarly so for lands identified as Acceptable in Principle.

7.2.9 The CWES defines the spatial extent of wind farms as small (1-5 turbines), medium (6-10 turbines), large (11-25 turbines) and very large (25+ turbines). The CWES assessed the capacity of each of the Landscape Character Areas to accommodate wind farms from large to small and the results are contained in Annex B. The Capacity Assessment for the Slieve Callan Strategic Area determined it to have a reduced sensitivity to such development and to be able to accommodate large or medium wind farms subject to careful siting to avoid significant impacts on skylines[13].

7.2.10 Apart from Slieve Callan wind farm (29no. turbines) which is a very large wind farm, all other wind farms permitted within this area have been either small, medium or large[14]. Cumulatively, the visual impact on the landscape from a given number of turbines will be the same whether they are proposed within one large wind farm or as individual turbines. In this regard the appellants submit that the proposal constitutes Booltiagh III and the piecemeal development of the Strategic Area, however the Board determined that the proposed development did not constitute a Strategic Infrastructure Development (PL03.PC0184) based on the report of the Board's Inspector who considered it separate from the Booltiagh Wind Farm, notwithstanding the proposal to utilise the existing Booltiagh I & II Wind Farm entrance as the primary entrance to the subject site.

7.2.11 Having regard to the CWES, the capacity to accommodate wind energy development concerns primarily landscape and visual capacity. Landscape and visual issues and potential impacts are addressed under chapter 15 of the EIS, which includes a Landscape Impact Assessment (LIA), concerning how the alterations to the physical landscape would be experienced, and a Visual Impact Assessment (VIA), which addresses how changes to the composition of views (obstruction and intrusion) would be perceived and the effects on visual amenity.

[13] Unlike all of the other LCAs, the actual sensitivity rating of the Slieve Callan LCA is not stated (table C1.1 of Annex B).
[14] Booltiagh wind farm was permitted for 21no., cumulatively, but only 19no. developed.

7.2.12 The applicant produced three maps of Zone of Theoretical Visibility for a 30km diameter radius study area, including taking account of cumulative impacts with all other existing and permitted windfarms (at time of making the application), with photomontages produced for 27no. Viewshed Reference Points selected based on the following:

- Key views (KV1 – Cliffs of Moher) being features or locations of national or higher significance.
- Designated Scenic Routes or Views (DR1-DR9) from the County Development Plan.
- Local Community Views (LC1-LC4) to represent views that may be available at residential properties usually within 5km.
- Centres of population (CP1-CP8) due to the number of viewers likely to experience the view.
- Major routes (MR1-MR4)
- Amenity and heritage features (AH1-AH3 & AH5) including tourist and visitor destinations.

The most highly sensitive landscapes were considered to be those identified in the CDP as heritage landscapes, being the Burren and the coastline. The most sensitive visual receptors were identified as including the Cliffs of Moher, Trump International Golf Links and relevant designated views.

7.2.13 **Landscape impacts** – The applicant's Landscape Impact Assessment determined that although there will be a perceived increase in the extent and intensity of wind energy development in the locality (within 2-3km), this will not give rise to a proportional increase in landscape impacts as wind energy development has already become an established element in the landscape character of the central study area and a familiar feature within the wider landscape. Outside of 2-3km it is submitted that the turbines become part of the landscape matrix rather than a defining feature. The magnitude of landscape effect is deemed medium-low within 2-3km, and of low magnitude beyond this area, reducing to low-negligible up to 10km and negligible at >10km due to the undulating plateau nature of the upland spine. The summary of

landscape impact significance is detailed in table 15.10. The impact of highest significance is a 'slight' impact on Slieve Callan 'settled landscape', with only 'slight-imperceptible' impact on the Burren, Cliffs of Moher, the coast, etc.

7.2.14 **Visual impacts** – The VIA determined that the visual impact of greatest significance on any of the VRPs selected would be only 'moderate', in respect of AH1 (Mid-Clare Way walking route, south of the site).

7.2.15 **Cumulative impacts** – I consider the main concern to be the potential for cumulative landscape and visual impacts, rather than the impacts of the proposal as a standalone development.

7.2.16 The applicant's assessment of cumulative landscape and visual impacts is based on Scottish Natural Heritage (SNH) guidance 'Assessing the Cumulative Impacts of Onshore Wind Energy Developments' (2012), which identifies cumulative impacts arising from combined visibility (two or more developments visible in same view) and from sequential effects (developments visible from different locations as the observer moves through a landscape). These categories are also used by the Guidelines on Landscape and Visual Impact Assessment (Landscape Institute; IEMA, 2013).

7.2.17 The EIS notes that cumulative impacts tend to be negative and include skylining – where an existing wind farm is already prominent on the skyline and a new development increases the proportion of developed to non-developed skyline – and generation of visual conflict and disharmony – where visual tension is caused by disparate extent, scale or layout of neighbouring developments; visual ambivalence caused by neighbouring development traversing different landscape types; stacking of neighbouring turbines; more distant turbines being larger than nearer ones, distorting perspective of distance.

7.2.18 Table 15.12 details the other wind energy development in the vicinity (existing and permitted), totalling 86no. turbines within the combined Strategic and Acceptable in Principle areas associated with Slieve Callan[15], but this is information is now out of date. Figure 12.2 (chapter 12 Human Environment) refers to three additional

[15] A further 20no. wind turbines are indicated as permitted between 9km to 16km to the south and southwest, but these are not relevant to this assessment.

developments 'in planning', but which are now permitted, which increases the total number of permitted turbines within the Slieve Callan area to 92no. turbines[16].

7.2.19 The EIS considers that existing landscape to be consistent with Mountain Moorland and Transitional Marginal under the WEDG and the applicant states to the different WEDG guidance on cumulative impact within the two landscape character types (s.6.91 and s. 6.94, respectively). The WEDG advises that within the Transitional and Marginal landscape type the potential for cumulative effects need to be evaluated on a case-by-case basis, but that great caution needs to be exercised as a critically adverse effect might result where two or more developments are visible within a confined setting, depending on turbine height, spatial extent and proximity. The guidance also notes that spatial enclosure within such landscapes is likely to preclude the possibility of seeing another wind energy development.

7.2.20 The EIS accepts that the landscape is not so confined as to completely screen the neighbouring wind energy developments, although this will occur from less elevated locations. It asserts that the proposed development is likely to read as a single wind farm with Booltiagh 1 and 2. It also submits that this upland setting is not so confined that such critical impacts might occur.

7.2.21 The WEDG doesn't explain whether cumulative visual impacts are more critical in near or distant views. The EIS indicates that the proposed development will be visible in conjunction with existing / permitted wind energy development from c.50% of the Zone of Theoretical View (see ZTV cumulative map (nacelle height) – not numbered). The ZTV maps indicates that blade tips would not be visible from 46.5% of the study area (map ZTV to tip-height), and that 57.3% of the area would not have any view to nacelle height[17] (map ZTV to nacelle height). The applicant reviews the nature of the cumulative impacts from 26no. VRPs in table 15.13 of the EIS, indicating that in all but one of the views the proposed development will be visible with between 1 to 5+ other wind farms, most including wind farms at a similar distance, visible in a combined view (in the same viewing arc) with those wind farms in all but two of the views and in a succession view (within the combined view) in 19 of the VRPs. In addition, in 17no. of those cases the proposed wind farm would be

[16] As noted above, I count 94no. permitted turbines, but only 13no. of the 15no. permitted at Booltiagh 1 have been developed.
[17] Note, it actually says to tip height on both maps, but it is reasonable to assume that the latter refers to lack of visibility to nacelle height given it is based on ZTV for same.

seen in a sequential view (a view of different developments when moving along a linear receptor) with other wind farms.

7.2.22 The EIS summarises that the proposed development will contribute to a modest but noticeable degree to the Slieve Callan area being perceived as a wind energy landscape. The applicant submits that this perception is likely to occur, regardless, due to the number of wind farms that have already been permitted in this area. It is submitted that the likely visual reading of the proposed development as part of the Booltiagh Wind Farm is consistent with the WEDG by helping to provide a cohesive, consolidated development and that the likely perception of the proposed development as a singular wind farm with Booltiagh and the other wind farms to the south (Glenmore, Boolynagleragh, Letteragh, Kiltumper) is a desirable outcome consistent with the CWES policy to concentrate such development in a robust landscape character unit, which can absorb such development rather than prominently display it above the skyline. It is asserted that the broadness of the landscape and the gentle transition to the lowland and coastline landscape allows a considerable distance buffer from more sensitive landscape and sensitive visual receptors, with the wind farm developments becoming a small scale background feature of inland views. On this basis the magnitude of cumulative impact contributed by the proposed development is deemed by the applicant to be medium-low.

7.2.23 I find it somewhat difficult to reconcile the applicant's conclusions with the extent of potential cumulative impacts detailed (combined and sequential views; skylining; visual stacking; visual clutter and confusion including from wind energy developments of differing heights of 90m, 120m and 131m turbines), with the illustrations of the ZTV and the photomontages submitted with the application.

7.2.24 The ZTV would indicate significant visibility for the proposed development within 3km (ZTV 5km radius inner zone), but with significant visibility to the northeast and west and south within the middle (10km radius) zone. There is almost nowhere from within the ZTV that the proposed development will be viewed in isolation, therefore the potential cumulative impact on sensitive receptors is much more significant than suggested.

7.2.25 Table 15.13 refers only to the number of wind farms visible in combination with the proposed development, not the number of turbines visible within cumulative views. From LC1 illustrates the cumulative skylining[18] of the proposed development within a combined view, showing at least 29no. visible turbines. In this view six of the proposed Slaghbooly turbines are obscured by a small stand of trees and the image does not take account of the revised Glenmore Wind farm which includes six turbines located directly south of Booltiagh and proposed T11 and which can be expected to be of similar visibility to Letteragh and Boolynagleragh from this vantage point. Therefore, up to 41no. turbines are likely to be visible in the combined view along this stretch of road and it would seem likely that sequential views of other wind energy development, including Coor West, Cahermurphy and possibly Slieve Calla wind farms, would be visible west along this local road. At least 47no. turbines would be visible from LC2 and at least 57no. from LC3, although this excludes the likely impact of the amended Glenmore wind farm. AH1(i) and AH1(ii) illustrate the visual impact on the Mid-Clare Way, with at least 30no. turbines visible to the north and at least 30no. turbines visible to the south of the view point. LC2, LC4, AH1 and AH2 are representative of the potential visual impact on the nearest sensitive receptors (residential dwellings) to the west-northwest (c.900m from T3), north (c.800m from T3 and 600m from T5), east (c.650m T8) and southeast (c.900m from T8).

7.2.26 CP7 illustrates the potential view from the village of Connelly (c.3.4km to northeast pf T5), where turbines would be visible in an arc from the northwest (Slieve Callan) through to the southeast, with at least 27 turbines in view. It can also be expected that wind turbines will become more or less exposed in future depending on the cycle of commercial forestry in the area. In my opinion, the cumulative landscape and visual impact from within the ZTV 5km radius and, in particular within 3km to the northwest, north and east, will be significant.

7.2.27 In other views, such as CP2 (from village of Kilmihil) and MR1, the addition of Slaghbooly would have a relatively minor cumulative impact. Whilst the proposed development will contribute to the cumulative landscape and visual impact of wind energy development from more distant sensitive locations to the west and north, I

[18] It is not clear why the applicant considers skylining to occur only at distance of >15km

consider this to be a less of a concern given the distance and the relatively low and rolling nature of this inland upland area.

7.2.28 The WEDG (table 1, p.78) recommend that the spatial extent for wind farms within the 'Transitional and Marginal' landscape character type should be generally small relative to the scale of context[19] and should not bridge two different land covers. The proposal constitutes a large wind energy development under CWES and whilst the WEDG doesn't explicitly state what constitutes a large development (this would appear to depend on landscape type context), reference to a large wind energy development in fig 4(c) (p.60) is illustrated with only 7no. turbines. Generally medium (100m) and short (60m) turbines are recommended under WED, whereas the proposed turbines are tall. There is, however, precedent for tall turbines at Booltiagh Wind Farm where c.120m turbines exist in addition to 90m turbines and varied turbine heights are acceptable within this landscape type under the guidelines.

7.2.29 The WEDG advises, however, that cumulative effects are generally not acceptable unless the visual presence of the second wind farm is negligible, which is clearly not the case. The applicant submits that the proposed development will read as a single very large wind farm (of 30no. turbines) with Booltiagh 1 and 2, but it is also likely to read as a singular wind farm development with the other development permitted at Glenmore, Boolynagleragh, and Letteragh from various vantage points. Whilst this form of wind energy development is contrary to the recommended approach to wind energy development under the current WEDG, cognisance has to be taken of the fact that the CWES was adopted as part of the statutory Development Plan process having regard to the provisions of the WEDG. In this context, I consider the cumulative impact to be acceptable within the defined Strategic Area.

7.2.30 In terms of impact on landscape character, the SNH Guidance on Assessing the Cumulative Impact of Onshore Wind Energy Developments' (2012) points out that 'as more windfarms are developed they will begin to be perceived as a key landscape characteristic and will therefore change the landscape character' (p.20). Given that this area is designated as a Strategic Area for such development, the cumulative impact which has and will change in landscape character of this area

[19] Under CWES small (1-5 turbines), medium (6-10 turbines), large (11-25 turbines) and very large (25+ turbines).

should be accepted as a planned change to the landscape character. Therefore, whilst I consider the cumulative impact to be significant within the 5km ZTV, it is acceptable within the context of the Clare Wind Energy Strategy and provisions of the Clare County Development Plan 2017.

7.2.31 **Landscape and Visual Conclusion** – The landscape and visual impact of the proposed development alone will be significant, however taken cumulatively the proposed wind energy development will likely read as part of a very large wind farm development, including Booltiagh, Glenmore, Letteragh and Boolynagleragh, which will change the landscape character as they are constructed and become operational. The cumulative landscape and visual impact will be very significant, particularly within 5km of the proposed turbines, within a landscape that may be defined as a 'Transitional Marginal' landscape character type under WEDG. The omission of T8 as required by condition no.2 of the Planning Authority's decision will reduce the impact on the nearest dwellings to the east, but will have minimal impact on the cumulative landscape impact of the wind energy developments constructed and / or permitted in this area.

7.2.32 Notwithstanding that the proposed cumulative effects may be contrary to the recommended approach detailed in WEDG (table 1, p.78 and under section 6.9.4 Transitional Marginal Landscapes), the proposed development is consistent with the Clare Wind Energy Strategy which has been adopted into the County Development Plan 2017 and which had regard to the WEDG and the proposed development should therefore be viewed within the context of the planned future landscape within which wind turbines will form a defining feature.

7.2.33 Taken cumulatively with the level of permitted development (164 MW permitted, with a target of 250 MW for the Strategic Area alone), the planned capacity for the area would not be exceeded through the proposed development. Accordingly, the significant cumulative landscape and visual impacts may be regarded as an acceptable impact.

7.3 Noise

7.3.1 Potential impacts from noise are addressed in chapter 6 of the EIS. The cumulative impact of operational wind turbine noise on residential amenity, disturbance of sleep,

impact on general well-being were raised in the grounds of appeal. It has been claimed that people have experienced physical pain from pressure effects on their ears and that noise from the existing Booltiagh Wind Farm is amplified by the topography of the area, as in an amphitheatre affect, under certain conditions, causing considerable discomfort during outside work, particularly at night during temperature inversions and that the reliance on simple decibel limit values does not address the impact and changes in the baseline noise environment. Similar issues were raised in observations to the applications, including that the existing Booltiagh wind farm causes excessive noise disturbance (especially at night) and concerns that forestry felling will remove the acoustic barrier, thereby increasing potential adverse noise impacts.

7.3.2 The baseline study area is limited to residences within 1.5km of the proposed wind farm on the basis that the proposal is not considered to have any significant impact at further distances. This is reasonable.

7.3.3 The EIS notes the requirement of the WEDG that 'the contribution to background noise levels of existing wind turbines has to be discounted in determining the background noise level'. This is similar to the requirements under the UK Institute of Acoustics' 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (the ETSU-R-97 GPG), which sets out detailed methods to avoid background noise measurements being influenced by existing operational wind farms under s.5.2[20]. The applicant has misinterpreted the guidance to the effect that the existing baseline noise environment has not been determined in accordance with the approach recommended in the guidelines to enable the potential noise impact to be assessed. Rather the EIS assessed potential noise impacts of the proposed wind farm on a comparison with a fixed 43dB(A)LA90 noise limit, which is the limit applied by condition on recently permitted schemes (e.g. condition no.8 PL03.239933 – Letteragh Wind Farm)[21]. The ETSU-R-97 GPG advises that the relevant background noise levels for the purpose of setting noise limits for a new installation are the levels with no existing wind turbines operating and

[20] Non-influenced background noise can be derived from a number of methods, such as: switching off the existing wind farm; using directional filtering or subtracting a prediction of noise from the existing wind farm from measured noise levels; utilising an agreed proxy location; or utilising background data from the EIS for the original wind farm/s.

[21] Submitted '*as a conservative approached with no allowance for the higher daytime limit (45dB) and higher limits related to high levels of background noise (5dB above background)'* (EIS s.6.3).

that (SB3) any contribution to background noise levels of noise from an existing wind farm must be excluded when assigning background noise and setting noise limits for a new development. The approach employed by the applicant is contrary to the WEDG and the ETSU-R-97 GPG.

7.3.4 Whilst a baseline noise survey was still carried out (over c.6-week period) at 6no. monitoring points in the vicinity, for information purposes only. The noise measurements were taken to measured 10m wind speed, with no corrections to standardised 10m wind speed height.

7.3.5 In terms of predicted noise immissions, the predicted operational noise is based on the rated power output of a sample turbine model, Enercon E92 (hub height 90.5m and SPL of 107dBLwAeq, at 2.35 MW, but which can run in reduced noise mode), although the actual model will only be determined at tendering stage. It is not stated whether the sample model constitutes the worst case scenario for SPL for turbine models of this size. In terms of cumulative immission levels, the assessment takes explicit account of Booltiagh 1 & 2, Letteragh and the revised permitted Glenmore wind farm (in scenario 2). It doesn't refer to the permitted Boolynagleragh or Slieve Callan wind farms which are also within the vicinity (of NML5 and NML3, respectively) although these can reasonably be excluded due to the separation distance (the nearest turbines are c.2.7km from the respective NMLs)[22].

7.3.6 The assessment takes appropriate account of directivity of the sound (measured as downwind direction for worst case scenario), atmospheric absorption, ground effect and barrier effect in line with the advice of the IOA's Good Practice Guide. I cannot determine whether the application of geometric divergence to take account of spherical spreading from a point source has been appropriately applied by the applicant as neither the ETSU-R-97 GPG nor the IWEA Best Practice Guidelines (IWEA BPG) refer to same.

7.3.7 The applicable standards for wind energy noise limits are set out under WEDG 2006: 45dB(A) or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations; 35-40dB(A)LA90, 10min in low noise environments where

[22] The Irish Wind Energy Association's 'Best Practice Guidelines for the Irish Wind Energy Industry' (2012) (IWEA BPG) advise that cumulative assessment should be carried out where there are wind turbines within 2km of a proposed development (p.27).

background noise is less than30dB(A); a fixed limit of 43dB(A) at night[23]. As noted above the applicant has elected to compare predicted noise levels with the fixed 43dB(A). The application of noise limits under WEDG 2006, being based on the established baseline noise character disregarding the noise effect of existing wind turbines, are unambiguous. The 43dB(A)L90, 10min limit is a night-time limit applying to all areas, whereas lower limits apply to low noise environments during the daytime. The applicant's determination of potential noise impact on sensitive receptors is incorrect.

7.3.8 In response to a further information request in respect of operational noise (RFI item 1(c)), the applicant volunteered to address s.5.2 of the IOA GPG. It submits that NML3 and NML6 act as a proxy location for the baseline noise survey for the wider area. The derived background noise levels for the two NMLs to standardised 10m wind speed[24] are provided showing NML3 noise environment is characterised by <30dBLA90 up to and including 6m/s wind speed and at NML6 is similarly characterised by <30dBLA90 up to and including 5m/s wind speed during day time hours. The use of only 2 NMLs as a 'proxy' for baseline noise data raises the question of whether it is representative over the wider area likely to be affected, although it may be representative. However, the measured background noise data cannot be properly compared to the recorded noise levels detailed in Appendix E of the EIS as that data is set against measured 10m height wind speed, not standardised 10m wind speed, which is contrary to the ETSU-R-97 GPG. The applicant provided the background noise levels at NML3 and NML6 to standardised 10m height wind speed as further information (Table 2.8, p.25 RFI[25]).

7.3.9 The noise immissions predicted at sensitive receptors are tabulated in appendix E5 (including cumulative – only scenario 2 is relevant) and illustrated in noise contour maps in appendix E6 (including cumulative – only scenario 2 is relevant) based on the predicted sound power level (107dBLAeq) for the sample turbine at its rated electrical power output[26]. It is not stated at what wind speed the maximum SPL is reached but the ETSU-R-97 GPG (s.2.9.2) indicates this may be achieved at a

[23] Note, the WEDG is currently under review commenced June 2017.
[24] Standardised 10m WS is wind speed corrected to take account of wind shear between wind speed at ground level and that occurring at hub height. It is not comparable to measured wind speed.
[25] Not to be confused with a second table 2.8 on p.22.
[26] EIS s.6.5.2.

standardised wind speeds above 7-8m/s. The sample model's cut-in wind speed (i.e. the wind speed the turbine will generate operational noise emissions) is not stated but can be assumed to be 2-4m/s at hub height level based on ETSU-R-97 GPG[27].

7.3.10 In the RFI submission (p.25) the applicant indicates that the predicted noise levels will be some 10dB(A) to 15dB(A) above existing background levels at standardised 10m height wind speed of 3m/s to 8m/s at NML3 and NML6[28]. According to the WEDG (p.30) a 10dB(A) increase in sound level represents a doubling of loudness and a change of 3dB(A) is the minimum perceptible under normal circumstances. In this context the predicted change in noise levels can be seen to be very significant, particularly so as these areas to the north and east of the proposed development can be classified as low noise environments at lower wind speeds and they accommodate not insignificant numbers of sensitive receptors.

7.3.11 A review of the Predicted Noise Contours – Cumulative (Unmitigated Scenario 2 - Figure no.E.3) in Appendix E6 indicates that there are c.21no. residences located within the 45dB to 40dB contours[29]; and up to c.40no. residences located between the 40dB to 35dB contours[30], which would be contrary to the limits (35-40dB(A)) currently recommended under WEDG within what is evidently a low noise environment[31]. These dwellings, located to the west north and east of the site are sensitive to the proposed wind farm, alone and taken cumulatively with existing and permitted wind energy developments. The details in Appendix E5 of the EIS show that the proposed development, alone, will increase noise levels by up to 10.4dB(A) above the predicted baseline noise environment taking account of the existing and / or permitted wind farms (Booltiagh 1 & 2, Letteragh and Glenmore). Again, it should be noted that the baseline noise environment should be considered absent of existing / permitted wind energy development.

[27] P.12. Note, this is not stated as standardised 10m height wind speed.
[28] The predicted change at higher wind speeds (0-5dB(A) at 9m/s to 12m/s) would not appear to be significant.
[29] H12, H13, H57, H58, H59, H18, H19, H21, H27, H15, H23, H43, H44, H45, H46, H24, H35, H36, H25, H16, and H17,
[30] H32, H14, H3, H30, H31, H29, H52, H10, H50, H60, H62, H8, H26, H34, H42, H41, H20, H40, H39, H5, H38, H7, H37, H56, H61 in addition to others which have not been allocated a number on the plans.
[31] As was supported by my site inspection.

7.3.12 I note the applicant's response to RFI 1(c) concerning the impact on noise sensitive properties which have a financial interest in the proposed development. It submits that properties H51 and H52 are direct beneficiaries (I assume the applicant intended to refer to H51 and H55 as detailed in table 2.9 of the RFI (p.23)) and that the ETSU-R-97 GPG would accept a higher level of incident noise for same. The WEDG does not make provision for such an allowance. H51 and H55 (Figure E.3) are situated between the 50dB and 45dB contours to the southwest of Booltiagh wind farm. It would seem unlikely that the proposed development (T11 is the nearest proposed wind turbine c.1.3km northeast) would have any appreciable impact on the noise environment of those properties given that there are at least 9no. existing intervening turbines. I note the applicant's submission (RFI p.25) that no noise complaints have been received in respect of Booltiagh 1 and / or 2 concerning these or any other properties.

7.3.13 The EIS considers the noise impacts arising from the operational stage of the proposed development not to be significant based on a noise limit of 43dB(A) and no mitigation measures are proposed (no mitigation measures are specified in the OEMP s.2.5 Noise, other than to agree same with the Planning Authority where exceedences of the permitted levels are determined through monitoring). The sample turbine model may be operated in a variety of noise reduction modes, but the EIS provides no information as to whether it is feasible to operate the proposed wind farm in compliance with the WEDG noise limits for a low noise environment and I therefore do not consider it feasible to attach a condition requiring compliance with same.

7.3.14 **Noise Conclusion** – The applicant's noise assessment does not follow the ETSU-R-97 GPG regarding the determination of potential noise impacts on noise sensitive receptors, including potential cumulative impacts within the context of existing wind farm developments, however the information submitted as further information may be regarded as sufficient. The area surrounding the proposed development may be characterised as a low noise environment. The predicted noise immission levels, from the proposed development alone and taken cumulatively with existing and / or permitted wind energy developments, received at noise sensitive receptors would represent a significant increase over existing background noise levels and would exceed the noise limits (35-40dB(A)) applicable to such low noise environments

under WEDG and would therefore seriously injure the amenities of residential property in the vicinity, contrary to the proper planning and sustainable development of the area. No mitigation measures are proposed. Based on the information on file it is not possible to determine whether it would be feasible for the proposed development to comply with the WEDG recommended noise limits for a low noise environment.

7.4 Shadow Flicker

7.4.1 Shadow flicker is addressed in chapter 13 of the EIS, having regard to the limits applying to same under the WEDG 2006. Concern regarding the impact of shadow flicker was raised in the grounds of appeal and in observations to the application.

7.4.2 For the purposes of the assessment of shadow flicker impact the EIS assumes that each building within 1km has a window directly facing a proposed turbine and that turbines have a hub height of 85m and a rotor diameter of 92m (131m to tip height). In accordance with the IWEA BPG the EIS considers all existing and / or permitted wind farm development within 2km of the proposed development, with scenario two taking account of the revised Glenmore Wind Farm which has subsequently been granted permission. All buildings within 1.5km of a proposed turbine were considered, excluding Booltiagh Wind Farm substation (H54) and a reservoir (H22), all of which are identified in Fig.12.1 of the EIS, with the details of same set out in table 13.2.

7.4.3 The assessment assumes 29% sunshine during daylight hours based on Met Eireann 30-year data (1981-2010) for Shannon Airport, which was applied to the maximum amount of annual shadow flicker (maximum assuming 100% sunshine also stated). It assumes that the wind direction is always parallel with the line between the sun and the turbine and the window concerned, which can be accepted as an overestimation on the basis that the frequency that wind blows from any one direction is stated as no greater that 22% of the time. It also assumes that the wind speed is such that the turbines will always be operational, which is an overestimation - the applicant submits that wind speed will be at operational speed for c.88% of the time (based on 3m/s cut-in speed and 25m/s cut-off speed) – and no screening.

7.4.4 The shadow flicker assessment was carried out for all buildings within 1km of the proposed turbines using ReSoft Windfarm software, with the predicted results tabulated in tables 13.3 (existing Booltiagh 1 & 2), 13.4 (Slaghbooly with Booltiagh 1 & 2 wind farms) and 13.6[32] (Slaghbooly, with Booltiagh, permitted Letteragh and the permitted revised Glenmore wind farms). From tables 13.3 and 13.4 it can be deduced that the proposed development will not materially increase shadow flicker experienced at any of the receptors affected by Booltiagh 1 & 2, although I note that H59 is not included in the latter table. This result appears realistic given the separation distance of the proposed turbines from those receptors (>1km except for H12 and H13 c.900m north of T11). The proposed development will potentially result in the exceeding of WEDG day limit of 30 minutes at H6 (T5), H21 (T4), H24 (T8), H28 (T3), H43 (T34), H45 (T8) and H46 (T35), but will not result in the 30 hours per year limit being exceeded or even approached (14 hours max at H45 from T8) assuming 29% sunshine.

7.4.5 The applicant notes that the WEDG limits apply within 500m of a wind turbine and that no dwelling is within this distance. Whilst the guidelines do not expressly recommend that these limits apply outside the 500m distance, it would seem to recognise the potential for shadow flicker effects up to 10 rotor diameters distance from turbines[33] (i.e. 920m in the case of the proposed sample turbine model), which is widely accepted rule of thumb applied across different European counties[34]. Accordingly, in the interest of protecting residential amenities I would advise that the shadow flicker limits be applied up to 10 rotor diameter distance from the proposed turbines in the event of permission being granted.

7.4.6 The EIS submits that the day limit exceedances (31-35 minutes) at H6, H21, H24, H28, H43 and H46 are negligible as the shadow flicker calculations are conservative, however the possibility for wind direction and sunshine factors to coincide on any particular relevant day and exceed the daytime limit would appear likely for dwellings to the east and northeast given the prevailing wind direction (west through to southwest). The EIS does not detail the number of days the daytime limit would be at risk of exceedance at the relevant properties.

[32] Note 13.5 provides cumulative impact with previous Glenmore wind farm.
[33] Page 34 of the WEDG 2006 refers.
[34] Update of UK Shadow Flicker Evidence Base, Final Report (DoECC, 2011). https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48052/1416-update-uk-shadow-flicker-evidence-base.pdf accessed 09/06/17.

7.4.7 The EIS considers the potential exceedance of daytime limits at H45 (59 minutes) to be moderate, with a maximum exceedance of the limit by 29 minutes at certain periods of the year. The separation distance is stated as 592m. Mitigation measures are discussed under s.13.5.

7.4.8 The cumulative impacts with Booltiagh, Letteragh and revised Glenmore are detailed in table 13.6. The assessment indicates that no material cumulative shadow impact would occur.

7.4.9 The applicant submits that it is likely that the WEDG limits will be met at the locations concerns on the basis that the shadow flicker model is conservative and no mitigation measures are proposed to address the potential exceedences at H6, H21, H24, H28, H43 and H46. H6 and H28 are indicated as derelict and H24 and H46 as owned by landowners involved in the development. Although two of the consent letters from landowners indicate they are aware of the potential impacts of the development[35], there would appear to be no map to confirm these are the landowners of the properties concerned - H24 and H46.

7.4.10 The mitigation measures proposed for H45 include screen planting, with the permission of the relevant landowner, or window blinds (I note that the proposed mitigation approach was objected to by third observers to the application). This approach is contrary to standard mitigation approach adopted by many European countries, which is through turbine shut down systems[36] and which is the mitigation approach referred to under the WEDG (p.33). The applicant proposes that mitigation by turbine control (through light sensors and control software SCADA) will only be implemented to mitigate exceedences of the guideline limits where the parties fail to agree on a set of appropriate screening measures and operational monitoring has confirmed exceedences – this proposal has not been amended in the further information response. I consider the applicant's approach to places an unfair burden of monitoring and recording shadow flicker on those affected by it, for up to a year regarding the annual limit, when the adverse impact can be effectively predicted and

[35]Appendix A, EIS Vol.3: A letter from Michael Eustace consents to the application on his lands and specifically confirms that he is aware all potential impact including visual, noise and shadow flicker; A letter from Peter and Moira Griffen consent to the application on their lands and confirm that they are aware of the potential impacts.

[36] Update of UK Shadow Flicker Evidence Base, Final Report (DoECC, 2011). https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48052/1416-update-uk-shadow-flicker-evidence-base.pdf accessed 09/06/17

prevented by the applicant. This is further complicated by the potential cumulative effect with other permitted and possible further wind energy developments within this area. Given the limited number of dwellings identified as potentially affected, it would not be an onerous task for the applicant to model the potential shadow flicker impact in detail having regard to the actual details of the dwelling concerned, regardless of vegetative screening. Furthermore, where sensitive receptors are likely to be affected by more than one wind energy development, coordination of acceptable mitigation measures (through control software) would, in my opinion, be necessary to protect residential amenities. Should the Board decide to grant permission, this issue could be addressed by condition.

7.4.11 Table 13.7 indicates that the shutdown approach could be implemented at T8 and T9 to address the potential exceedance of the daytime limit which may be exceeded over 30 days of the year, between 21 January and 10 February, and 5 November to 22 November, to meet the 30-minute daily limit. It is intended to implement, as part of the Operational Stage Environmental Management Plan (OSEMP), a complaints recorded, enabling appropriate corrective action to be put in place to mitigate any verified exceedences of the guideline limits. In response to the further information request the applicant clarified that shadow flicker monitoring will be carried out within one year of commissioning, by an independent consultant and that if shadow flicker is deemed to be occurring at the three identified turbines (T2, T3 and T11), the above mentioned physical mitigation measures will be implemented with the householders' agreement, or otherwise through turbine SCADA control.

7.4.12 The Planning Authority sought further information concerning the impact of shadow flicker on those dwellings where the annual limit would potentially be exceeded (this included H27 at 31 hours) assuming 100% sunshine. The applicant provided further detail of the potential impact on the properties concerned, illustrated by graphs (Fig.2.2-2.7), which clarify the calendar period and timing when shadow flicker would occur and the source of same (turbine number). The details are, however, far from what would intuitively be expected in terms of which turbines would impact on the subject properties. For example, T24 and T46 (located to the northeast of T8 – see Fig.12.1) are indicated as affected by T11 c.3km to the west-southwest; H45 located to the northeast of T8 is indicted as affected by T11 c.3km to the west-southwest and by T10 c.1.15km to the southwest on dates and times that overlap, notwithstanding

they are 2km apart. This would seem implausible. That H21 and H27 (north of T3) are only affected by T2 (c.1.2km and 1.3km east-southeast, respectively) and H43 (north of T5) affected only by T3 (c.1.7km west-southwest) and not at all by the cluster of turbines within which T2/T3 is located also seems implausible. None of the dwellings are indicated as affected by wind turbines within 10 rotor diameter. The potential impact may have been better elucidated through shadow flicker assessment mapping, particular given the perceived potential for cumulative shadow flicker effects from surrounding existing and permitted wind farms. I therefore have serious doubts about the accuracy of the assessment of potential shadow flicker impact.

7.4.13 Given the relatively low proportion of sunshine and other relevant factors (including 12% non-operational period[37] and periods when wind direction is perpendicular to the line between the sun, turbine and receptor), it would not appear to be particularly onerous to prevent shadow flicker occurring at all at the relevant properties through turbine control method within 10 rotor diameter. In this regard the Board should also take cognisance of the level of existing and permitted wind energy development within the vicinity and the potential for additional such development based on the designation of the area as a Strategic Area for wind energy development, surrounded by an area where wind energy development is acceptable in principle. This will make it increasingly difficult to prevent and to enforce the prevention of cumulative shadow flicker in excess of the recommended standard at properties impacted by separate wind farms.

7.4.14 Accordingly, going forward within such areas, the Board should consider attaching as a standard condition requiring that no shadow flicker occur on dwellings / premises within 10 rotor diameters, notwithstanding the recommended limits under the WEDG, and that same is achieved through rotor shut down. This should not be regarded an onerous condition given the low proportion of sunshine experienced in this region (29%), combined with variations in wind direction and the technology and software available to implement same. It would also be a clear, unambiguous and enforceable condition for all parties concerned. In this regard, the Board may consider this to be a reasonable condition in the context of the significant visual

[37] RFI response p.14.

impact and potential noise impacts arising from the very large scale spatial extent of wind energy development in this area which is an inhabited landscape

7.4.15 **Shadow Flicker Conclusion** – The proposed development has the potential to seriously injure the residential amenities of residential property and other occupied buildings within 10 rotor diameters of the turbines proposed. I am not satisfied that the applicant's assessment of shadow flicker impacts has accurately described the potential for adverse effects from the proposed development and the surrounding permitted and existing wind farms and the potential cumulative impacts are uncertain. The proposed mitigation measures to address shadow flicker, comprising use of screening and blinds is contrary to the suggested approach under WEDG and the approach commonly implemented in European countries, which is through turbine control. In the context of the designation of this area as a Strategic Area for wind energy development, within a broader area where such development is permitted in principle, where up to 94no. wind turbines have either been erected, are under construction or permitted, it will become increasingly difficult to prevent and to enforce the prevention of excessive shadow flicker (in excess of WEDG recommended daily and annual limits) where properties are impacted by separate wind farms. Therefore, I am not satisfied that potentially excessive shadow flicker would be adequately mitigated and I consider the proposed development, taken with existing and / or permitted wind farm development to have potential to result in significant cumulative shadow flicker impacts on local residential property.

7.4.16 In view of the foregoing, I would advise the Board that in the event that it decides to grant permission a condition should be attached requiring that no shadow flicker occur on dwellings / premises within 10 rotor diameters of a proposed wind turbine.

7.5 Health Impacts

7.5.1 The issue of potential health impacts was raised in observations to the application and in the grounds of appeal. In the EIS the applicant addressed potential health and safety impacts and public health (in chapter 12), but related issues are included in chapter 6 Noise and Vibration (s.6.2.2.2 infra-sound and low frequency noise (LFN)).

7.5.2 The main concern is the potential for indirect impacts on health from noise disturbance from audible noise but also possibly direct and indirect effects from Low Frequency Noise (LFN) and infrasound. The EIS refers to the Australian Government National Health and Medical Research Council's (NHMRC) review of Wind Turbines and Health (2010), a 2010 report by an Independent Expert Panel on behalf of Renewable UK refuted the connection between infrasound and wind turbine syndrome symptoms; a 2012 report by the Massachusetts Department of Environmental Protection to refute the suggested link between noise and the range of symptoms known as Wind Turbine Syndrome.

7.5.3 The WEDG 2006 does not address the issue of potential health impacts from wind turbines. Regarding potential consequential health impacts from audible noise, the applicant proposes to comply with WEDG 2006 noise limits of 43dB(A)LA90, 10mins for night-time, which should be sufficient to protect local residents from sleep disturbance and any potential for consequential adverse health impacts. Given the scale of wind energy development proposed taken cumulatively with existing permitted / developed wind farms, in the event of a decision to grant permission the Board may consider it appropriate to attach a condition requiring compliance with any reduced noise limit adopted under the review.

7.5.4 Regarding infrasound and LFN, the EIS explains that noise from modern wind turbines is essentially broadband in nature, with similar amounts of acoustic energy in all frequency bands. As distance from a wind farm increases, noise levels decrease due to the spreading out of sound energy and due to air absorption which increases within increasing frequency. This results in an increase in the ratio of low-frequency : high-frequency noise with increased distance from the site. The applicant submits that at such distances the overall noise level is so low that any bias in the frequency spectrum is insignificant (LFN did not form any part of the EIS assessment). This is contradicted by the EPA NG3 which reports that LFN may 'be a significant characteristic for a large wind farm site when heard from a distance, although close to the site it would not be significant' (p.11) arising from the greater attenuation of middle to high frequency noise by atmospheric effects.

7.5.5 A report by the UK DTI on Low Frequency Noise Report notes that the common cause of complaints associated with wind turbine noise were not related to LFN but to the audible modulation of aerodynamic noise (also known as amplitude

modulation, aerodynamic modulation or blade swish) which, whilst deemed insufficient to wake up residents, once awoken, the noise can result in difficulties in returning to sleep.

7.5.6 The EPA NG3 guidance notes that 'evaluation of the significance of [the effects of aerodynamic noise] is not covered by any recognised process. Because such effects, like tonal noise, give the impression of a noise which is 5dB, or more, louder than a noise of the same level without any such components, methods are being development using complex signal processing to allow such evaluation to be repeatedly and consistently carried out such that appropriate corrections can be applied where necessary for regulatory purposes' (p.11). The IOA Good Practice Guide indicates that the evidence in relation to "excess" or "other" amplitude modulation is still developing and, at time of writing it is current practice in the UK not to assign a planning condition to deal with it.

7.5.7 Regarding amplitude modulation (which may be as much as 6dB according to ETSU-R-97), the EIS notes that noise limits recommend in ETSU-R-97 take into account the character of wind turbine noise, including blade swish, which are consistent with those under the WEDG 2006. The applicant is therefore justified in not separately assessing the impact of amplitude modulation.

7.5.8 Regarding infrasound, the EIS refers to the above mentioned UK DTI report which concludes that there is no reliable evidence that infrasound produces physiological or psychological effects, and that wind farm infrasound is not a source that may be injurious to the health of a wind farm neighbour.

7.5.9 Based on the UK Department of Energy and Climate Change report 'Update of UK Shadow Flicker Evidence Base'[38], modern large-scale turbines do not appear to pose any significant risk to epileptic sufferers and do not produce shadows at a frequency that would risk inducing epileptic seizures. That report also suggests that strobing (i.e. the flashing of reflected light) is not an issue for modern turbines due to the development of an industry standard (light grey semi-matt) for the colour and surface finish of turbine blades.

[38] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48052/1416-update-uk-shadow-flicker-evidence-base.pdf (07/04/16).

7.5.10 The EIS addresses construction health and safety issues and operational health and safety issues under s.12.4.4. A preliminary Safety and Health Management Plan is contained in the Outline CEMP, which will be further developed at construction stage to address construction health and safety, traffic safety, use of cranes, working with electricity, working at heights, substation construction and electrical cables. Standard-type mitigation measures are set out under s.10.5.4. This is satisfactory.

7.5.11 **Health Conclusion** - Subject to compliance with the WEDG noise limits appropriate to the relevant background noise environment within which noise sensitive receptors are located, there would appear to be no significant health impact risks associated with noise, including infrasound and LFN, arising from the proposed development. No other adverse health effects are considered likely to be of significance.

7.6 Ecology / flora and fauna

7.6.1 The EIS provides a detailed review of the existing terrestrial (chapter 7) and aquatic ecology (8) on site and within the wider vicinity, addressing potential impacts on flora and fauna, with information also contained in chapter 10 Forestry Felling. The EIS includes a comprehensive and detailed survey of ecology of the site and surrounding area, in Appendix F (in Vol.3(1&2) of the EIS), and includes a Cumulative Impact Assessment Landscape Model (F7) which consider the cumulative impact of changes to land cover in the area and close to other permitted wind farms on Hen Harrier and other key avian species; and a Detailed Habitat and Species Management Plan (F8) for lands with relatively high resource value for Hen Harrier. The applicant also submitted further information concerning potential impacts on Hen Harrier, Freshwater Pearl Mussel and forestry replant lands. Potential impacts on the species and habitats subject of European sites are also addressed in a Natura Impact Statement submitted with the application, with a revised NIS concerning replant lands submitted as further information.

7.6.2 The grounds of appeal include, inter alia, potential for adverse cumulative impacts on Hen Harrier, Marsh Fritillary, water quality and ecology. Similar concerns were raised in observations by third parties and Prescribed Bodies to the application, in addition to the more general concerns for potential impacts flora and fauna and specific concerns for the potential impact on Freshwater Pearl Mussel, blanket bog, fisheries, breeding Curlew and bats (Lesser Horseshoe Bat).

7.6.3 **Habitats** – The EIS habitats study area, which encompasses the application site and surrounding area (see Figure 7.7), is indicated as comprising >90% commercial conifer plantation, although this does not take account of the extensive recent felling in the vicinity of proposed turbines T3, T6 and T2 and elsewhere which is detailed in Figure 10.2. The balance of the area includes actively eroding upland streams (4no.), poor fen and flush habitat (0.4% land area), upland blanket bog (Annex 1 habitat) (0.44%), degraded wet heath (c.3% of area), dystrophic lake (Annex 1 habitat) (2no. adjacent T4 and T5), buildings and artificial surfaces and recolonising bare ground (area not stated, but extensive forestry tracks noted throughout site).

7.6.4 I would accept that the loss of the existing commercial forestry for infrastructure development and turbulence reduction is not a significant impact. The EIS submits that no Annex 1 habitats will be lost or reduced in area through the footprint of the proposed development and that no direct impact will occur as potential impacts have been mitigated by design. This includes 100m setback of turbines from Annex 1 habitats and 50m from all natural watercourses except at stream crossing points for cable route and site tracks. The potential impacts on habitats within the study area during the operational period are not likely to be of significance.

7.6.5 No protected botanical species, or Red Data Book listed botanical species were recorded within the study area or along the Turbine Delivery route. However, invasive species, Rhododendron and Japanese Knotweed were noted within / adjacent the study area and there is potential for significant adverse impacts on habitats through the spread of the latter through construction works (the Rhododendron is located at a distance to any infrastructural works). It is submitted that The Best Practice Management Guidelines (Invasive Species Ireland, Kelly et al., 2008) have been integrated into the Outline Construction and Environmental Management Plan to mitigate the potential adverse impact. In response to item no.5 of the request for further information the applicant clarified that the management of Japanese Knotweed during construction is described in s.4.3.4 ‘Outline Ecological Management Plan’ of the OCEMP. Condition no.21 attached by the Planning Authority addressed this issue. The issue can be adequately addressed by condition.

7.6.6 A Habitats and Species Management Plan (EIS Vol.3, Appendix F8) is proposed to be implemented commencing in parallel with the construction phase, with general

and bespoke (depending on area) measures proposed (EIS, Chapter 7, p.77) to enhance the habitat potential of the areas selected for nesting, foraging and roosting birds such as Hen Harrier and other ground-nesting birds such as Curlew. This area, comprising a total of 122.56ha set out in 5 separate parcels ranging from 12.55ha to 39.9ha (see figure F8.1 and table 2.1 of Appendix F8), is proposed to be maintained and monitored over the 25-year operational period of the proposed wind farm. The EIS indicates that these management measures have been agreed with the relevant landowners[39]. The HSMP can be expected to have a positive ecological effect.

7.6.7 Designated Conservation Sites (other than European sites) – There are four Natural Heritage Areas and 14 proposed NHAs within 15km. An NHA is an area considered important for the habitats present or which holds species of plants and animals whose habitat needs protection. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation, whereas proposed NHAs are subject only to limited, specified protection.

7.6.8 Lough Naminna Bog NHA (002367) is located to the southeast of the development, c.50m from the application site boundary. Slievecallan Mountain Bog NHA (002397) is located to the north of the proposed development within c.800m from the proposed grid connection. Lough Acrow Bogs NHA (002421) is situated to the south, beyond Letteragh and Glenmore wind farms c.1.4km, within c.1.4km of the proposed development site. The three are of considerable conservation interest/significance as good examples of upland blanket bog. Cragnashinguan Bogs NHA (002400) comprises three non-contiguous areas to the southwest of the application site, c.1.2km distant and is of considerable conservation value as an example of upland and lowland blanket bog. The site synopses indicate inter alia that Golden Plover and Hen Harrier occur on Lough Acrow Bogs NHA, Hen Harrier occur on Lough Naminna Bog NHA, on Cragnashinguan Bogs NHA and also on Lough Acrow Bogs NHA, with Golden Plover also occurring on the latter. The pNHAs are all far more distant (>10km) and I am satisfied that potential for significant impacts can be ruled out, except for those which are also European sites and which will be subject to an Appropriate Assessment, below.

[39] Note, these are contained in Appendix F8.A to Appendix F5 of the EIS Vol.3.

7.6.9 Construction activities may cause disturbance / displacement of fauna associated with the Lough Naminna Bog NHA and Slievecallan Mountain Bog NHA, but this will be of short term duration. It would be expected that the greatest potential for adverse impacts on these site would arise through hydrological links conveying suspended solids, contaminated runoff and peat into watercourses. On the bases that there being no hydrological links between the site and the four NHAs, as submitted in the EIS, I would accept that there is low potential for significant indirect impacts on the NHAs from construction works. No significant adverse impacts on habitats are anticipated during the operation period.

7.6.10 **Avifauna** – There will be direct impacts on birds from change in habitat, changing from closed canopy commercial coniferous plantation (also tracks and hardstanding areas, etc.). This will render it less suitable for existing species – wren, chaffinch, robin – but improve its suitability for other species. No felling will be carried out during the bird breeding season (March 1st to August 31st). Given that the plantation is a commercial plantation that would be felled in rotation regardless of the proposed wind farm, I do not regard the potential direct impacts to be significantly adverse. There will be indirect impacts on birds through temporary disturbance during construction activities.

7.6.11 Potential for indirect impacts on aquatic habitats from construction runoff, with consequential impacts on feeding resource for piscivores (e.g. Grey heron) and other species are proposed to be addressed through environmental controls and measures detailed under chapter 8 (Aquatic Ecology), chapter 9 (Hydrology and Water Quality), chapter 11 (Soils, Geology and Hydrogeology) and the OCEMP (Vo.3 EIS) in addition to s.7.5.1 of chapter 7. Having regard to the nature of the proposed development, the existing habitats and to the mitigation measures proposed, and to the details of the NIS and Appropriate Assessment (below) it is reasonable to conclude that the carrying out of the proposed development will not significantly affect avifauna.

7.6.12 In Ireland the main risk of operational wind farms to bird species include displacement of birds through the creation of a barrier effect to migration and local flight paths, disrupting feeding, breeding and roosting sites – impacting on migrating wintering Golden Plover, Curlew and Greenland White-fronted Goose, but also Whooper Swan; and on resident Merlin and Hen Harrier. The EIS rules out

significant impacts on the wintering wading birds having regard to low number of such birds recorded (or absent) from the study area, the unsuitability of the wooded site for birds, such as Whooper Swan and the distance of the larger lakes from the proposed turbines (>400m distant). The EIS submits that a review of literature on turbine avoidance by Hen Harrier ranked the species sensitivity to displacement as low-medium. All other birds recorded at the site are not regarded as being particularly sensitive to disturbance or displacement (appendix F3).

7.6.13 Risk of collision also arises during operation. It is submitted that migratory birds avoid turbines and earlier estimations of avoidance rates grossly underestimated the capability of birds to successfully navigate through a complex three-dimensional environment. The SNH rates for avoidance is given as 99.8% for geese and 99.7% for Berwick Swan. Based on the consistently low overflying rates for bird species of elevated conservation importance, including Hen Harrier (appendix F6), the EIS considers the potential for collision risk to be minimal.

7.6.14 In terms of cumulative impacts (s.7.4.4.1 and Appendix F7 Cumulative Impact Assessment and Landscape Model), the EIS concludes that there will be a gradual increase in the next 25 years in the amount of commercial plantation that will become 'open' and more attractive for foraging of Hen Harriers, that the cumulative magnitude of displacement of Hen Harriers and other bird species as a result of the proposed wind farm is negligible, with the HSMP ensuring suitability of lands for roosting, foraging and nesting birds such as Hen Harrier and Curlew. There is potential for cumulative collision risk for species with large home ranges or those commuting long distances. The EIS submits that none of the proposed turbines are situated along any regular commuting route for key target species (e.g. raptors, waders and wildfowl).

7.6.15 An Taisce submit that this area is one of the most important areas for breeding Hen Harrier in the Country, as identified by the NPWS, with 6 breeding pairs located within foraging distance of the site according to the National Hen Harrier Breeding Survey 2015. The EIS survey information would suggest the site is not currently important for foraging for Hen Harrier (in this regard in response to the grounds of appeal the applicant has submitted a robust justification of the Hen Harrier surveys carried out to inform the EIS). An Taisce submits that the clear felling of the area will increase the attractiveness of the area for Hen Harrier, thereby increasing the risk of

conflict with this species. The EIS neglects to address the potential for increased attractiveness of the clear-felled site as a foraging area and the applicant's response to the appeal does not adequately address this concern. However, the EIS submits that Hen Harrier typically fly at 25m or below (EIS Chapter 7, p.70), which is well below intended rotor spread (c.40-131m AGL), and that the studies show the species demonstrates small scale avoidance of wind turbines, thereby limiting potential conflict and cumulative impacts regardless of the increased attractiveness of the proposed altered habitats on site.

7.6.16 **Bats** – All Irish bats are protected under national (Wildlife Acts, 1976-2012) and EU legislation (under Annex IV of Habitats Directive, with Lesser Horseshoe Bat included under Annex II also). In four active bat survey nights (see Figure F7.5 of Chapter 7 for survey locations) five bat species were recorded in the area - Common Pipistrelle, Soprano Pipistrelle, Brown Long-Eared Bat, Daubenton's Bat, Leisler's Bat (near threatened on Red List for Terrestrial Mammals). In addition, Lesser Horseshoe and Natterer's Bat were also recorded in passive detectors. Neither the EIS nor the NIS appear to include the detailed results of the bat surveys, either within the body of the assessment or as an appendix. The survey results presented in the EIS are not clear and lack detail in terms of actual numbers of each species recorded in each survey.

7.6.17 The EIS submits that the model of Bat Landscapes (by Lundy et al. 2011) suggest that the proposed development area has moderate potential for bats in general, with greatest potential for Soprano Pipistrelle and Brown Long- Eared Bat. It is submitted that the dominant conifer plantation is rated as of low value and locally important for bats, that overall bat species registered at very low levels, that there was no evidence to suggest that bats roost on site and that there were no structures on site suitable as roosting locations. I note a number of structures (former house and outbuildings) (H-6 on Fig.12.1, and another not marked but located between T2 and T5) which would appear to have potential but the EIS (p.54) but the surveys found no evidence of bat roosts. It is intended to apply mitigation measures to minimise potential impacts on bats roosting in the conifer plantation from construction related disturbance. It is submitted that the replanting of species mix within the site and as part of the HSMP prescriptions will create foraging habitat for several bat species.

7.6.18 The EIS notes the near threatened rating for Leisler's Bat and that it is the Irish species most at risk of collision with wind turbines (due to its flight level being within the proposed rotor swept zone). However, whilst the Leisler's Bat, Ireland's only large bat species is Red Listed as 'near threatened', it 'widespread and abundant'[40] and I note the DAU (DAHRR&GA) did not raise the potential impact as a specific concern. No mitigation it proposed to address this potential impact. It is proposed to provide 30 bat boxes during the construction period, five of which will be suitable as maternity roosts.

7.6.19 Bat Conservation Ireland, referring to the evidence of impacts on bat mortality in Europe and North America, notes that these impacts have been reported at larger wind farms sited along known bat migration routes where many hundred or even thousands of bats commute seasonally, which may not be relevant to the Irish situation where there is no evidence of bat migration within or to/from southern Ireland Given the relative abundance of Leisler's Bat it is unlikely that the proposed operational wind farm, in itself and taken cumulatively, would have a significant adverse impact on the species.

7.6.20 The potential impact on Lessor Horseshoe Bat is addressed under Appropriate Assessment below. No significant adverse impacts are anticipated in this regard.

7.6.21 **Mammals** – The site is considered to be of low value, locally important for mammals. Otter, Fox, Irish Hare and Pine Marten recorded at wind farms within the wider area, with Badger recorded at Coor West wind farm. Otter signs are noted at Lough Naminna outside of the application site.

7.6.22 Disturbance to mammals during construction and along the cable route will be temporary. The loss of c.31.7ha of conifer plantation will be permanent but will be unlikely to impact negatively on the mammal communities and may have a positive impact. A major run-off or peat instability, which could have a negative impact on the local mammal fauna through mortality and / or loss of habitat, is unlikely as the peat stability assessment concludes that peat instability is low on the site. The potential for adverse impacts on aquatic mammals during construction, including from siltation and fuel spills, will be addressed through mitigation measures (chapter 9 and 11) to minimise occurrence. The potential impacts are rated as imperceptible to neutral.

[40] P.4 Ireland Red List No. 3 Terrestrial Mammals https://www.npws.ie/sites/default/files/publications/pdf/RL3.pdf (19/06/17).

7.6.23 **Marsh fritillary and other taxa** – Based on the information on file, including the results of the Devil's Bit Scabious survey (being the best indicator of the suitability of a site for Marsh Fritillary), it can be concluded that the proposed development will not significantly impact on this species.

7.6.24 The site, dominated by conifer plantation, is rated as of low value, locally important for other taxa. It is not anticipated that there would be any significant direct or indirect impacts on the other species (4 dragonfly / damselfly species, 5 butterfly species, common frog, green tiger beetle and common lizard) recorded within the study area subject to the implementation of mitigation measures concerning hydrology and water quality and aquatic ecology. Disturbance or loss of other taxa during construction will be temporary and stated as imperceptible neutral in the EIS.

7.6.25 **Aquatic Ecology** - Potential impacts on aquatic ecology is addressed separately under chapter 8 of the EIS. I address potential for significant effects on the integrity of European sites, having regard to their Conservation Objectives pertaining to their Features of Interest under Appropriate Assessment, below, and will limit my assessment hereunder to avoid unnecessary duplication. The wind farm site is drained by three main catchments – Aughaglanna (Inagh), Furroor (Fergus) and Annagleeragh (via Doo Lough); the cable route is also drained by the Annageeragh, the Inagh and the Annagh catchments; and the turbine delivery route (TDR) by the Fergus and the Doonbeg catchments.

7.6.26 Overall the chemical analysis of local watercourses draining the site (see map figure 8.2) were found to be clean, well oxygenated, soft waters, characterised by generally low conductivity, low alkalinity and low nutrient concentrations and low potassium concentrations. Waterbody status ranges from Poor (upper Aughlanna, upper Furroor and Annagh), moderate (upper Annageeragh), good (upper Inagh) and high (upper Doonbeg), with the objective to restore to, or maintain, good / high status.

7.6.27 A portion of the site is drained by the upper Annagheragh River which flows to Doolough, an important regional public water supply producing 15,000m3 treated potable water per day and serving c.14,000 permanent population according to the HSE report. Chlorophyll levels have fluctuated over recent years but are reported to have dropped in the last 2 years to become oligotrophic (i.e. of improved lake

quality). Overall the chlorophyll and Total-P data indicated the lake falls mainly within the 'Good' or 'High' Status, occasionally dropping to 'Moderate'.

7.6.28 Potential impacts may arise from forestry operations (138.9ha clear felling phased over 7 years); from site infrastructure construction (construction of floating and excavated roads, stream crossings, widening of existing roads, borrow pits and turbine foundation excavations, onsite cable trenching, etc.); underground grid connection (able trenching); TDR works (minor).

7.6.29 The potential negative pressures on aquatic ecosystems from forestry operations include: i) nutrient loss leading to eutrophication; ii) suspended solids leading to sedimentations; and iii) acidification. Peat soils, such as those at Slaghbooly, have low capacity to bind phosphorus and can result in significant P-losses for a period (up to 4 years) post clear felling but only in smaller streams. The EIS identifies potential impact on Doolough as of particular concern as a sensitive receptor.

7.6.30 Forestry felling will be undertaken under felling licence phased over 7 years and turbulence-felled areas and the HMSP felled area in the Furroor catchment will be replanted with slow growing lodge pole pine without fertiliser. The replanting is expected to uptake onsite P-uptake and may reduce the time for post felling instream P-levels to return to normal. The preferred approach to replanting is for windrowing and scrape-mounding to cause less ground disturbance to reduce soluble nutrient losses relative to mounding / ditching drainage approach to replanting.

7.6.31 The potential impact on the Furroor, Annageeragh Upper and Aughaglanna water catchments aquatic ecosystems, including fisheries, are predicted to be short term, slight negative locally to imperceptible before mitigation. The impact on Doolough lake, Annagh and tributary of Annageeragh and predicted to be imperceptible, slight negative. No significant impacts are anticipated from acidification. Impacts from infrastructure works comprising soil excavations are predicted to be short-term significant negative locally in the absence of mitigation. No impacts are predicted from cabling works or from turbine delivery route works, but there is potential for short term significant negative impacts from cement and hydrocarbons in the absence of mitigation. Cumulative felling impacts are not expected to be no more than short term slight negative.

7.6.32 The EIS includes a more detailed cumulative felling impact assessment of Doolough Lake, for the period 2013-2024 as requested by the DAFM[41]. Figure 8.7 shows the afforested area within Doolough catchment and table 8.30 the proposed felling within the catchment over the period concerned. Felling of no more than 1.53% of Doolough catchment will be undertaken in any one year. The EIS indicates that the data shows the proposed felling could contribute to an increase in the amounts of in-lake Total-P, with peak increases between 2017-2022, but would still place Doolough in the Good Status category at all times (Good-Moderate status cut-off is 25ug/l, P). The EIS submits that the figures used are conservative and in reality the potential levels would be far less based on the average rainfall levels for the area and the potential for a portion of phosphorus to be absorbed by the channels. The EIS concludes that the phosphorus export rates are not anticipated to increase annual chlorophyll levels in the lake such that it would no longer achieve Good Status as previously elevated levels (30.6ug/l, P in 2009) did not result in elevated chlorophyll levels and it concludes that there is no risk of Good Status not being maintained. In response to the appeal the applicant reiterates the points made in the EIS.

7.6.33 Cumulative impacts with other proposed developments are rated as of low significance, and other potential cumulative impacts with agriculture and onsite wastewater treatment is consider negligible. No significant impacts are anticipated during operation and impacts during decommissioning are predicted to be slight, temporary negative in the absence of mitigation.

7.6.34 The issue of potential impact on Freshwater Pearl Mussel was raised in the course of the Council's assessment and addressed by the applicant is response to item no.2(d) of the request for further information. The Inland Fisheries Ireland (IFI) report (16/12/16) considered the proposed development not to pose a significant threat to FWPM due to the extensive settling zone protecting same.

7.6.35 **Mitigation measures** – In addition to mitigation proposed under chapter 11 'Soil, Geology and Hydrogeology', chapter 9 'Hydrology and Water Quality', chapter 10 'Forestry Felling', and proposed in the Outline CEMP, Outline OEMP and Habitats and Species Management Plan appended to the EIS, specific mitigation measures to protect habitat and botanical species, birds, mammals and other taxa during

[41] This appears to refer to the DAFM pre-planning consultation response dated 03/10/14 attached in appendix B2 to EIS.

construction and operation stages are set out under s.7.5.1 to 7.5.9, and for aquatic ecology under s.8.5. The implementation of same would mitigate against any potential for unacceptable significant adverse impacts on ecology.

7.6.36 **Ecology / Flora and Fauna Conclusion** – Based on the information on file and otherwise available to me, it can reasonably be concluded that the proposed development, in itself and taken cumulatively with similar permitted development, will not on balance significantly adversely impact on ecology or fauna and flora within the site or within the wider vicinity, subject to the implementation of the detailed mitigation measures.

7.7 Hydrology

7.7.1 Hydrology and water quality issues are addressed under chapter 9 of the EIS. In the previous section on water ecology I have already addressed the main impacts on water quality which have the potential to impact on The Furroor River (tributary of River Fergus), Aughaglanna River (Tributary of Inagh River), Annageeragh River and Doolough, and Annageeragh River (see figures 9.1.1, 9.1.2 and 9.2). Note there is no potential to impact on the Greygrove River catchment, which includes a tributary from Lough Naminna as no works are proposed within the 2.5ha area of its catchment which falls within the wind farm study area. No significant adverse impacts on water quality are predicted in the absence of mitigation measures.

7.7.2 **Flood risk** - A flood risk assessment was carried out for the proposed development (EIS Vol.3 Appendix H) as requested by the OPW. No detailed mapping is currently available for the area of the proposed wind farm as part of the Shannon Catchment-based Flood Risk Assessment Management Study (CFRAMS). None of the proposed turbines or the proposed substation are situated within Flood Zone A indicated on the OPW indicative flooding area maps (see figure 9.5)[42]. The internal access track and cable route (for T7-T10) cross Flood Zone A for the Furroor in addition to areas of indicative pluvial flooding. The EIS indicated that the cable route will cross an area of pluvial flooding at a stream crossing in the townland of Glenletternafinny, but this would appear to be an error as it is not supported by the OPW maps and Glenletternafinny (and the HV cable route) is located to the north of

[42] Note, no additional flood risk extent is indicated on the Council's Strategic Flood Risk Assessment maps (Map 17, Clare CDP 2017-2023, Vol.2).

the site, not the south as is referred to in the EIS. The TDR crosses Flood Zone A at 9no. points, but only very minor temporary modifications[43] are proposed to accommodate turbine delivery, with no significant increase in hard areas and no increase in flood risk will result.

7.7.3 8no. stream crossings are proposed (see figure 9.7.1 and 9.7.2), 7no. within the wind farm proper and 1no. at Slieve Callan to accommodate HV grid connection. The HV route will also cross 4no. existing stream crossings where it is intended to install cables within the parapet of all existing bridges, but trenchless crossing techniques will be used where it is not practical to lay cables within the existing bridge or culvert structures.

7.7.4 The EIS FRA determined that potential for flood risk arising from the proposed development would be of low significance, with only a slight rise in flood level over the existing scenario, without taking account of the extent of available floodplain of rivers upstream or of the storage capacity of loughs within the sub-catchments. No significant cumulative flooding impacts are anticipated.

7.7.5 Runoff from existing access tracks (4.17km existing, of which 2.27km require widening from 3m to 5m), proposed access tracks (10.15km to minimum of 5m width) inclusive of 0.54km of track for proposed cable route will be reduced by permeable nature of tracks constructed of hardcore. Velocity of runoff will further be reduced by use of SuDS (i.e. swales and 45no. stilling ponds) to emulate greenfield runoff rates for track and cable route track, with outflow concentration of suspended solids estimated to be well within the limits under Directive 2006/44/EC. 300mm diameter cross drains will be provided under floating tracks at 12m intervals to provide continuity for overland flows to discharge diffusely over natural vegetation or into existing forestry drains. Interceptor ditches will be used to divert clean overland flow around development where it is obstructed by tracks.

7.7.6 All 8no. proposed stream crossings will be clear span structures (Matiere arch design as recommended by IFI, designed in accordance with Protection and Conservation of Fisheries Habitat with particular reference to Road Construction (SRFB, 2009) and the Draft Wind Farm Scoping Document prepared by IFI), with no

[43] In particular, there will be no instream works, tree removal, boundary ditches removal or works to bridges.

instream works, based on calculated 100 year flows taking account of climate change.

7.7.7 In addition to mitigation by design to limit potential adverse impacts on water quality and flooding, the EIS sets out detailed mitigation measures to be employed during construction (trafficking, excavations and drainage), for tree felling, cabling works, turbine delivery and including monitoring and maintenance during construction as set out in the Outline CEMP. Additional mitigation measures are proposed for the operational period. The proposed development is not expected to result in any significant adverse impacts on the water environment with the implementation of the proposed mitigation measures.

7.7.8 **Hydrology Conclusion** – Subject to implementation of the proposed mitigation measures, no significant adverse impacts on hydrology, including flooding, is anticipated.

7.8 Soils, geology and hydrogeology

7.8.1 Potential for significant impacts on soils, geology and hydrogeology are addressed under chapter 11 of the EIS.

7.8.2 The site is not within a site of geological significance and the nearest such site is 13km northeast at Magowna.

7.8.3 Two borrow pits are proposed within the site to provide aggregates for infrastructural works and are not located within an area susceptible to peat slippage based on the Peat Stability Assessment. No ground water was encountered in trial holes at the pits (figure 11.3 indicates that there was no trial hole at the northern borrow pit) which will have an average depth of 4m, producing c.76,000m3 of aggregate. A further c.25,500m3 aggregates will have to be imported to the site, to be sourced from nearby licensed and certified quarries.

7.8.4 An estimated volume of c.85,000m3 of peat will be excavated from proposed roads, hardstandings, turbine bases, compounds, substation, drainage ponds and swales. The peat will be used for reinstatement of the proposed borrow pits. The EIS indicates that excess peat will be placed at two designated material storage areas (MSA1 near BP1 and MSA2 near T3), although the borrow pits have more than

enough capacity volume (116,864m3) to accommodate all anticipated peat extracted.

7.8.5 The initial peat survey identified peat deposits ranging from 0.8m to 4m at turbine locations and averaging 1.75m across the site, with a maximum depth of 7m locally isolated peat. Based on Scottish Guidance, the applicant carried out Peat Stability Assessment (EIS Vo.3, Appendix J). Peat depths are detailed in figure PSA1 and landslide susceptibility in figure PSA3. The PSA concluded that risks associated with peat instability on this site are low and acceptable subject to implementation of appropriate mitigation (set out under 11.5.1.1) and compliance with best practice.

7.8.6 Due to the nature of works, entailing significant excavations and extractions, the proposed development poses a risk of contamination to groundwater. Under the Water Framework Directive (EC Environmental Objectives (Groundwater) Regulations), the groundwater quality for Lissycasey and Miltown Malbay, being the relevant groundwater bodies potentially impacted, are of Good status probably not at risk and for which it is the objective to protect the status. There are currently no drinking water monitoring locations in the vicinity, however the HSE indicated that historical sampling found consistent exceedance of Manganese and Iron parametric values under the Drinking Water Regulations.

7.8.7 There will be a direct permanent impacts on soils and geology from the carrying out of borrow pit extraction and site excavations and cabling trenching. As noted elsewhere, erosion of soil and rock have impact on water quality and tree felling activity my increase sediment, nutrient concentrations, phosphorus levels and acidification, including impacting on groundwater. If piling is necessary for turbines, this will create vertical pathways for pollutants and disruption of groundwater flows.

7.8.8 A maximum of 5.7km floating roads will be constructed where deeper peat is encountered in order to reduce impacts associated with peat extraction. There is also risk of peat slippage, with potential for consequential direct and indirect impacts (injury, damage to property, land or resources down gradient) and also soil compaction and contamination of soils due to accidental spillage. Cumulative impacts are possible with other developments in the area.

7.8.9 In terms of hydrology, the main potential direct impact concerns contamination of groundwater due to removal of protective soil / peat layer during construction,

excavation and extraction activities, potential for chemical spillage entering groundwater and the disruption of groundwater flows from piling (if necessary) and possible conveyance of contaminants to greater depths of groundwater via piles, with implications for ecology and well water supplies. Cumulative impacts are possible with other developments in the area.

7.8.10 Similar (but reduced) potential impacts arise during decommissioning, but no significant direct or indirect impacts, or cumulative impacts are anticipated during the operation period.

7.8.11 Substantial mitigation measures, in addition to avoidance by design and implementation of the CEMP, are set out under section 11.5 of the EIS. These include mitigation of slope instability, mitigation measures for excavation, storage and removal of peat, subsoils and rock, for borrow pits and groundwater, for operational period and decommissioning. No unacceptable significant adverse impacts on geology, soil and hydrogeology are likely subject to the implementation of the mitigation measures proposed.

7.8.12 **Soils, Geology and Hydrogeology Conclusion** – Subject to implementation of the mitigation measures proposed, no significant adverse impact are anticipated.

7.9 Material assets

7.9.1 Impacts on material assets are not addressed in a standalone chapter of the EIS but are addressed as part of impacts on the Human Environment in chapter 12, but also concern traffic and transport impacts on road infrastructure, impacts on communications, aviation and water services infrastructure which are addressed separately and/or as part of consideration of other factors of the environment. The specific issues addressed include potential impacts on socio-economics (employment), land-use, recreation and amenity and tourism, health and safety and material assets.

7.9.2 **Employment** - In addition to general direct and indirect benefits to the national economy and local economy, the proposed development will provide up to 50no. jobs through direct and indirect employment during construction and operation. The majority can be expected to be short term and related to construction.

7.9.3 **Community benefit fund** - The applicant is committed to and a signatory of the IWEA Good Neighbour Best Practice Principles in Community Engagement and Community Commitment policy consisting of community contribution rates of a minimum of €1000 per MW installed capacity. This will equate to at least €25,300 per annum, or potentially €632,500 over the 25-year lifetime, contributing to charitable, educational or environmental and amenity use.

7.9.4 **Property value** - The EIS submits that there is no evidence to indicate a negative impact on the Irish property market and there are no known studies undertaken to consider this impact in Ireland. It refers to four studies which found no or suggested no negative impact on property prices from wind farms (2007 Report of RICS and Oxford Brooks University; 2006 research by the ESPC; 2014 study by CEBR, commissioned by RenewableUK; US government-funded studies in 2009 and 2013).

7.9.5 It would seem plausible that the proximity of a dwelling to wind turbines would be a determining factor in property value, and that the larger, nearer, more prominent and more numerous wind turbines are within a development, the more likely there is to be significant factor. Property value is also likely to be impacted by the perception of noise associated with the wind farm, related primarily with separation distance. There is, however contradictory findings in different research studies concerning impact on property values and it is not possible for me to reach a determination on the whether a permanent material impact will arise on residential property value in the vicinity based on the information at available. Given that the WEG 2006 do not refer to impact on property value but set standards in relation to minimum setback distance from and maximum noise impacts at residential properties, it may be reasonable of the Board to take the view that subject to compliance with the standards that the issue of permanent material impact on property value does not arise.

7.9.6 **Tourism / amenity / recreation** - The EIS refers to the advice of the WEDG 2006 which states 'wind energy developments are not incompatible with tourism and leisure interests, but care needs to be taken to ensure that insensitively sited wind energy developments do not impact negatively on tourism potential. The results of survey works indicate that tourism and wind energy can co-exist happily' (p.6). The applicant refers to various studies by Fáilte Ireland and the Northern Ireland Tourist Board (2008) which found most visitors were broadly positive towards wind farms in

any context, that their presence did not detract from the quality of sightseeing and that greater numbers of wind turbines would either have no impact or a positive on their likelihood to visit Ireland in the future. The applicant presents similar evidence from the Scottish tourism agency, Visit Scotland. Furthermore, as noted by the applicant, Fáilte Ireland's 'Guidelines on the Treatment of Tourism in an Environmental Impact Statement' (2011)[44] consider that 'some types of new or improved large scale infrastructure…. can convey a sense of environmental responsibility – such as wind turbines' (s.4) and that 'visitor's expectations of 'beautiful' scenery does not exclude an admiration of new modern developments – such as wind farms – which appear to be seen as indicative of a modern, informed and responsible attitude to the environment' (s.3).

7.9.7 The EIS does not refer to subsequent Failte Ireland survey (2012) on visitor attitudes, which suggests a moderate hardening of negative attitudes, with fewer respondents having the opinion that wind farms have a positive impact (down 32% from 40%) and an increase in respondents with negative perceptions (up 21% from 15%). It also found a greater negativity expressed about potential wind farms on coastal (40%), fertile farmland (37%) and mountain moorland (35%) landscapes than on bogland (24%) and industrial lands (21%). The report recognises that the there is a challenge in striking a balance between maintenance of landscape character and scenery as a tourism asset and facilitating further wind farm development, including concerns about cumulative impacts and having regard to the preference amongst tourists for wind farms with a smaller number of turbines and in certain landscapes[45].

7.9.8 Failte Ireland did not make a submission on the application or the appeal. The proposed wind farm is sited in central west Clare at a distance to the main tourism and recreational sites, within an area designated as a Strategic Area for wind energy development. Whilst tourists will pass through the area on their way to/from the main tourist sites of the county, I consider it unlikely that there will be any significant

[44] I could not locate a copy of this document on Failte Ireland's website and I am therefore unsure of its status. I obtained a copy at http://www.yellowriverwindfarm.com/files/EisAppendices/Appendix%20F%20-%20Statutory%20&%20Non-statutory%20Consultees/02.%20F%C3%A1ilte%20Ireland%20EIS%20and%20Tourism%20Guidelines%202011.pdf (16/13/17)

[45] http://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/WindFarm-VAS-(FINAL)-(2).pdf?ext=.pdf (16/03/17)

adverse impact on tourism overall. The potential impact in local and regional hill walking routes on or within the vicinity, such as the Mid-Clare Way adjacent to the east of the site, is less clear. It is possible, as suggested in the EIS, that such facilities may constitute an attraction in their own right, but it the development may also dissuade a certain proportion of visitors. On balance I would consider the impact the tourist offer of the county to be neutral within the context of county Clare.

7.9.9 **Other resources** – No significant impacts are predicted in terms of use of other resources, including land use, quarries, wind, forestry or general utilities infrastructure. I will address the potential impacts on the road transport network separately.

7.9.10 **Material Assets Conclusion** – Subject to implementation of the mitigation measures proposed, the proposed development would not significantly adversely impact on material assets.

7.10 Traffic and transport

7.10.1 Chapter 18 of the EIS addresses potential impact on traffic and transport. Further information was submitted by the applicants concerning a Road Safety Audit, the site entrance (existing boulders), pinch points on the turbine delivery route (TDR) and safety concerns regarding traffic conflicts arising during turbine delivery, encroachment on third party lands, internal access route and passing bays. The main potential impacts arise from construction traffic, delivery of turbine components and the carrying out of in-road cable trenching and layout works.

7.10.2 **Turbine delivery** - The intended TDR is through Booltiagh wind farm to the south via the local road (Inch Mor to Kilmaley), from R474 to Ennis and the N85 Ennis bypass to connect to the M18, to where the turbines can be delivered from Foynes Port via the national and regional road networks. A Turbine Delivery Report, which included a 'dry run' field test is included in Appendix N. Overall only minor interventions, including temporary removal of street furniture and tree and hedgerow pruning are required, however the route requires access to third party land at one location, entailing the removal of a wall (on R474 at Inch Mor junction to facilitate navigation) and also necessitates some relatively minor carriageway realignments in several locations. The turbine delivery will result in 132 HGV deliveries over a period of 1

month, in a specialist transport operation owing to the oversized loads involved. The EIS submits that the determination of the intended TDR is mitigation by design. An outline Construction Traffic Management Plan is included in the outline CEMP appended (Appendix 13) to the EIS, with the final CTMP will address general construction traffic and oversized loads and will be agreed with Clare County Council and An Garda Síochána prior to implementation. Whilst the delivery of turbine parts will cause temporary disruption on the network, I consider the impact to be acceptable subject to the implementation of the agreed CTMP.

7.10.3 **Cable trenching** – The length of inroad cable trenching is relatively limited at c.4.1km, c.2.8km being on the regional road (R474) and c.1.3km on the local road (L6204) to the northwest of the site. Rolling lane closures are proposed on the regional road but temporary road closure and traffic diversions are likely on the local road due to its narrow width. This will result in delays in the regional network and significant diversions on the local network, which will be temporary but of unspecified duration. The details of lane and / or road closures will necessarily have to be agree with the local authority and in principle the impacts are acceptable.

7.10.4 There is potential for physical damage to the carriageway arising from carrying out of cable trenching. ESB standards apply for the carrying out of cable trenching for 110 HV cables and 20/33MV cables.

7.10.5 **Construction traffic** – General construction traffic will increase the level of traffic on the network for a limited period. There will be cumulative traffic impacts on the network taking account of cable trenching and turbine delivery, in addition to traffic and other works associated with similar permitted wind energy development in the vicinity (addressed under 18.4.16). Traffic impacts will occur over an 18-month period and, at peak, construction traffic may result in up to 224 traffic movements per day, mostly being LGV, during concrete foundation construction over a two-month period. The impact will be locally significant.

7.10.6 Detailed mitigation measures are set out under s.18.5.2. They include the agreement of a Construction Traffic Management Plan (outline CTMP summarised under s.18.5.3) with the local authority and An Garda Síochána, the appointment of a traffic management coordinator to regulate all HGV movements (including scheduling of deliveries to avoid disruption to local residents) a Community Liaison

Officer and agreement of timing of oversized deliveries with the County Council and An Garda. A Consultation and Notification Protocol is to be put in place to inform local residents and the relevant authorities concerning construction activities and specific mitigation measures are proposed to address construction traffic dust, construction traffic noise and construction traffic impact on water quality. No mitigation is required during the operational period and similar mitigation measures during decommission include a decommissioning plan (with traffic management details) to be agreed with the local authority.

7.10.7 The Roads Design report (16/12/16) raised no objection subject to generally standard type conditions.

7.10.8 **Conclusion** – The potential adverse impacts from on traffic and transport arising from the proposed development are acceptable in principle subject to implementation of the mitigation measures proposed.

7.11 Cultural and Built Heritage

7.11.1 Potential impacts on cultural and built heritage are addressed in chapter 14 of the EIS.

7.11.2 There are no National Monuments, Recorded Monuments, Protected Structures, NIAH listed structures located within the application site and therefore no direct impacts are to be expected from the carrying out of the proposed development regarding same. The EIS also considered the potential impacts on other non-listed/recorded cultural and heritage items (figure 14.6 and Appendix L refer), including an old 19th century cottage (with associated outbuildings) but the significance of the items appears to be of local rating only and no direct impacts are anticipated. Indirect adverse impacts on the visual context and setting of heritage and cultural items (mostly at a distance to the proposed development site) are possible, including cumulative impacts with other existing and / or permitted wind farms in the vicinity. As the proposed development is located within a Strategic Area designated for wind energy development under the Clare Wind Energy Strategy, adopted as part of the County Development Plan 2017-2023, I do not consider the potential impact to be unacceptable.

7.11.3 The proximity of cultural and heritage items along the turbine delivery route and HV cable route are noted under tables 14.4 and 14.5, respectively. No significant impacts are expected along the TDR. S.14.5.4 Proposed Grid Connection notes the proximity of the cable route to megalithic tomb CL031-032 and the potential for archaeological finds, features and deposits to be present. It can therefore reasonably be assumed that there is a risk of damage subsurface archaeology through the said cable trenching works - this is not included as one of the potential impacts during construction listed under section 14.6.1.1 of the EIS.

7.11.4 The EIS notes the potential impact of cable works to Glen Bridge (CH14) and Barony Bridge (CH15) and also on a milestone (CH16) at The Hands crossroad. The mitigation measures under s.14.7.3 address the potential impacts on the said four items potentially impacted by the cable works and the mitigated impact would not be significant. The Council's Architectural Conservation Officer had no objection subject to standard type conditions. The DAU (DAHRR&GA) concurs with the mitigation measures proposed under the EIS and raised no objections subject to 5no. conditions concerning archaeological monitoring, although the requirements of same were not fully captured by the condition attached by the Planning Authority (no.16).

7.11.5 **Cultural and Built Heritage Conclusion** – Subject to implementation of the proposed mitigation measures and compliance with the requirements of the DAU, the proposed development would not significantly adversely impact on archaeological, architectural and cultural heritage.

7.12 Telecommunications and aviation

7.12.1 Potential impacts on telecommunications and aviation are addressed under chapter 16 of the EIS.

7.12.2 **Telecommunications** – Potential impacts comprise signal reflecting / scattering and signal obstruction by turbine blades and impact of the electromagnetic field of the turbine generator. Following consultation with telecommunications operators the proposed layout is determined not to have potential to impact on existing telecommunication networks. There is potential to impact on digital television Saorview signals. RTE has issued a standard protocol for dealing with wind farms

that has been signed by the developer (attached as Appendix B, Vol.3 EIS) and the developer will be responsible for ensuring that TV signals are not disrupted by the wind farm. Cumulative impacts on telecommunications and TV signals has been determined as negligible. Subject to implementation of proposed mitigation measures, no significant adverse impacts are likely.

7.12.3 **Aviation** –Shannon Airport 22km distant and Spanish Point Airfield is 12km to the northwest. The Department of Defence was consulted by the applicant and raised no objections subject to aviation warning lights being fitted to the proposed turbines. Shannon Airport Authority Plc was also consulted and raised no objection subject to the applicant consulting the IAA. The IAA raised no objection subject to a scheme of aviation obstacle warning lighting to be agreed and as-built details provided to the IAA. No significant adverse impacts are anticipated on aviation. A standard type conditions (no.14) was attached to the permission concerning same. Subject to implementation of the mitigation measures set out under s.16.3.5 no significant adverse impacts on aviation are expected to arise from the development taken cumulatively with existing and / or permitted wind energy developments in the vicinity.

7.12.4 **Telecommunications and Aviation Conclusions** – No significant adverse impacts are anticipated.

7.13 Air Quality and Climate

7.13.1 Potential impacts on air quality and climate are addressed under chapter 17 of the EIS. Potential negative impacts from dust emissions (including PM10 and PM 2.5 concentrations and dust soiling) will arise during construction (and decommissioning), excavations and extractions, in addition to emissions (NO2, Benzene and PM10) from construction traffic and machinery. With the implementation of the proposed mitigation measures for construction phase impacts set out under 17.5.1 the impact will not be excessive. No significant impacts will arise at operational stage.

7.13.2 No significant adverse impacts on climate are anticipated at operational stage and the EIS asserts that the impact will be positive.

7.13.3 **Aviation Conclusion** – The potential impacts on air and climate are acceptable subject to implementation of the mitigation measures proposed.

8.0 Environmental Impact Assessment

8.1 Environmental Impact Statement

8.1.1 The application was accompanied by an EIS. The EIS is laid out as follows:
Volume 1 – Non-technical summary

Volume 2 – Main EIS

Volume 3 (3 parts) – Appendices to Main EIS

8.1.2 This application/ appeal was submitted prior to 16 May 2017, the date for transposition of Directive 2014/52/EU amending the 2011 EIA Directive. Under the transitional provisions of the 2014 Directive, the 2011 Directive (Directive 2011/92/EU) as transposed into Irish legislation will apply to the [appeal.
I am satisfied that the information contained in the EIS complies with article 94 of the Planning and Development Regulations 2000:

8.1.3 The EIA has had regard to the application documentation, including the EIS and its associated documentation, the NIS and the written submissions, in addition to any documents, reports and guidance referred to within the Inspectors report.

8.2 Likely significant direct and indirect effects

(a) Human beings, fauna and flora

8.2.1 Human beings

I have considered all of the written submissions made in relation to impacts on human beings. The main potential for direct and indirect impacts on human beings arise from noise and shadow flicker, but also from visual impacts.

The predicted noise immission levels at noise sensitive receptors, arising from the proposed development, alone and taken cumulatively with existing and / or permitted

wind energy developments, would represent a significant increase over existing background noise levels (10-15dB(A)) and would exceed the noise limits (35-40dB(A)) applicable to such low noise environments under WEDG. The proposed development would therefore be likely to seriously injure the amenities of residential property in the vicinity and would constitute a significant long term adverse impact on human beings that is not proposed to be mitigated.

The proposed development taken cumulatively with existing and /or permitted wind energy development has potential to significantly adversely impact on the amenities of residential dwellings from shadow flicker within 10-rotor diameter distance, particularly those to the northwest and northeast. The proposed mitigation measures are not compliant with that recommended under the WEDG. The potential cumulative impact is increased due to the large number of separately controlled wind farms which will make enforcement of the recommended shadow flicker increasingly difficult to enforce where a property is affected by more than one development, particularly where there are no proposals to coordinate acceptable mitigation between neighbouring wind energy developments.

Based on the information contained in the EIS I consider significant direct health impacts from noise to be unlikely and significant indirect health impacts (from sleep disturbance) to be unlikely subject to compliance with the WEDG night-time noise limit as is proposed by the applicant.

The proposed development of 11no. (10no. having regard to the omission of T8 by condition no.2 of the permission) 131m-high turbines, in themselves and taken cumulatively with the existing and / permitted wind farms, will have a significant visual impact on the landscape and visual context of residential dwellings in the vicinity. Given the provisions of the statutory County Development Plan and the CWES adopted into the plan, the Board may regard the significant visual impact to be an unavoidable and acceptable.

8.2.2 Flora & fauna

I have considered all of the written submissions made in relation to impacts on flora and fauna.

Flora – The direct impacts on flora and habitats on site would be of low significance due to the low value of existing habitats within the construction area and there would be no direct impacts on sites of conservation interest, including Natural Heritage Areas (Lough Naminna Bog 002367; Slievecallan Mountain Bog 002397; and Lough Acrow Bogs 002421) and European sites (addressed in the Appropriate Assessment, below). Subject to implementation of mitigation measures proposed, no significant adverse indirect impacts on flora and habitats are anticipated.

Fauna – The alteration of habitat on site will affect bird and mammal species, however as the site comprising 90% plantation forestry will be felled in the coming years regardless, the impact is not significant. The potential impact of construction on species dependent on the aquatic environment – fish and psicivores (e.g. Grey Heron) operational turbines on aerial species (birds and bats) – is proposed to be mitigated through implementation of environmental controls and best practice during construction.

The detailed assessment contained in the EIS concerning potential impacts on avian species, including from barrier effects on migratory species and risk of collision with specific bird species concludes that the potential impacts on migratory wintering Golden Plover, Curlew, Greenland White-fronted Goose and Whooper Swan, in addition to Merlin and Hen Harrier would not be significant, including from cumulative impacts, subject to the implementation of mitigation and compensatory measures.

Similarly, no significant adverse direct or indirect effects are considered likely on terrestrial fauna, bats or other taxa (including Marsh Fritillary) arising from the development and operation of proposed development subject to implementation of proposed mitigation measures.

I am satisfied that the potential impacts on flora and fauna would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am, therefore, satisfied that the proposed development would not have any unacceptable direct or indirect impacts in terms of flora and fauna. I am also satisfied that while some cumulative effects may arise from the proposed development together with existing and permitted wind farm developments within the vicinity, these would be avoided,

managed and mitigated by the measures which form part of the proposed development and through suitable conditions.

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

8.2.3 Soil

I have considered all of the written submissions made in relation to impacts on soil. I am satisfied that potential for direct and indirect impacts on soils (including peat stability), geology and hydrogeology would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am, therefore, satisfied that the proposed development would not have any unacceptable direct or indirect impacts in terms of soil.

8.2.4 Water

I have considered all of the written submissions made in relation to impacts on water. I am satisfied that potential for direct and indirect impacts on water, including water quality and flood risk, would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am, therefore, satisfied that the proposed development would not have any unacceptable direct or indirect impacts in terms of water.

8.2.5 Air and climate

I have considered all of the written submissions made in relation to impacts on air. I am satisfied that the potential impacts on air and climate have been appropriately addressed in terms of the application and the information submitted by the applicant and that no significant adverse effect is likely to arise.

8.2.6 Landscape

I have considered all of the written submissions made in relation to impacts on landscape. No significant landscape and visual impacts are anticipated in the EIS (chapter 15), including on sensitive landscapes (e.g. the Burren, Cliffs of Moher, Clare coast) or on sensitive visual receptors. Having regard to the number of wind

turbines (94no.) already permitted within or adjoining the Strategic Area within the vicinity of the site, in view of the provisions of the WEDG concerning spatial extent and height of wind turbine development within different landscape character types, I consider the cumulative landscape impact of the proposed development to be very significant.

Given that the area was adopted as a Strategic Area for wind energy development with potential for 250 MW energy generation and that the predicted cumulative energy generation with the proposed development, at c.194 MW, would not exceed same the capacity of the landscape to accommodate such development may be regarded as not to be exceeded. Therefore, whilst the landscape and visual impact may be significant, this impact may be regarded as acceptable under the policy provisions adopted by the Council having regard to the WEDG.

(c) Material assets and the cultural heritage

8.2.7 Material assets

I have considered all of the written submissions made in relation to impacts on material assets. Impacts on material assets are addressed in Chapter 12 Human Environment, Chapter 18 Traffic and Transport and Chapter 16 Telecommunications and Aviation, but also concern impacts on the water environment as a public water supply which is addressed in Chapter 9 Hydrology and 11 Soil, Geology and Hydrogeology. I am satisfied that any potential for adverse impact would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions

8.2.8 Cultural heritage

I have considered all of the written submissions made in relation to impacts on cultural heritage. Cultural heritage is addressed under Chapter 14 Archaeological, Architectural and Cultural Heritage. I am satisfied that any potential impact would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions.

(d) Interactions between the factors referred to in points (a), (b) and (c)

8.2.9 Interactions

I have also considered the interrelationships between factors and whether these might as a whole affect the environment, even though the effects may be acceptable when considered on an individual basis.

In particular, the potential arises for adverse impacts on human beings and on flora and fauna through interactions with impacts on the water environment, primarily during construction.

In conclusion, I am satisfied that such effects can be avoided, managed and mitigated by the measures which form part of the proposed development, mitigations measures, and suitable conditions. There is, therefore, nothing to prevent the granting of permission on the grounds of cumulative effects.

8.2.10 Alternatives

The applicant details the alternatives studied in chapter 3 of the EIS, including (s.3.2.2) site location, (3.3) site layouts and grid connection, (s.3.4) alternative technology and (s.3.5) the do-nothing alternative. The investigation of alternatives does not appear to have included consideration of turbines of different heights.

8.2.11 Conclusion

Having regard to the examination of environmental information contained above, and in particular to the EIS and supplementary information provided by the developer, and the submission from the planning authority, prescribed bodies, appellants and observers in the course of the application, it is considered that the main significant direct and indirect effects of the proposed development on the environment are as follows:

- indirect impacts on flora and fauna and on human beings during construction from potential pollution of surface waters, which will be mitigated by measures forming part of the proposed development, by the detailed drainage proposals and provisions of the Construction and Environment Management Plan;

• direct impacts on human beings from operational noise and shadow flicker which will not be avoided, mitigated, and which are not feasible to otherwise address by means of condition.

It is considered that the environmental effects comprising significant adverse impacts on human beings are such as to justify a refusal of planning permission, notwithstanding the overall benefits of the proposed development.

9.0 Appropriate Assessment

9.1 Stage 1 Appropriate Assessment

9.1.1 Legal protection is provided for habitats and species of European importance under the Habitats Directive 92/43/EEC, which established a network of designated conservation areas known as Natura 2000 or European sites, which include Special Areas of Conservation (SAC) under the Habitats Directive and Special Protection Areas (SPA) under the Birds Directive (Directive 2009/147/EC). Article 6(3) of the Habitats Directive requires Appropriate Assessment to be carried out for any plan or project not directly connected with or necessary to the management of a European site (or sites) concerned, but that it likely to have a significant effect thereon, on its own or in combination with other plans or project, in view of its conservation objectives.

9.1.2 The proposed development is not directly connected with or necessary to the management of any European site and the applicant has submitted a Natura Impact Statement (NIS) with the application (14/12/15) as a separate volume as part of the EIS. The applicant submitted a revised NIS (14/11/16) in response to point 2(e) of the Council's request for further information concerning compensatory forestry (c.42ha replant lands) considered 'intrinsic elements' of the proposed development, addressing the possible likely effects, if any, on any European sites.

9.1.3 I note the relevant guidance published by the European Commission, 'Assessment of Plans and Projects Significantly Affecting Natura 200 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC' (2001) and by the NPWS, 'Appropriate Assessment of Plans and

Projects in Ireland, Guidance for Planning Authorities' (2009, revised 2010), both of which are purported to have been taken into account by the applicant. In addition, I also note the applicant reference to the Opinion of the Advocate General Sharpstone (2012) regarding Case C-258/11 concerning interpretation of adverse impact on Natura 2000 site integrity (N6 Galway Outer Bypass)[46], although the decision of the ECJ issued 11/04/13[47].

9.1.4 Stage 1 screening – Stage 1 is concerned with determining whether a described development, not being a development directly connected with or necessary to the management of a European site, in itself or in-combination with other described projects or plans, has the potential to have significant effects on any European site.

9.1.5 The submitted screening report provides a description of the proposed development (s.3.1). Having regard to the guidance of the European Commission (section 3.1.3), I would direct the Board's attention to the more comprehensive description included under section 2.0 of my report.

9.1.6 The applicant (under section 3.2 of NIS) considered 11 European sites, ten within 15km of the proposed development and one more distant European site illustrated in figures F5.3 and F5.4 (Hen Harrier SPA locations) and detailed in table F5.1. In addition, the applicant submitted a revised NIS by way of further information, examining 35 European sites for potential effects in respect of the proposed replant lands (mapped in Appendix 10 of revised NIS). I have listed the relevant European sites (in order of those potentially affected by the wind farm proper, and then concerning each of the four replant lands, in the interest of clarity) and the conservation objectives pertaining to the Features of Interest for which the sites were designated, below:

[46] Conclusion: '*In order to establish whether a plan or project to which Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora applies has an adverse effect on the integrity of a site, it is necessary to determine whether that plan or project will have a negative effect on the constitutive elements of the site concerned, having regard to the reasons for which the site was designated and their associated conservation objectives. An effect which is permanent or long lasting must be regarded as an adverse one. In reaching such a determination, the precautionary principle will apply'.* (The precautionary principle is a '*procedural principle, in that it describes the approach to be adopted by the decision-maker and does not demand a particular result*').

[47] *Article 6(3) of the Habitats Directive must be interpreted as meaning that a plan or project not directly connected with or necessary to the management of a site will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of SCIs, in accordance with the directive. The precautionary principle should be applied for the purposes of that appraisal.*

- **Site Code 002165** – Lower River Shannon SAC c.7.8km south at nearest point. The Features of Interest, for which it is the conservation objective to maintain or restore the favourable conservation status, comprise: Sandbanks which are slightly covered by sea water all the time [1110]; Estuaries [1130]; Mudflats and sandflats not covered by seawater at low tide [1140]; **Coastal lagoons [1150] (priority habitat)**; Large shallow inlets and bays [1160]; Reefs [1170]; Perennial vegetation of stony banks [1220]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]; Salicornia and other annuals colonizing mud and sand [1310]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]; Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]; **Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] (priority habitat)**; Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]; Petromyzon marinus (Sea Lamprey) [1095]; Lampetra planeri (Brook Lamprey) [1096]; Lampetra fluviatilis (River Lamprey) [1099]; Salmo salar (Salmon) [1106]; Tursiops truncatus (Common Bottlenose Dolphin) [1349]; Lutra lutra (Otter) [1355].
- **Site Code 004077** - River Shannon and River Fergus Estuaries SPA c.7.8km south at nearest point. The Features of Interest, for which it is the conservation objective to maintain or restore the favourable conservation status, comprise: Cormorant (Phalacrocorax carbo) [A017]; Whooper Swan (Cygnus cygnus) [A038]; Light-bellied Brent Goose (Branta bernicla hrota) [A046]; Shelduck (Tadorna tadorna) [A048]; Wigeon (Anas penelope) [A050]; Teal (Anas crecca) [A052]; Pintail (Anas acuta) [A054]; Shoveler (Anas clypeata) [A056]; Scaup (Aythya marila) [A062]; Ringed Plover (Charadrius hiaticula) [A137]; Golden Plover (Pluvialis apricaria) [A140]; Grey Plover (Pluvialis squatarola) [A141]; Lapwing (Vanellus vanellus) [A142]; not (Calidris canutus) [A143]; Dunlin (Calidris alpina) [A149]; Black-tailed Godwit (Limosa limosa) [A156]; Bar-tailed Godwit (Limosa lapponica) [A157]; Curlew (Numenius arquata) [A160]; Redshank (Tringa totanus) [A162]; Greenshank (Tringa nebularia) [A164]; Black-

headed Gull (Chroicocephalus ridibundus) [A179]; Wetland and Waterbirds [A999]

- **Site Code 001021** – Carrowmore Point to Spanish Point and Islands SAC, c.10km to west. The Features of Interest, for which it is the conservation objective to maintain or restore the favourable conservation status, comprise: **Coastal lagoons [1150] (priority habitat)**; Reefs [1170]; Perennial vegetation of stony banks [1220]; **Petrifying springs with tufa formation (Cratoneurion) [7220] (priority habitat)**.
- **Site Code 004182** – Mid-Clare Coast SPA c.10km west. The Features of Interest, for which it is the conservation objective to maintain the favourable conservation status, comprise: Cormorant (Phalacrocorax carbo) [A017]; Barnacle Goose (Branta leucopsis) [A045]; Ringed Plover (Charadrius hiaticula) [A137]; Sanderling (Calidris alba) [A144]; Purple Sandpiper (Calidris maritima) [A148]; Dunlin (Calidris alpina) [A149]; Turnstone (Arenaria interpres) [A169]; Wetland and Waterbirds [A999]. Contrary to the screening report, the site is not designated for Whooper Swan. The conservation objectives should be read in conjunction for those of Carrowmore Point to Spanish Point and Islands SAC (001021) and Carrowmore Dunes SAC (002250).
- **Site Code 002250** – Carrowmore Dunes SAC c.14.5km west. The Features of Interest, for which it is the conservation objective to maintain or restore the favourable conservation status, comprise: Reefs [1170]; Embryonic shifting dunes [2110]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; **Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] (priority habitat)**; Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]
- **Site Code 002318** – Knockanira House SACc.10.5km east. The Features of Interest for which it is the conservation objective to maintain or restore comprises Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303].
- **Site Code 000037**– Pouladatig Cave SAC c.12.4km east. The Features of Interest, for which it is the conservation objective to maintain or restore the favourable conservation status, comprise: Caves not open to the public [8310]; Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303].

- **Site Code 000036** – Inagh River Estuary SAC c.12.2km north. The Features of Interest, for which it is the conservation objective to restore the favourable conservation status, comprise: Salicornia and other annuals colonizing mud and sand [1310]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; **Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] (priority habitat)**.
- **Site Code 002091** – Newhall and Edenvale Complex SAC c.13.5km east. The Features of Interest, for which it is the conservation objective to maintain or restore the favourable conservation status, comprise: Caves not open to the public [8310]; Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]
- **Site Code 002247** - Toonagh Estate SAC c.14.9km northeast. The Features of Interest, for which it is the conservation objective to maintain or restore the favourable conservation status, comprise: Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303].
- **Site Code 004168** – Slieve Aughty Mountains SPA c.24km northeast. To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: Hen Harrier (Circus cyaneus) [A082]; Merlin (Falco columbarius) [A098]
- In addition, I consider it necessary to include the following site (Site Code 004161) for stage 1 appropriate assessment screening due to that site's proximity to the application site, which is effectively the same as that for the Slieve Aughty Mountains SPA (004168). In comparison, the four other European sites designated with Hen Harrier as a Feature of Interest (indicated in Fig.F5.4) are between 56km to 216km distant and may reasonably be ruled out. Whilst the following SPA is examined in the revised NIS submitted as further information, this is only in respect of the proposed replant lands at Knocknagashel.
- **Site Code 004161 -** Stack's to Mullaghereirk Mountains, West Limerick Hills and Mount Eagle SPA c.24.km south. To maintain or restore the conservation condition of the bird species listed as Special Conservation Interests for this SPA: Hen Harrier (Circus cyaneus) [A082]; Merlin (Falco columbarius) [A098].

9.1.7 **Summary of potential effects -** Only a very brief summary of the potential for adverse on the European sites are set out under table F5.2. No direct effects are possible as the proposed development is not located within but at a distance from any European sites. I consider the potential effects to arise as follows:

9.1.8 **Construction and/or decommissioning** - Impact on water quality and indirect impacts on qualifying aquatic species and habitats, including damaging relevant habitats and species of SAC and reducing prey for relevant species in SPA due to hydrological links to the site from the following works –

- During construction/decommissioning works over and adjacent to watercourses there is potential for releases of suspended solids and other substances arising from works, including the construction / upgrading of access roads, cable trenching and excavation of borrow pits;
- Potential for eutrophication due to run-off entering relevant watercourses to during construction/decommissioning works;
- Potential pollution of relevant watercourses from wet concrete operations, fuel spillages/leaks or leaking of sanitary waste.

9.1.9 **Operations and maintenance period** - Impact on water quality from potential increase in run-off from storm event resulting from change in land use and increase in impermeable ground area, with potential to damage relevant habitats and species of SAC and reducing prey for relevant species in SPA. Potential collision risk to qualifying wader and waterfowl species, Hen Harrier and Lesser Horseshoe Bats, being Features of Interest of SAC or SPA.

9.1.10 **In-combination Effects** – The potential for in-combination effects from construction / decommissioning and operation of similar permitted and / or operational wind energy projects and arising from similar projects provided for under the Clare County Development Plan 2017-2023, with particular reference to the Clare Wind Energy Strategy appended to the said County Development Plan, cannot be ruled out.

9.1.11 Having regard to the relatively small scale and dispersed distribution of the proposed Replant Lands (as referred to in the revised NIS submitted as further information), the replant sites selected meet the criteria advised by the DAHG (in meeting with Dr. Julie Fossit, NPWS, in meeting of 13/05/15) being not located within an

environmentally designated area and not within high ecological value habitat, the distance between replant lands and any European sites (having regard to the Conservation Objectives pertaining to the Features of Interest of same[48]), including in particular the distance of the replant sites from those European sites located within 15km of the proposed wind energy development, it is considered that in-combination significant adverse effects on the above mentioned European sites can be ruled out. Furthermore, due to the small scale, dispersed distribution, the detailed nature of the proposed replant developments, outside of any European site, no Appropriate Assessment issues arise and it is not considered the that the proposed replant development would be likely to have a significant effect individually or in-combination with other plans or projects on a European site.

9.1.12 **Stage 1 Screening Conclusion** – It is reasonable to conclude that on the basis of information on the file, which I consider to be adequate in order to issue a screening determination, that the proposed development, individually or in combination with other plans or projects would not be likely to have a significant effect on European site no.002250 – Carrowmore Dunes SAC, due to the separation distance (14.5km), the absence of hydrological links thereto and the Features of Interest of the European site do not include contain mobile / migratory.

9.1.13 Potential for significant indirect effects on the Features of Interest of (the 11no. other) European sites site no.002165 – Lower River Shannon SAC, site no.004077 - River Shannon and River Fergus Estuaries SPA, site no.001021 – Carrowmore Point to Spanish Point and Islands SAC, site no.004182 – Mid-Clare Coast SPA, site no.000036 – Inagh River Estuary SAC, arising from siltation or pollution of watercourses during construction / decommissioning or during operation / maintenance, potentially affecting water quality and turbidity, damaging relevant habitats and species of the SAC and reducing prey for relevant species in the SPA, cannot be screened out.

[48] I have had regard to the content of the revised NIS and have reviewed the Conservation Objectives for the Features of Interested pertaining to the following European sites: 000584, 002032, 002347, 002350, 000301, 001242, 000326, 000296, 004097, 000285, 000588, 000609, 001637, 004140, 000297, 002197, 002200, 002165, 004161, 002351, 000475, 000503, 000504, 000461, 000541, 0002298, 000480, 000525, 001774, 004051, 001858, 000849, 000831, 000407, 002162, 004233. In the interest of ensuring a reasonably concise and readable assessment to enable the Board to carry out its Appropriate Assessment, I excluded the extensive publicly available information from this report relating to the aforementioned European sites which I do not consider necessary.

9.1.14 Potential for significant indirect effects on the Features of Interest of European sites site no.002318 – Knockanira House SAC, site no.000037– Pouladatig Cave SAC, site no.002091 – Newhall and Edenvale Complex SAC, site no.002247 - Toonagh Estate SAC, site no.004168 – Slieve Aughty Mountains SPA and site Code 004161 - Stack's to Mullaghereirk Mountains, West Limerick Hills and Mount Eagle SPA, arising from potential for collision with turbines during the operational period, cannot be screened out.

9.1.15 Accordingly, a Stage 2 Appropriate Assessment is required to determine the potential of the proposed development to adversely affect the integrity of the aforementioned 11no. European sites.

9.2 Stage 2 Appropriate Assessment -

9.2.1 The Stage 2 Appropriate Assessment concerns European sites which can be separated into two groups based on the nature of potential pathways for effects between the project and the European sites:

9.2.2 **Group 1** - European sites **no.002165** – Lower River Shannon SAC, **no.004077** - River Shannon and River Fergus Estuaries SPA, **no.001021** – Carrowmore Point to Spanish Point and Islands SAC, **no.004182** – Mid-Clare Coast SPA, **no.000036** – Inagh River Estuary SAC, which are hydrologically connected to the proposed development site.

9.2.3 **Group 2**- European sites **no.002318** – Knockanira House SAC, **no.000037**– Pouladatig Cave SAC, **no.002091** – Newhall and Edenvale Complex SAC, **no.002247** - Toonagh Estate SAC, **no.004168** – Slieve Aughty Mountains SPA and **no.004161** - Stack's to Mullaghereirk Mountains, West Limerick Hills and Mount Eagle SPA, which are not hydrologically connected to the proposed development site, but which contain Features of Interest which being mobile / migratory species which may be connected to the proposed development site. European sites **no.004077** - River Shannon and River Fergus Estuaries SPA **no.004182** – Mid-Clare Coast SPA also contain Features of Interest where are mobile / migratory species which may be connected to the proposed development.

9.2.4 **Group 1 assessment** - I have already extensively described the details of the proposed development under section 2.0, stated the Features of Interest and the conservation objectives of the said European sites.

9.2.5 According to the NIS the proposed wind farm site is drained by small headwater stream of three distinct sub-catchments: Furroor (tributary of the River Fergus), Aughaglanna (tributary of the Inagh) and the Upper Annagheeragh; with the proposed cable route encroaching on two other sub-catchments: Upper Inagh and Caheranan (from Lough Boolynagreana, tributary of Annagh River). These watercourses provide source -receptor pathways between the proposed development and the Group 1 European sites. Each of these European sites are at least 17km downstream of the proposed development (table 8.3 of NIS Appendix 3 details the relevant distances from each site). The watercourses and sub-catchments are detailed in figures nos. 9.1.1 and 9.1.2, the hydrological features in figure 9.2, the contextual proposed drainage layout in figure 9.7.1 and 9.7.2, and OPW flood information in figure 9.5 of the EIS Chapter 9 Hydrology and Water Quality. There would appear to be no map showing the actual hydrological links to the European sites and I find the level of detail less than optimum.

9.2.6 As identified in the NIS (p.19) the risks to hydrologically connected Europeans sites, including their Features of Interests consisting of aquatic habitats and species downstream, relate to water quality impacts arising from construction phases and forestry felling, comprising – i) nutrient loss leading to eutrophication, ii) suspending solids loss leading to turbidity and sedimentation and, 3) acidification. 94no. wind turbines have been permitted within close vicinity, in addition to 15no. other more distant projects (Tullacbrack and Moanmore), the development of which has potential for significant in-combination effects with existing / permitted projects. The site is located within a Strategic Area for wind energy development, which is situated within a broader area where wind energy development is deemed permitted in principle under the Clare Wind Energy Strategy forming part of the Clare County Development Plan 2017-2023, therefore there is potential for significant in-combination effects with existing plans.

9.2.7 The NIS directs the Board to the detailed assessment of sensitive aquatic ecological receptors within catchments / sub-catchments with hydrological links to the development site included in Chapter 8 of the EIS. This included biological water

quality sampling, electrofishing survey, water chemistry sampling and Phase 1 Freshwater Pearl Mussel survey of the Annagheeragh River (appendix 3), a detailed catchment based impact assessment, with emphasis on forestry felling and associated nutrient and sediment loss, cumulative impact modelling in relation to forestry operations and the potential impacts of changes in phosphorus levels in neighbouring Doolough. The applicant provided further information concerning the potential impact on FWPM in response to item no.2C of the further information request and additional information on water quality (borrow pit groundwater ingress, stilling pond calculations, control of peat fines and peat storage management) in response to item nos.3A-3D. The subsequent report from the IFI (16/12/16) determined that the proposed development did not pose a significant threat to the species due to the extensive settling zone provided by Doolough which would protect FWPM.

9.2.8 Infrastructure tree-felling (i.e. to accommodate construction and development) amounts to 31.7ha, and turbulence felling (required to maximise efficiency of operations associated with wind flow over forestry) will amount to 94.6ha, and 12.55ha of felling is required for the Habitats and Species Management Plan (as a habitat enhancement measure to benefit Hen Harriers). Felling will be limited to 20-25ha per catchment year. No replanting will take place on infrastructural felled lands, but slow growing lodge pole pine, with perimeter planting of native broadleaf tree species to the perimeter, will be planted on turbulence and HSMP plans without application of fertiliser and subject to s.5.1.1 Mitigation Measures for the Protection of Watercourses. In the 'do-nothing' scenario normal forestry operations (harvesting, replanting, urea application) would continue but on a different timescale, therefore, there would be no net change in potential for nutrient and sediment losses between the 'with development' and 'do-nothing scenario' except for the timescale and there would be a net reduction in potential phosphorous loss as not fertiliser will be applied. Neutral or slightly positive medium term effects on downstream aquatic ecology are predicted relative to the 'do-nothing' scenario due to reduced net nutrient loss.

9.2.9 There are no freshwater Features of Interest within European sites Inagh River Estuary SAC (00036), Mid Clare Coast SPA (004182), Carrowmore Point to Spanish Point and Islands SAC (001021) and River Shannon and River Fergus Estuaries

SPA (004077). I am satisfied that the applicant has demonstrated that there is no potential for significant effects on the integrity of these European sites via hydrological source-receptor pathways.

9.2.10 The Features of Interest for the Lower Shannon SAC (0002165) include several which are freshwater based, including (species) Freshwater Pearl Mussel (FWPM), Atlantic Salmon (Salmo Salar), Sea Lamprey (Petromyzon Marinus), Brook Lamprey (Lampetra Fluvialitis) and (habitat) watercourse of plain to montane levels with the Ranunculion Fluitantis and Callitricho-Batrachion vegetation. No FWPM were identified as part of the applicant's aquatic assessment; FWPM are not recorded on the Furroor sub-catchment; the site is not hydrologically connected to any known FWPM population in the SAC (i.e. Cloon and Feale Rivers) and the catchment is not located within a Margaritifera Sensitive Area. No in-stream works are anticipated for grid-connection and the risk of peat instability at the site is low according to the peat stability assessment (EIS Chapter 8, informed by the Peat Stability Assessment in Appendix J of the EIS).

9.2.11 The Planning Authority was satisfied with the revised monitoring proposals to protect FWPM from potential impact of peat fines submitted by the applicant in response to item no.2(d) of the further information request, subject to managing of outstanding issues by condition. The report of the Inland Fisheries considered the relevant mitigation measures to ostensibly be comprehensive. The report of the Council's Environmental Assessment Officer recommended conditions concerning same.

9.2.12 Regarding the other species being Features of Interest (Atlantic Salmon (Salmo Salar), Sea Lamprey (Petromyzon Marinus), Brook Lamprey (Lampetra Fluvialitis)) in the Lower Shannon SAC (002165), the NIS does not clearly demonstrate that there is no potential for significant effects. According to the Natura 2000 Standard Data Form, the main relevant activities external threats to the SAC comprise fertilisation, sylviculture / forestry, eutrophication. The EIS notes that Atlantic Salmon were recorded in abundance at electrofishing sites in the Furroor (Fergus) and Kilmaley (Fergus) Rivers during surveys in September 2014 and that Lampreys (mainly Brook) are likely to occur in the lower Furroor/Klimaley (Fergus) system and that the Furroor catchment is considered to have the greatest fisheries sensitivity owning to the presence of Atlantic Salmon within 2km. The EIS also acknowledges that the small headwater streams within the proposed development site, whilst of limited

fisheries value due to their small size and lack of suitable substrates, do possess some salmonid spawning and nursery habitat. It also notes that they connect to locally important fisheries for salmon (Furroor only), trout, eel and Lamprey further downstream.

9.2.13 There is a risk that nutrient loss (leading to eutrophication) and sedimentation could affect the upper Furroor (Fergus) catchment where suitable Salmon spawning habitat is present within 1km of the site (table 8.25 EIS) and good Salmon populations within 4km, but for a temporary period. The impact is predicted to be a short term, slight negative local impact of significance only for threat to Salmon. The EIS submits that the nutrient effects are very unlikely to persist downstream into the good quality salmonid waters of the large Furroor and Kilmaley Rivers and the impact on water quality and conservation objectives for Atlantic Salmon of the River Fergus as part of the Lower River Shannon SAC is negligible. On this basis the proposed development may be considered not to significantly affect the integrity of the SAC along or in combination with other plans or projects.

9.2.14 There is a similar risk to aquatic ecology from infrastructure construction, including access roads, turbine foundations and associated hardstandings, borrow pits, resulting in sediment loss to watercourses. Mitigation by design in the form of 50m buffers have been applied between infrastructure and waterbodies to minimise potential effects. Whilst proposed stream crossings (8no.) are an exception, there will be no instream works at any crossing and the crossings have been designed in accordance with the document 'Protection and Conservation of Fisheries Habitat' with particular reference to Road Construction (Shannon Regional Fisheries Board, 2009), in consultation with the IFI. The impact of sediment loss would be short term, slight, negative locally within the Furroor catchment 1km upstream of suitable Salmon spawning habitat. The potential for significant effects on the Features of Interest of the SAC can therefore be considered negligible.

9.2.15 There is potential for sediment runoff to the Claureen River (135m distant) within the Fergus catchment arising from the temporary removal of a wall to facilitate turbine delivery. This is rated short term, slight negative impact on salmon and macroinvertebrates and their habitats. Given the small scale nature of the works there would seem to be no risk of significant effects on the Features of Interest of the SAC.

9.2.16 There is potential for short term, significant negative impacts on aquatic organisms and water quality from accidental spillage of cement or cement washings or of hydrocarbons, but the likelihood is considered very low from a well-managed construction site. No cement works are proposed in or near to identified watercourses and no wet cement will be used at stream crossing, only pre-cast single span structures with pre-cast footings.

9.2.17 Cumulative impacts are addressed under s.8.4.2.7 of the EIS, including additional forestry felling, wind farms (existing), agriculture and on-site wastewater treatment plants (for dwellings). The EIS notes 48.2ha of Coillte felling and replanting with fertiliser within a 16-year period[49] within the Furroor (Fergus) catchment. The sampling of the catchment reported it as of Good Status during 2014 and 2015 EIS surveys, contradicting the official Poor Status which was determined not from direct sampling but rather was extrapolated from 2006 monitoring of the Aughaglanna River. Total felling would amount to 109.52ha, or c.11.3% of the Furroor waterbody catchment (972ha), 61.32ha of which is project related. This equates to an annual average of 0.8% of the catchment area per annum which, it is submitted, is not considered significantly high in terms of potential effects on aquatic ecology and waterbody status. An annual maximum of 25.6ha felling is expected in 2020 in the Furroor catchment (20.4ha is project related T9/T10), but drainage will be spread between two separate tributaries. The majority of T9/T10 turbulence felling is scheduled for felling by Coillte in 2020 anyway. The intended scheduling of felling is such that there is a very low level cumulatively, with neutral impact on overall waterbody status, negligible impact on water quality and negligible effect on the freshwater Features of Interest of the Lower River Shannon SAC.

9.2.18 Based on the EIS, no in-combination effects are anticipated with the existing operating Booltiagh 1 & 2 wind farms. Neither the EIS nor the NIS address potential for in-combination effects with existing permitted wind farms or the potential for similar development having regard to the provisions of the County Development Plan 2017-2023 incorporating the CWES. The potential for in-combination effects on the Lower River Shannon SAC from permitted wind farms, including Letteragh, and Glenmore would appear to be limited as they do not appear to be fall within the Furroor catchment. The situation with Boolynagleragh is less certain and it may be

[49] This period was agreed with the DAFM.

within the catchment. However, on the basis that the proposed Slaghbooly development would have negligible effects on the Features of Interest of the said SAC, it cannot be determined to have potential for significant in-combination effects. In combination effects with agriculture and on-site wastewater treatment systems were determined as negligible.

9.2.19 Under the Stage 2 appropriate assessment, the applicant submits that there are no potential effects on European sites no.002165 – Lower River Shannon SAC, no.004077 - River Shannon and River Fergus Estuaries SPA, no.001021 – Carrowmore Point to Spanish Point and Islands SAC, no.004182 – Mid-Clare Coast SPA, no.000036 – Inagh River Estuary SAC, due to the hydrological separation distance (all >17km downstream), subject to the implementation of standard environmental controls and good practice (e.g. sediment control) and bespoke mitigation measures as detailed in Appendix 3 (Aquatic Ecology, Chapter 8 of EIS; in addition to those contained in Chapter 9 Hydrology and Water Quality, Chapter 10 Forestry Felling, and Chapter 11 Soils, Geology and Hydrology) and Appendix 7 (Outline Construction and Environmental Management Plan) of the NIS. On the basis of the information within the NIS, the revised NIS, the EIS, on file and as otherwise available to me through official government websites, I am satisfied that significant hydrologically conveyed effects can be ruled out on those sites.

9.2.20 **Group 2 assessment** – I have already extensively described the details of the proposed development under section 2.0, stated the Features of Interest and the conservation objectives of the said European sites.

9.2.21 The Features of Interest for which European sites no.002318 – Knockanira House SAC, no.000037– Pouladatig Cave SAC, no.002091 – Newhall and Edenvale Complex SAC, no.002247 - Toonagh Estate SAC are designated is the Lesser Horseshoe Bat. The sites are located between 10km and 15km from the proposed development site and therefore no direct effects would occur on same. There is potential for indirect effects ex-situ arising from collision between bats and turbine blades and for barotrauma resulting from close contact with blades. The NIS submits, however that Lesser Horseshoe Bats are a low risk species as they favour broadleaved and mixed woodlands for foraging and generally avoid open land. The only external threat to the species indicated in the Natura 2000 Standard Data Form arises from grazing.

9.2.22 Notwithstanding the distance from the designated sites, the known locations of Lesser Horseshoe Bats roosts in the county and the foraging behaviour of the species (they are though to forage within a few kilometres of their roosts), the NIS reports that the bat surveys carried out (described in EIS Ch.7, s.7.2.5, Appendix 2 of NIS) found the species accounted for 2.5% of total bat triggers at the two locations where they were detected. The felling and replanting scheme will result in an increase in habitat heterogeneity at the site and open up potential foraging habitat for the speeds outside of the swept rotor area. The NIS considers it unlikely that the Lesser Horseshoe Bats recorded could have could from the SAC's given the minimum 10km separation distance and no in-combination significant effects with other developments within 5km are anticipated.

9.2.23 Neither the NIS nor the EIS provide information on the range of elevation for the flight of the species. The Bat Conservation Trust (UK)[50] indicates that the species rarely fly more than five metres above the ground, which would suggest the operation of the proposed wind turbines would not pose a threat to species.

9.2.24 Lesser Horseshoe Bat were detected at two passive detector sites at relatively low activity levels overall (BD1 and BD4) but there was no evidence to suggest that the species roosts at the site (i.e. no socal calls and only low levels of activity sporadic basis) and it is submitted that there are no obvious potential roost sites in the development area. The actual results of the bat surveys are not provided within the NIS or Chapter 7 of the EIS and do not appear to be separately appended under Appendix F of the EIS, or elsewhere. However, on the basis of the information provided concerning the short foraging distance of the Lesser Horseshoe Bat species and the distance of the proposed development site from the four European sites, and the low flight height of the species, direct and indirect significant effects on the integrity of the subject European sites can reasonably be ruled out.

9.2.25 The Features of Interest for which European sites no.004168 – Slieve Aughty Mountains SPA and no.004161 - Stack's to Mullaghereirk Mountains, West Limerick Hills and Mount Eagle SPA, are designated is the Hen Harrier (Circus cyaneus) [A082], in addition to Merlin (Falco columbarius) [A098] for Slieve Aughty. The Natura 2000 Standard Data Form for the two sites identify no threats, pressures or

[50] P.1 *Lesser Horseshoe Bat, Rhinolophus hipposideros* www.bats.org.uk/publications_download.php/221/lesserhorseshoe.pdf (accessed 16/06/17)

activities external to those European sites that would have a negative impact thereon. Due to the c.24km separation distance from the proposed development there is no potential for direct impacts including habitat loss or disturbance.

9.2.26 The NIS informs that according to Scottish Natural Heritage (2013) the maximum foraging ranged of Hen Harriers during the breeding season is 10km (the NPWS gives a figure of 5km[51]) and therefore there is no potential for impacts on foraging breeding Hen Harriers within the SPAs. The NIS notes that Hen Harriers range widely during the winter season and can disperse large distances from their natal areas. Hen Harriers are known to breed in west Clare, with nine confirmed and possible nest sites recorded in the region during the last national Hen Harrier breeding survey.

9.2.27 The Vantage Point surveys carried out in the vicinity (annual winter season VP in 2012/13, 2014/15; annual breeding season VP 2013, 2014, 2015) observed Hen Harriers in both 2014 and 2015 breeding seasons, including crossing the site and within the wider vicinity. It also confirmed nesting pair at Tullaghboy (this is just north of the site) at a distance >500m from any proposed turbine. The Slaghbooly Wind Farm and Habitat and Species Management Plan (HSMP)[52] makes reference to a second nesting pair at Doolough, in 2015, which is not noted in the NIS. Excluding the activity of the breeding pair, the frequency observations and duration of sightings is submitted as very low[53].

9.2.28 The NIS reports that a literature review on Hen Harrier collision mortality at wind farms in North America and Europe indicates that the species are less susceptible to collision than other raptors, with negligible deaths recorded. Hen harriers typically fly below wind turbine rotor blade height at less than 25m and the species show small-scale avoidance of turbines. Accordingly, collision risk is determined to be low and risk of significant collision fatalities is considered to be extremely low.

9.2.29 The site is currently dominated by close-canopy conifer plantation and is unsuitable for Hen Harriers. It would seem likely that the clear felling for infrastructure and turbulence within the site and, eventually the clear felling of the area for harvesting of timber will change the habitats on site, will make it more attractive to foraging Hen

[51] Site synopsis Slieve Aughty Mountains SPA Site Code: 004168
[52] Appendix F8 of the EIS (p.1).
[53] The NIS refers the reader to appendix F6 for details, however this does not appear to be on file.

Harrier, attracting them to the wind farm. However, based on the information provided concerning low collision risk for this raptor, it would appear unlikely that a significant adverse effect would result on this species.

9.2.30 The Cumulative Impact Assessment and Landscape Model (EIS Appendix F7) concluded that the cumulative magnitude of potential impacts to Hen Harrier (which is a ground nesting bird) and other key bird species would be negligible given the location largely on afforested lands. With the implementation of mitigation measures and the prescriptions of the Habitats and Species Management Plan[54] (EIS Appendix F8) the applicant submits that the impact would be neutral to slight positive within the wider land use and development context. Construction mitigation measures are set out under 7.5.2, which include Hen Harrier Monitoring Protocol (as per SNH guidance, 2013) and provision of a no-go zone 500m around any pre-nesting breeding site or next except with the written approval of NPWS.

9.2.31 Having regard to the information on file, including the NIS and EIS and the applicant's response to the appeal, significant adverse effects on the integrity of the relevant SPAs arising from the proposed alone or in-combination may therefore be ruled out.

9.2.32 The NIS does not address the potential impact on Merlin. This species is not recorded in the avian species surveys of 2014 and 2015 (tables 7-4a, b, c and 7-5 to 7-8), however s.7.3.3.7 indicates that Merlin were observed on two occasions (2014 summer survey) and they are included in table 7-9 as an observed avian species of Amber Listing conservation status. It is stated that the species is notoriously difficult to survey[55] and there are no records of breeding activity or consistent presence of Merlin recorded in several years of VP surveys at Booltiagh and Slaghbooly. In the EIS the species is not considered to be one of the most sensitive to wind energy development. Neither the EIS nor NIS provide information on foraging distance from Merlin nest sites, however Scottish Natural Heritage Guidance Assessing Connectivity with Special Protection Areas (2012) indicate that the range is within 5km for the species. Having regard to the >24km distance to the SPA, it would not

[54] According to the applicant's response to the appeal, the HSMP identified lands (122.56ha) with a relatively high resource value for Hen Harrier and prescribed detailed land management agreed with landowners to come into place in parallel with the proposed development, and to be managed and closely monitored over the operational period

[55] This statement is supported by the NPWS Site Synopsis.

seem likely that proposed development, alone or in combination, would not be likely to significantly affect the integrity of the SPA concerning Merlin.

9.2.33 As noted above, European sites no.004077 - River Shannon and River Fergus Estuaries SPA no.004182 – Mid-Clare Coast SPA also contain Features of Interest where are mobile / migratory species which may be connected to the proposed development. The NIS considered potential impact on waders / wildfowl wintering within these SPAs. Whilst there will be no direct impacts on habitats within those European sites due to the >9.9km separation distance, but there is a recognised risk of disruption to migrating wildfowl populations. In this regard the NIS considers the potential impacts on Golden Plover, Curlew and Whooper Swan which winter in the area.

9.2.34 No impacts on Golden Plover are expected as a result of the proposed development due to the absence of the species from the development site during extensive field surveys, the lack of suitability of the habitats at the site and the distance of the European site from the development area.

9.2.35 No impacts on Whooper Swan are anticipated, which, based on a review of EIS studies between 2006 and 2014, have been found to occur only on a very occasional basis and in small numbers surrounding the lakes. At >9.9km, the SPAs are outside of the core foraging distance of 5km for the species according to SNH guidance.

9.2.36 The development area is not a known wintering area for Curlew but it is possible that it may breed in the vicinity as it is within its known breeding range and historical breeding records for Curlew exist in the vicinity but not on site. In this regard I note the response of Birdwatch Ireland (24/09/14) to pre-planning consultation carried out by the applicant which expressed serious concern for the potential impact on Curlew (see B2 of the EIS), noting the decline of the species in Ireland (88% since 1988, with breeding pairs estimated at 200) and the significant adverse effects found on the species from wind farm development through recent research.

9.2.37 The NIS submits that the growth of closed canopy forest plantations has occurred on some of the recorded nesting sites making them unsuitable as breeding sites. The nearest historical breeding sites within current suitable habitat, at 900m distant from the proposed turbines, would appear to be outside the critical impact area (620m). No Curlew were recorded in the 2014 and 2015 surveys and no breeding Curlew

were recorded during the cumulative impact assessment surveys for other wind farms within 5km. There will be no loss of Curlew habitat through the development and the HSMP is designed to improve the attractiveness of lands in the vicinity of Slaghbooly development for ground nesting birds. The NIS concludes that the potential residual impacts on Curlew is imperceptible. Significant effects on the integrity of the SPAs can therefore be ruled out.

9.2.38 No flight-lines of qualifying wildfowl species for the SPAs were recorded in the VP surveys. There is very little movement between wintering sites for Curlew, there is no evidence to suggest the site is located on a regular commuting or migration route for qualifying species and the overflying rate for same was found to be consistently low or absent through the year. The potential collision risk is therefore considered to be minimal and no significant risk of adverse effect on the integrity of the European sites is anticipated as likely from the proposed development alone, or in-combination with other developments.

9.2.39 Detailed mitigation measures are set out under s.5 and table F5.4 of the NIS addressing forestry operations, site infrastructure construction, cable laying and jointing bays and turbine delivery routes. Additional measures are proposed to address potential cumulative forestry operations impacts (up to 2028) under table F5.5 and to address operational impacts under table F5.6. These generally comprise best practice approaches and are acceptable.

9.2.40 Stage 2 Appropriate Assessment Conclusion – The Natura Impact Statement assessed the likely significant effects arising from the proposed development, individually and in combination with other relevant plans and projects, and the implications for the European sites concerned in view of those sites' conservation objectives pertaining the sites' Features of Interest for which those sites have been designated. There is no potential for any direct effects on any European site arising from the proposed development.

9.2.41 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 significantly adversely affect the integrity of European sites **no.002165** – Lower River Shannon SAC, **no.004077** - River Shannon and River Fergus Estuaries

SPA, **no.001021** – Carrowmore Point to Spanish Point and Islands SAC, **no.004182** – Mid-Clare Coast SPA, **no.000036** – Inagh River Estuary SAC, **no.002318** – Knockanira House SAC, **no.000037**– Pouladatig Cave SAC, **no.002091** – Newhall and Edenvale Complex SAC, **no.002247** - Toonagh Estate SAC, **no.004168** – Slieve Aughty Mountains SPA and **no.004161** - Stack's to Mullaghereirk Mountains, West Limerick Hills and Mount Eagle SPA, **no.004077** - River Shannon and River Fergus Estuaries SPA and **no.004182** – Mid-Clare Coast SPA in view of those sites' Conservation Objectives.

10 Conclusion and Recommendation

Having regard to:

(a) the Wind Energy Development Guidelines – Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government in June, 2006, and, in particular, the provisions of Chapter 3 'Wind Energy and the Development Plan' and Chapter 6, 'Aesthetic Considerations in Siting and Design';

(b) the policies and objectives of the Clare County Development Plan 2017-2023, including, inter alia, in respect of renewable energy and wind energy, including the Clare Wind Energy Strategy, and the Clare Renewable Energy Strategy appended as Volumes 5 and 6, respectively, of the County Development Plan; and the location of the location of the majority of the proposed development within the Strategic Area and the balance of the site located within the area indicated as Acceptable in Principle for wind energy development;

(c) the proximity of existing dispersed residential dwellings predominantly to the east, north and northwest of the application site

(e) the noise impact assessment carried out by the applicant and the application of a limit of 43dB(A)$_{LAeq}$ to what may be defined as a low noise environment contrary to the recommendations of the Wind Energy Development Guidelines;

(f) the shadow flicker assessment carried out by the applicant;

(g) the spatial extent and height of existing constructed and / or permitted wind energy development that are as yet not constructed / commissioned within the vicinity of the site;

(h) the grounds of appeal and the details of observations received in relation to the proposed development at appeal and application stage; and

(i) the details, drawings and documentation submitted with the application, in response to the further information request and with the appeal,

it is considered that the proposed wind farm (including as reduced from 11no. to 10no. wind turbines by condition in the decision of the Planning Authority), taken cumulatively with existing and/or permitted but as yet not constructed / commissioned wind energy development within the vicinity would likely seriously injure the amenities of residential property in the vicinity by way of long term excessive adverse noise effects and would also pose excessive risk of serious injury of residential amenities through shadow flicker from multiple wind energy developments under separate control due to the inadequate and uncoordinated shadow flicker mitigation measures.

John Desmond
Senior Planning Inspector

19th July 2017