An Bord Pleanála

Inspector's Report

ABP-308799-20

Development	19 wind turbines, one meteorological mast, 110kV substation and all associated site development works.
Location	Townlands of Ballydonaghan, Caherhurley, Coumnagun, Carrownagowan, Inchalughoge, Killokennedy, Kilbane, Coolready and Drummod, Co. Clare.
Planning Authority	Clare County Council
Applicant(s)	Coilte
Type of Application	Permission under 37 E of the Planning and Development Act 2000, as amended.
Prescribed Bodies	Failte Ireland Irish Aviation Authority Irish Water Transport Infrastructure Ireland Department Culture Heritage and the Gaeltacht. Clare County Council

	Shannon Airport DAA
Observer(s)	See list in Appendix 1
Date of Site Inspection	5th June 2022
Inspector	Sarah Lynch

Contents

1.0 Introduction

1.1. Preapplication consultation

1.2. The Board received a request on the 29th November 2018 from Coillte to enter pre-application consultations under Section 37A of the Planning and Development Act 2000, as amended, in relation to the proposed development at Carrownagowan in east Clare.

1.3. Two pre-application meetings were held between the prospective applicant and the Board's representatives on the 11th February 2019 and 8th September 2019. The details of the meeting are set out in the written record contained on the Board's file. The applicant was advised of the sensitivity of the proposed development site within the pre application meetings held. The applicant confirmed that 3 year bird surveys were undertaken and Hen Harrier were observed at two locations on the site.

1.4. The applicant referred to ongoing consultations with prescribed bodies and was advised that continuing public consultation was also necessary.

2.0 Site Location and Description

2.1. The proposed development comprises the construction and operation of a wind energy development on lands near Slieve Bernagh, Co. Clare, approx. 4km north-east of the village of Broadford, 7km north-west of Killaloe and 2.5km south of the village of Bodyke. The site, on the northern slopes of Slieve Bernagh (between 130 and 450m OD) is within Coillte forestry with additional private lands. Lough Derg lies approximately 4km to the east of the proposed development area.

2.2. The site planning boundary includes a total land area of 749.69ha which principally consists of conifer plantation, bogland, cutover bogland, and improved grasslands. The townlands within the wind farm site include Ballydonaghan, Caherhurley, Coumnagun, Carrownagowan, Inchalughoge, Killokennedy and Kilbane. There was a single dwelling close to the development boundary that at the time of inspection was occupied. No other dwellings are located in such close proximity to the development site.

2.3.

3.0 **Proposed Development**

3.1. The proposed development comprises 19 No. turbine wind farm on the north-western slopes of Slieve Bernagh in Co Clare. This application is seeking permission for 19 No. turbines with a maximum tip height of 169m. The proposed turbines will have an expected yield in the order of 90 to 110MW with an operating life up to 30 years. Each wind turbine will have a reinforced concrete base pad foundation of approximately 24m in diameter and installed to a maximum excavation depth of approximately 3m below ground level. Each wind turbine will also have an associated turbine hardstand area and temporary laydown area adjacent to the foundation.

3.2. A permanent meteorological mast will be erected within the wind farm lands to monitor the local wind regime while the wind farm is in operation. The permanent meteorological mast is to be located west of T19. The meteorological mast will be up to 100m in height. The development includes a 110kV substation within the wind farm lands for exporting power from the wind farm to the national electricity grid. The substation compound is to be located in the northern section of the site, within an area currently under forestry to the northeast of T19.

3.3. The electrical equipment at the substation compound and buildings will include transformers, busbars, circuit breakers, cable supports, switchgear, panels and all associated cabling. The individual turbines within the wind farm will be connected electrically by underground cables to the new 110kv substation. The Carrownagowan Wind Farm substation will in turn be connected via an underground grid connection cable to the existing ESB owned 110kV substation at Ardnacrusha, County Clare which will allow the electrical energy generated from the wind farm to be exported onto the national grid.

3.4. The project is seeking a ten-year permission period to construct and make operational the proposed wind turbines and associated infrastructure (access roads, substation, borrow pits, deposition areas, meteorological mast and visitor cabin). To facilitate delivery of the turbine components, permission is also sought for works along the turbine delivery route in the townlands of Coolready and Drummod, south of Bodyke.

3.5. **Prescribed Bodies**

A total of 7 no. submissions were received from prescribed bodies which are summarised hereunder.

Failte Ireland

- As a prescribed body in the planning process, one of the main objectives of Fáilte Ireland is to advocate for the protection of key tourism assets and amenities. The Irish landscape is one of the primary assets for tourism in the country and has been the cornerstone of international tourism marketing campaigns for decades,
- It is the policy of Fáilte Ireland to support sustainable development and we acknowledge that there is a requirement to provide for and develop renewable energy, at appropriate locations and in accordance with proper planning and sustainable development.
- Fáilte Ireland recognises the importance of developing the State's renewable energy sector. The Authority has been supportive of the preparation and adoption of Wind Energy Strategies across the Country.
- Clare County Council includes a Wind Energy Strategy in Volume 5 of the County Development Plan 2017 -2023. The proposed wind farm is located within an area indicated as a Strategic Area for Windfarms in the Wind Energy Strategy, which is informed by the County Landscape Character Assessment (LCA). The LCA8 Slieve Bernagh Uplands, in which the proposed windfarm is located, is set within 'Settled Landscape - areas where people live and work', as defined in Clare County Council Development Plan Policy.
- While supporting the wind energy industry subject to proper planning and environmental requirements being met, the position of the Authority is also informed by research on visitor attitudes. In 2007 Fáilte Ireland commissioned an independent study looking at visitor attitudes to wind farm developments in the Republic of Ireland.
- The key findings of the 2012 & 2018 studies are summarised as follows;

- Over half saw at least one wind farm in 2012 compared with under half in 2007 and more groups of wind turbines were detected as opposed to just one, as in 2007.
- More visitors saw turbines at closer proximity than on the horizon in 2012, versus 2007. Mountain moorland areas were the most prevalent sites where wind farms were seen.
- Impacts on sight-seeing were less positive in 2012, with a sharp rise in both negative and 'no impact' views compared with 2007. Those on countryside breaks, not on activity breaks and over 65s were most negative about wind farms being present when sight-seeing.
- The majority of participants favour small groups of large turbines over large groups of small turbines.
- In 2012, seventy-one per cent stated that wind farms have either a positive or 'no impact' on their likelihood to visit Ireland,
- In 2018, the results from a major study by Fáilte Ireland on tourism and landscape found that the majority of visitors appeared not to notice the majority of developments – even very large and visually prominent structures such as wind turbines and powerlines.
- The proposed development is located in close proximity to Heritage Landscape in Clare County Development Plan and it is visible from a designated Area of Primary Amenity in the North Tipperary Development Plan. Both designations have been identified as high sensitivity landscapes, including the lake itself, which play a regionally important role as tourism and amenity features. This role will only increase in significance with the development of Fáilte Ireland's newest brand proposition 'Ireland's Hidden Heartlands' and initiatives such as the Shannon Tourism Masterplan.

Irish Aviation Authority

- Two assessments are requested – Assess effects of windfarm on ILS signals and one to assess the ability of FCSL to complete flight checks on ILS 24 in all weather conditions.
- A radar impact study is requested as the proposed development is within 15km of the Woodcock Hill MSSR radar.

Irish Water

- Irish Water would draw the Board's attention to the presence of critical raw water sources (both surface water and groundwater) for a number of public water supplies, namely, the Broadford (Crean Borehole), Killaloe (Garraunboy) and Shannon (Castle Lake) Public Water Supplies in the area. It is critical that these sources are protected from any possible pollution arising from the proposed wind farm construction.
- Irish Water would also draw the Board's attention to the presence of existing watermains in and adjacent to public roads along the route of the grid connection infrastructure and along proposed component delivery routes. Irish Water has no objection in principal to the proposed development subject to conditions which seek to protect water quality and associated infrastructure and also seek the engagement of the developer prior to construction works adjacent to water infrastructure.

Transport Infrastructure Ireland

- No observations to make

Department Culture Heritage and the Gaeltacht.

- The site is within a Non-Designated Regional Zone for Hen Harrier
- These Non-Designated Regional Zones hold up to 42.7% of the known breeding territories.
- The location of the turbines will likely result in displacement of nesting and breeding Hen Harrier at locations within 1km of the proposed wind development.
- Displacement and disturbance within a 1km buffer should be considered and examined by the applicant.
- The exact habitat composition of the habitat area including a 1km buffer needs to be outlined.
- Any habitat enhancement areas should ensure long term viability of these areas and prevent edge effects from occurring.
- Measures should be taken to reduce collision risks for birds.

- Cumulative impacts need to assess all pressures on the surrounding environment.
- Cumulative impacts to be assessed within 20km of development.
- Water quality in the area is of good status, however there is a potential for mobilisation of peat arising from the proposed development.
- The development is likely to cause significant changes to pattern of surface water flow and may desiccate the peat allowing pathways to open up and result in subsurface water losses. In light of landslides in 2020 the department recommends a review of the submitted Peat Stability Risk Assessment (2019). Further information is requested in relation to the hydrological change and flow pattern that is predicted to occur with the windfarm infrastructure in place.
- It should also be clarified if the rainfall prediction rating has considered Climate Change predictions into the Hazard Rating Criteria.
- It is stated that the fire break along the southern boundary and stream along northern boundary splits the hydrological links to the SAC, there is no clear assessment of this or description of the firebreak to support this statement.

Clare County Council

- The submission from the Council sets out the policy context for the proposed development and states that the proposed development is designated as being 'Strategic' for wind energy development which can accommodate a medium to large scale wind farm. Developments in these areas must conform with guidelines and not impact the integrity of surrounding SACs.
- The current wind strategy within the Clare County Development Plan is the policy framework which guides wind development within the county.
- The surrounding landscape type is similar to Mountain Moorland and can accommodate larger wind developments.
- Main visual impacts will be from the north at Feakle and Bodyke. The submission examines the visual impact of the full array of turbines from sensitive locations such as Lough Derg. It is requested that the Board has regard to the landscape designation in the development plan as a settled landscape and the specific requirements of objective CDP 13.2.

- Based on the information provided it is apparent that the instances of shadow flicker would be low.
- It is noted that noise modelling has been based on 2006 guidelines and it is considered that given the number of noise sensitive receptors around the site that the WHO noise requirements may be more appropriate in this instance.
- A special development contribution is requested for road works on haul routes of heavy loads and repair works to ancillary roads utilised in the event of diversions being required.
- A survey of the R352 and R465 should be carried out prior to construction of grid connection.
- There is a potential planning gain in the upgrade of roads into Bodyke and the permeant development of the proposed temporary link road.
- The Board should satisfy itself that adequate information has been given in relation to peat slide hazards.
- The Board should satisfy itself that adequate information has been submitted in relation to NIS conclusions.
- Overall the principle of the proposed development is in accordance with the policy position of the Council as set out in the Development Plan.

Shannon Airport DAC

- Regard must be had to Obstacles to Aircraft in Flight Order, 2005 (S.I. No. 215 of 2005).
- This development will not penetrate either the Inner Horizontal Surface or the Transitional Surface or indeed have any effect on the Airport OLS.
- Due to the multiple site elevations associated with the project, which when combined with turbine elevations of 165M blade tip heights, infringe the maximum elevation, below which the Shannon flight procedures are not affected. On this basis, their position is that as a minimum an IFP opinion is required, from an approved IFPD provider (e.g. ASAP, Cyrrus, Osprey), which in turn may require a full IFP assessment.
- It is the supporting view of the Shannon Airport Authority DAC therefore that as a minimum an IFP opinion is sought from the suggested list of approved

IFPD providers and if necessary a full aeronautical assessment should be requested from the wind farm applicant to consider the impact on Instrument Flight Procedures (IFPs), flight checking and any potential impact on communication, navigation and surveillance equipment including that equipment local to Shannon Airport but also for en-route air navigation.

- The developer must apply the following standard: Chapter Q (Visual Aids for Denoting Obstacles) of the Certification Specifications contained within the EASA Easy Access Rules for Aerodromes CS ADR-DSN.Q.851 Marking and Lighting of wind turbines (Regulation (EU) No. 139/2014) to the wind turbine development.

3.6. Third Party Observations

Ailish and Brian O'Dwyer

- Lack of public engagement, only small number of people within 2km were consulted.
- Concerns that grid connection is not included with the development application.
- Proposed development will negatively impact SAC and the species travelling between sites.
- There is significant Kestrel and Hen Harrier activity within the development site. Collision assessments in relation to Kestrel is inaccurate.
- Developer has published misleading information in relation to the landscape designation in the area, describing the landscape as settled, it is contended that this landscape is not settled.
- There is significant shale present in the area. Concerns are raised in relation to the potential for landslides to occur.
- There was a significant peat slip in the 1980's in the area.
- Insufficient details in relation to the disposal/treatment of excavated soil and peat.
- The lands and depth of peat are not suitable for construction.
- Information is not easily accessible and website does not perform correctly.

- Development is contrary to Clare County Development Plan as it breaks the skyline.
- Proposed development will be seen from Lough Derg and will impact tourism development in the area.
- The development will also impact views from Tuamgraney village which is of historical significance.
- Proposed turbines emit significant level of CO_2 during the construction and installation of the turbines, the payback is therefore a lot longer than stated.
- Impact of trenching of grid connection in terms of CO_2 has not been properly examined.
- Impacts of heavy construction traffic on local community have not been considered.
- Development is at a high risk in terms of fire.
- No plan for removal and disposal of structures.
- Proposed development will introduce artificial light where currently there is none.
- The proposed development will visually affect more than one local authority area.
- This will be the largest development of its kind in Ireland and noise impacts will be experienced at locations in excess of 2km from the site.

Brian Penny and Sinead Cooney

- Lack of public consultations.
- Concerns regarding impacts to birds and bats.
- Impacts to Buzzards and Hen Harrier
- Concerns raised over potential for the development to give rise to landslides.
- The submitters have included articles to support their concerns.

Charles Scanlan

Hasset Leydon and Associates have prepared a submission on behalf of Charles Scanlan which can be summarised as follows:

- Concerns are raised in relation to the siting of turbines T1-4.

- Lands will be impacted visually, by noise disturbance and flicker.
- Working dogs will be affected.
- The proposed development will place additional pressure on the submitters lands to accommodate displaced species.
- Lands will decrease in value due to turbines.
- Lands will not be suitable for wind development due to the proximity of the proposed development.
- Submitter's lands will be restricted in plans for rewilding.
- Separation distances to turbines sterilises a significant amount of the submitter's lands.
- Resurfaced roads will bring dog walkers, it is requested that appropriate fencing is erected to prevent dogs from entering the submitter's lands.

Darragh and Deirdre Hogan

A number of issues are similar to those raised above and in the interest of conciseness, such issues will not be repeated hereunder, only new issues raised will be summarised as follows:

- Concerns raised regarding the spread of invasive plant species.
- 3 breeding pairs of hen harrier on mountain.
- Area is known for significant numbers of Woodcock.
- Site is not located in settled landscape.
- Publication has been submitted in relation to the effects of turbines on radars.
- The development will give rise to light pollution
- Flicker effect will be visible at the submitters home which is 2 km away from the site.
- Field boundaries should be reinstated to a high standard.
- Mountain area should be left to animals living within it.

Donal O'Connor

- The proposed development would be contrary to the Clare County Development Plan which seeks to protect the visual landscape around Lough Derg and the Eastern uplands. The submitter resides 2km from the

development site and considers that the proposal would negatively impact the Heritage Landscape around Lough Derg.

- Concerns are raised in relation to noise emissions in an area whereby it is stated there are none at present.
- Concerns are raised in relation to the maintenance of good soil and water conditions at the site.
- EIAR does not adequately address threats to birds.
- An application for the proposed grid connection should be submitted.

Kathleen Horgan and Eamon Cregan

This submission refers to similar issues as outlined above and will not be repeated hereunder. Additional issues raised relate to the emitting of infrasound from the development and impacts to the White-Tailed Eagle.

Michael and Siobhan Cooney

There are no new issues within this submission. Similar issues, in relation to noise, visual impacts, grid connection application, impacts to SAC and protected landscapes, habitats and species and the lack of communication and consultation with the public have been raised as outlined above and will not be repeated hereunder.

Michael McNamara

- The proposed development is materially different to that decided as being SID by the Board, such that it may preclude the Board from making a decision.
- Reference is made by the submitter to case law relating to the removal of any reasonable doubt to the effects of development on European designated sites.
- Current rainfall averages have been assessed in relation to the potential for impacts to arise, the applicant has failed to apply the precautionary principle in failing to consider projected increases in heavy rainfall in the area.
- A peat slide occurred on an adjacent slope in 2003 during the construction of forestry roads.
- No regard is had in the peat stability assessment to the potential impact of additional roads and the upgrading of existing roads.

Noel and Ailish Daly

A number of issues referred to in relation to peat landslides, visual impacts and impacts to European designated sites have been outlined in the foregoing submissions and will not be repeated hereunder. New issues are summarised as follows:

- Development should not be classed as SID as it is for 19 turbines.
- There are three to five pairs of nesting Hen Harrier at the site.
- Peat depths are deep and act as a carbon sink, concerns are raised in relation to a previous landslide during road construction, there are fears that this will happen again.
- Inchlahóg River runs through the middle of the site and is a spawning ground for trout and salmon. This River flows to Lough Derg.
- Turbines will become obsolete and not financially viable to replace, concerns are raised that they will be left in situ as an eyesore when no longer in use.
- Site is in flight path of Shannon Rescue Helicopter, concerns raised in relation to interference with helicopter radar.

Oisin Slattery

- A number of issues referred to in relation to peat landslides, visual impacts, lack of communication with residents and impacts to European designated sites have been outlined in the foregoing submissions and will not be repeated hereunder.
- Concerns are raised in relation to studies which examine the effects of wind turbines on sleep and health.
- Other concerns relate to visibility of the development from 4 no. counties, impact to tourism attractions in the area and the resultant impact to the Clare economy.
- It is stated within the submission that home values will be affected within the wider area of the windfarm.

Oliver Donnellan

A number of issues within this submission have been raised above and will not be repeated. The applicant is concerned that his property will decrease in value as a result of the development and it will also deter hikers from visiting Moylussa.

Paul O'Driscoll and Maria Svensson

A number of issues within this submission have been raised above and will not be repeated. New issues are summarised as follows:

- The proposed development will result in the felling of trees which sequester carbon from the locality. These trees are locally beneficial and the re planting at a different location will not benefit the population surrounding the development site.
- To date a detailed survey of the Slieve Bernagh Bog SAC has not been undertaken to support the conservation objectives, or the qualifying interests. It is not suitable to place a windfarm between three SACs.
- Studies show that wind turbines can have a detrimental impact on health, in many ways.

Piotr Kowalewicz and others

The issues raised are similar to those outlined within the previous submissions and will not be repeated hereunder, no new issues are included within this submission.

Susan McMahon

Issues raised within this submission are outlined above and as such will not be repeated hereunder. The submitter refers to the quantum of concrete to be utilised at the site and expresses concern in relation to the stability of the mountain as a result.

Ute and Conrad Rumberger

- A number of issues raised within this submission in relation to noise, visual impacts, tourism impacts and impacts to habitats and species have been outlined above and will not be repeated hereunder. New issues raised within this submission can be summarised as follows, it is of note that a number of people submitted emails of support with this submission which are attached to the document:
- Concerns are raised in relation to the economic impacts of the proposed development on farmers, it is stated that losses of animals through birth deformities will arise as a consequence of the development.
- Concerns are raised in relation to impacts from use of SF6 in substations.

- Previous reasons for refusal of a windfarm development in 2002/2003 are still valid.
- The applicant failed on this legal obligation to consult.
- Concerns that proposed development is not SID as it is for less than 25 turbines.
- Coillte engaged in numerous meetings over a 12 month period.
- Turbine locations changed prior to submission and moved away from the submitters locality, it is stated that communication with Coillte then stopped.
- A brochure was distributed to households within a 5km radius of the site.
- Townland referred to within the location of development is incorrect and leaves out relevant townlands.
- Permission from the Minister of Culture Heritage and the Gaeltacht is required to carry out works in or adjacent to an SAC/SPA.
- Development site borders a SPA and this is not referenced in the public notices.
- The development is adjacent to pNHAs.
- Concerns are raised about recycling turbines and decommissioning the site.
- Rotors will result in bird deaths.
- Concerns raised in relation to Hen Harrier roosts and badger setts in the area.
- Turbines may cause loss in insect populations.
- Concerns are raised in relation to the use of concrete and the resultant impacts to the hydrological regime of the area and the potential to affect wells.
- Waste water from wheel washes is not addressed in the EIAR.
- Concerns that noise assessments are not accurate and noise will in fact be louder.
- 40dB is proven to cause annoyance.
- Reference is made to a German study whereby it is stated that noise levels at night should not exceed 30dB and windfarms should be located 3km from dwellings.

- Concerns are raised and further reference is made to the impacts of infrasound on animal and human health, behaviour and reproduction. It is stated that the development of wind turbines is a breach of the public's constitutional rights.
- The proposed development would significantly impact daily living in Clare for a number of years, concerns are raised in relation to traffic congestion and the potential difficulties in transporting turbines from Limerick City.
- Concerns are raised in relation to the grid connection and whether it will be underground for its entirety.
- Turbines will be visually obtrusive in the landscape.
- Speed at which rotor stops is inadequate.
- Concerns are raised about the potential loss of income in the locality due to fall in tourism.
- The development will negatively impact job availability.
- It is stated that wind energy does not reduce CO_2 emissions.
- Other windfarm development is referred to within the EIAR, submitter is concerned that the information is a copy and paste from another EIAR.
- Wind will have to be supplemented by nuclear power which is contrary to Irish policy position.
- Solar and tidal energy are suitable alternatives.
- Previous application for 7 turbines refused, reasons are unchanged.
- It is alleged that false promises in relation to compensation were made by Coillte.
- The proposed development will not benefit locally, regionally or nationally in reductions to carbon emissions.
- The submitters request that the application is refused.

<u>Bodyke GAA Club</u>

- Proposed development may assist in the development of the Bodyke GAA club.
- GAA club seek to be the first to be paid by the development as they consider they will be most affected.

Tommy Melody and Michael Moloney

- Bodyke Village is 2.5km from the proposed development and is likely to be the most affected.
- The submission details a number of community projects that should be funded by the Community benefit fund provided by the development and include land acquisition and walking and cycling infrastructure.

Cathal Hogan

- A number of issues raised within this submission have been outlined above and will not be repeated hereunder, new issues can be summarised as follows:
- Concerns are raised in relation to a new road within Bodyke which will dissect the village.
- Access is in close proximity to a national school whereby parking is not available.
- No provision for trees, hedging or planting at boundaries to be reinstated.
- Road and surrounding environment should be reinstated in a widened state.
- No consideration has been given to light pollution at night.
- Concerns raised in relation to the duration that splays will be left cordoned off for.
- Concerns that the L8221 to be changed into a National Primary Route.
- The proposed development will have a significant impact on the character and appearance of Bodyke village.

3.7. **Further Information**

3.8. It is important to note at the outset that further information was requested in relation to Hen Harrier, peat stability and the implications for changes to surface water flows within the site and surrounds. The applicant was also required to provide information in relation to potential implications for instrument flight procedures. Further information was submitted in response to the concerns outlined within the further information request. The further information submitted also included an additional Hen Harrier breeding bird survey which was carried out during the breeding season of 2021 to establish whether hen harrier were breeding at Habitat Improvement Areas A and B. On the basis of an additional survey being submitted, the further information was

deemed to be significant and was re-advertised accordingly. Submissions received in this regard are outlined hereunder.

3.9. Submissions received in relation to significant further information submitted

Clare County Council

- No observations

TII

- No observations

Irish Aviation Authority

- Notify the IAA and ANSD 30 days prior to use of a crane or erection of any object above 45 metres in height.

Nicola Henley

Many of the issues raised within this submission in relation to impacts to tourism, visual amenities, lack of consultation with those residing in excess of 2km from the development, habitats and species have been outlined within the submissions above and will not be repeated hereunder. The submission largely focuses on the potential impact of the development on various bird species. It is noted within the submission that Hen harrier are breeding in the area and are increasing in numbers.

Paul O'Driscoll and Maria Svensson

The issues raised within this submission can be summarised as follows:

- A lot of focus has been placed on Hen Harrier within the further information submitted, concerns are raised in this submission in relation to the presence of red listed birds within the site and the potential for the development to significantly affect these species.
- The location of a windfarm in a bog plantation of Sitka Spruce is not a suitable location.
- It is stated that Coillte held meetings with third parties in relation to the FI request but would not meet residents living in excess of 2km from the development site.
- Slieve Bernagh Bog SAC is three blocks of lands separated by conifer plantations. To date a detailed habitat survey of the SAC has not been carried out to support the conservation objectives of the SAC.

- Concern raised in relation to the health implications of living beside turbines.

Piotr Kowalewicz and others

The issues raised are outlined in the submission above and will not be repeated hereunder.

Raheen Hospital Support Group

- Support the proposed development.

Tuamgraney Development Association

- Support the development

Ute and Conrad Rumberger

- Application should have been refused, it is not fair that the applicant had an opportunity to submit further information.
- A third party objection was delayed by post and not accepted by the Board.
- There are errors on the additional information uploaded to the website, spelling errors, out of date information and unfilled tabs.
- Change of layout to other documents.
- Climate Change is to be valued higher than wildlife.
- The proposed development site is not suitable to a windfarm and the notion that nature will adapt to the development is not plausible.
- The intimation that a wind farm is CO_2 neutral is false.
- The remaining issues raised were raised in the submitters original submission above and will not be repeated.

4.0 **Planning History**

4.1. There is no recently recorded planning history within the development site. However, I note that permission was previously refused in 2003 under appeal ref **ABP 200160** in the general vicinity of the proposed development site for a development consisting of 7 no. turbines, for the following reasons:

1. The site is located on elevated unspoilt ground of significant landscape amenity value in the Slieve Bearnagh range, which is designated in the current Clare County Development Plan as Visually Vulnerable, where it is a requirement that development

should not impinge in any significant way upon the character, integrity or uniformity of the landscape when viewed from such locations and surrounding areas. This designation is considered to be reasonable. The proposed development, by reason of the scale, height and position of the turbines would constitute a visually obtrusive feature in this unspoilt landscape when viewed from a range of near and distant locations including routes designated as scenic routes (28, 29 and 30) in the current County Development Plan, tourist centres such as Killaloe/Ballina and Mountshannon and the East Clare Way walking route. The proposal would, therefore, seriously injure the visual amenities and tourism potential of this area.

2. The proposed development is visible from the surrounding Visually Sensitive landscape, from Designated Routes 28, 29 and 30, and from Lough Derg. It is an objective of the Environmental Sensitivity and Protection policy (2.20) in the current County Development Plan to specifically prohibit development which would be obtrusive when viewed from Lough Derg or which would interfere with views from designated scenic routes. This objective is considered to be reasonable. It is considered that the proposed development would contravene materially this policy objective as it would be visually obtrusive and a prominent landmark clearly visible on the skyline when viewed over a wide area. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.

5.0 Policy Context

5.1. Development Plan

Clare County Development Plan 2017-2023 as varied

- CDP8.40 – 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 CO_2 emissions and the promotion of a low carbon economy.

Volume 5 Clare Wind Energy Strategy

- WES One: Development of Renewable Energy Generation It is the objective of the Council to support, in principle and in appropriate scales and locations, the development of wind energy resources in County Clare. It is an objective

of the Council to ensure the security of energy supply by accommodating the development of wind energy resources in appropriate areas and at appropriate scales within the County.

- The proposed development site is located in a 'settled landscape' as per the Landscape Character Assessment.
- The development site is located in an area identified as being a Strategic Area / Acceptable in Principle' for wind energy.

Southern Regional Assembly RSES 2020

- RPO 99 - Renewable Wind Energy - It is an objective to support the sustainable development of renewable wind energy (on shore and off shore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines.
- RPO 100 - Indigenous Renewable Energy Production and Grid Injection - It is an objective to support the integration of indigenous renewable energy production and grid injection.

Project Ireland - National Planning Framework 2040

The National Policy Position establishes the fundamental national objective of achieving transition to a competitive, low carbon, climate resilient and environmentally sustainable economy by 2050, this will be achieved by harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave and solar.

- NSO 8 Transition to a low carbon economy

It is an objective of the plan to deliver 40% of our electricity needs from renewable sources by 2020 with a strategic aim to increase renewable deployment in line with EU targets and national policy objectives out to 2030 and beyond.

Ireland's Transition to a Low Carbon Energy Future 2015-2030

This document is a complete energy policy update, which sets out a framework to guide policy up to 2030. Its objective is to guide a transition, which sets out a vision for transforming Ireland's fossil fuel-based energy sector into a clean, low carbon system. It states that under Directive 2009/28/EC the government is legally obliged to

ensure that by 2020, at least 16% of all energy consumed in the state is from renewable sources, with a sub-target of 40% in the electricity generation sector. It notes that onshore wind will continue to make a significant contribution but that the next phase of Ireland's energy transition will see the deployment of additional technologies as solar, offshore wind and ocean technologies mature and become more cost-effective.

Climate Action Plan 2021

- Section 4 - Choosing the Pathways which Create the Least Burden and Offer the Most Opportunity for Ireland.

In the power generation sector, increasing onshore and offshore wind capacity are the most economical options from the MACC for electricity production.

Wind Energy Development Guidelines 2006

- Section 5.6 discusses noise impacts, which should be assessed by reference to the nature and character of noise sensitive locations i.e. any occupied house, hostel, health building or place of worship and may include areas of particular scenic quality or special recreational importance. In general noise is unlikely to be a significant problem where the distance from the nearest noise sensitive property is more than 500m.
- Section 5.12 notes that careful site selection, design and planning and good use of relevant software can help to reduce the possibility of shadow flicker in the first instance. It is recommended in that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day. The potential for shadow flicker is very low at distances greater than 10 rotor diameters from a turbine.
- Chapter 6 relates to aesthetic considerations in siting and design. Regard should be had to profile, numbers, spacing and visual impact and the landscape character. Account should be taken of inter-visibility of sites and the cumulative impact of developments.

Draft Wind Energy Development Guidelines 2019

- Chapter 5 – considering an application for wind energy development.
    - A planning authority may consider some if not all of the following matters:
        - Environmental assessments (EIA, AA etc.)
        - Community engagement and participation aspects of the proposal
        - Grid Connection details
        - Geology and ground conditions, including peat stability; and management plans to deal with any potential material impact. Reference should be made to the National Landslide Susceptibility Map to confirm ground conditions are suitable stable for project;
        - Site drainage and hydrological effects, such as water supply and quality and watercourse crossings; Site drainage considerations for access roads/tracks, separate in addition to the impact of the actual turbines management plans to deal with any potential material impact on watercourses; the hydrological table; flood risk including mitigation measures;
        - Landscape and visual impact assessment, including the size, scale and layout and the degree to which the wind energy project is visible over certain areas and in certain views;
        - Visual impact of ancillary development, such as grid connection and access roads;
        - Potential impact of the project on natural heritage, to include direct and indirect effects on protected sites or species, on habitats of ecological sensitivity and biodiversity value and where necessary, management plans to deal with the satisfactory co-existence of the wind energy development and the particular species/habitat identified;
        - Potential impact of the project on the built heritage including archaeological and architectural heritage;

- It is recommended that consideration of carbon emissions balance is demonstrated when the development of wind energy developments requires peat extraction.
- Local environmental impacts including noise, shadow flicker, electromagnetic interference, etc.;
- Adequacy of local access road network to facilitate construction of the project and transportation of large machinery and turbine parts to site, including a traffic management plan;
- Information on any cumulative effects due to other projects, including effects on natural heritage and visual effects;
- Information on the location of quarries to be used or borrow pits proposed during the construction phase and associated remedial works thereafter;
- Disposal or elimination of waste/surplus material from construction/site clearance, particularly significant for peatland sites; and
- Decommissioning considerations.

Notable changes within the draft guidelines relate to community engagement, noise and separation distance.

Noise

- Section 5.7.4 - The "preferred draft approach", proposes noise restriction limits consistent with World Health Organisation Guidelines, proposing a relative rated noise limit of 5dB(A) above existing background noise within the range of 35 to 43dB(A), with 43dB(A) being the maximum noise limit permitted, day or night. The noise limits will apply to outdoor locations at any residential or noise sensitive properties.

Shadow Flicker

- Section 5.8.1 - The relevant planning authority or An Bord Pleanála should require that the applicant shall provide evidence as part of the planning application that shadow flicker control mechanisms will be in place for the operational duration of the wind energy development project.

Community Investment

- Section 5.10 - The Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement issued by the Department of Communications, Climate Action and Environment (December 2016) sets out to ensure that wind energy development in Ireland is undertaken in observance with the best industry practices, and with the full engagement of communities around the country.

Visual Impact

- Section 6.4- Siting of Wind energy projects.

Set back

- Section 6.18.1 Appropriate Setback Distance to apply - The potential for visual disturbance can be considered as dependent on the scale of the proposed turbine and the associated distance. Thus, a setback which is the function of size of the turbine should be key to setting the appropriate setback. Taking account of the various factors outlined above, a setback distance for visual amenity purposes of 4 times the tip height should apply between a wind turbine and the nearest point of the curtilage of any residential property in the vicinity of the proposed development, subject to a mandatory minimum setback of 500 metres.
- Policy SPPR 2 – Set back.
- Section 6.18.2 Exceptions to the mandatory minimum setbacks - An exception may be provided for a lower setback requirement from existing or permitted dwellings or other sensitive properties to new turbines where the owner(s) and occupier(s) of the relevant property or properties are agreeable to same but the noise requirements of these Guidelines must be capable of being complied with in all cases

Guidelines for Assessment of Ecological Impacts of National Roads Schemes, NRA, 2009

- Section 3.3.1 Geographic context for determining value

5.2. Natural Heritage Designations

- Slieve Bernagh Bog SAC abuts the boundary of the proposed development site on all sides.

- Lough Derg (Shannon) SPA is located c. 4km to the east of the proposed development site.
- Lower River Shannon SAC is located c. 7.4km to the southeast of the proposed development site.
- Slieve Aughty Mountains SPA is located c. 8km to the north of the proposed development site.

5.3. EIA Screening

5.3.1. Schedule 5 of the Planning and Development Regulations, 2001 (as amended) transposes Annex I and II of the EIA Directive and sets out prescribed classes of development, for which an environmental impact assessment is required. The following classes are noted:

5.3.2. Part 2 (3)(i) Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts.

5.3.3. An EIAR has been submitted by the applicant and is examined hereunder.

6.0 Assessment

6.1. In the interest of clarity, it is important to outline at the outset that significant further information has been received by the Board in relation to the proposed development. This significant further information shall be assessed under the relevant headings within the Planning Assessment, EIAR and Appropriate Assessment Sections of this report hereunder. Having reviewed the information submitted and having carried out a site inspection, I consider that the main issues before the Board relate to the principle of development, Residential Amenity, Shadow Flicker, impacts to Shannon Airport, EIAR and Appropriate Assessment. It is of note that many issues within the EIAR and NIS would also be considered within the planning assessment. In the interest of clarity and to avoid unnecessary repetition it is recommended that the planning assessment which will examine the principle of development, shadow flicker, Shannon Airport and any impacts to residential amenity and should be read in conjunction with the EIAR and NIS. It is also important to state at the outset that, as outlined above, there are a number of submissions in relation to the proposed development. Issues raised within

these submissions will be considered under the relevant heading hereunder and reference to specific submissions will be limited to prevent repetition. The individual submissions have been summarised within section 3.5 and 3.6 above for ease of reference. It is important to note at the outset that concerns have been raised within the submissions received in relation to the consultation process carried out by the developer. I have reviewed the applicant's public notices and public website in which all documentation associated with the proposed development is available. I also note that consultations were carried out in the form of meetings and information leaflet drops to properties. Having regard to the document submitted and the advertisements provided I am satisfied that the applicant has adequately complied with the requirements as set out within the Planning and Development Regulations 2001, as amended.

6.2. Having regard to the foregoing the proposed development will be considered under the following headings:

- Principle of Development
- Residential Amenity / Shadow flicker
- Impact to flight procedures – Shannon Airport
- EIAR
- Appropriate Assessment

Principle of Development

6.3. A seen from the policy provisions outlined above, it is clear that there is a positive presumption in favour of renewable energy projects at National, Regional and Local levels. This is reflected in the Wind Energy Development Guidelines for Planning Authorities, 2006, the Regional Spatial and Economic Strategy for the Southern Region and the Clare County Development Plan 2017-2023, as varied. Whist I note that the current Development Plan has an overriding objective 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, of particular relevance to the proposed development is the identification of the proposed development site within Volume 5 Wind Strategy of the current Clare County Development Plan in which the proposed development site is within an area identified as a Strategic Area / Acceptable in Principle for wind energy.

6.4. The identification of such areas within the plan is said to be based on the capacity of the landscape to absorb wind development and indicates the scale of wind farm developments that may be acceptable within a LCA in terms of cumulative impacts. The north western slopes of the Slieve Bernagh hills which is the location for the proposed development is considered to have a low sensitivity to wind farm developments and is considered within the WES to have the capacity to accommodate large windfarms as per Section 1.4 of the WES.

6.5. Thus, having regard to the overriding policy provisions at a national and regional level and the specific wind related local policies which apply specifically to the area within the proposed development site, it is clear that the principle of the proposed development is accepted, however, impacts on the environment and the amenities of the area and local residents will require examination in order to determine the overall suitability of the proposed development.

Residential Amenity / Shadow Flicker

6.6. With regard to the potential for impacts to arise in relation to residential amenities, it is considered that such impacts relate to issues such as noise disturbance, traffic generation, dust pollution, visual impacts and shadow flicker. It is important to note that examination of noise, traffic and dust will be examined in detail within the EIAR hereunder and will not be repeated hereunder. I note that submitters have raised concerns in relation to the potential for impacts to arise in relation to property values in the vicinity of the windfarm and note in this instance that properties are in excess of 500 metres from the proposed development site. Property value is not an issue that the Board can finally determine and as such this issue will be considered within the general context of residential amenities.

6.7. With regard to shadow flicker, I note that the Wind Energy guidelines 2006, recommend that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day. It is stated within Section 11 of the EIAR submitted that there are no houses within 1km of the proposed development, the scope of the assessment extends to 10 rotor diameters or 1.36km. There are 4 properties within the 10 rotor diameter study area where shadow flicker could occur (H36, H43, H44 and H45). Currently two of these are habitable (H36 and H43). H44 and H45 are currently uninhabitable and unoccupied. It is stated that there

is a stand of conifer trees obstructing the line of sight between the wind farm and any potentially impacted window of H43.

6.8. The results of the model show that shadow flicker thresholds may potentially be exceeded at properties H43 and H44 (uninhabitable). Shadow flicker is predicted to occur in the east and south windows of H43. However, the model cannot account for the stand of conifer trees obstructing the line of sight from these windows therefore the results are theoretical and in reality, will be lower if shadow flicker can be experienced at all. When average sunshine hours (27%) are accounted for, the shadow flicker reduces to well below the 30 hours per year threshold value at all locations.

6.9. The theoretical worst case scenario predicts 64 minutes flicker for H43 (south facing window which is currently screened) and 52 minutes for H44 (unoccupied).

6.10. A range of mitigation measures to maintain shadow flicker below the guideline thresholds are proposed by the applicant which include the provision of landscaping and other vegetative screening. Alternative measures could also include the shutting down of turbines by preprograming turbines to automatically stop in certain weather conditions.

6.11. Based on the information submitted I am satisfied that shadow flicker can be adequately mitigated and will not significantly impact properties in the vicinity.

Impact to light procedures– Shannon Airport

6.12. Shannon Airport DAC, in their submission to the proposed application refers to the potential for impacts to arise in relation to flight procedures, flight checking and any potential impact on communication, navigation and surveillance equipment. Concerns were also raised in this regard by third parties. In response to these concerns the applicant submitted further information in which it is stated that they received a list of approved contractors from the Irish Aviation Authority (IAA) for the work and consulted with both Shannon Airport and the IAA on the scope of the assessments.

6.13. Two assessments were ultimately carried out, including an assessment to establish any adverse effect the proposed wind farm may have on flight inspection procedures and profiles associated with the Shannon Airport Runway 24 Instrument Landing System (ILS) and a Technical Safeguarding Assessment for the proposed

Carrownagowan wind farm development. The study addressed the potential impact the proposed development may have on the Shannon Airport Instrument Landing System (ILS) and the Woodcock Hill Monopulse Secondary Surveillance Radar (MSSR).

6.14. I note that results of the FCSL assessment state that the proposed Carrownagowan Wind Farm will have no adverse effect on flight inspection procedures and profiles associated with the Runway 24 ILS.

6.15. The result of the additional assessment required found that the proposed wind farm will not pose a risk to aircraft approaching or departing from either runway at Shannon Airport. No further modelling was therefore deemed necessary and no mitigation measures are considered necessary for the Woodcock Hill MSSR.

6.16. A full IFP was also carried out as referred to within the Shannon Airport submission and it was determined that the wind Farm has no impact to the currently published IFPs for Shannon Airport.

6.17. Based on the information submitted, I am satisfied that the applicant has adequately addressed the concerns raised by Shannon Airport and note that a letter from Shannon Airport stating same was issued to the applicant.

7.0 Environmental Impact Assessment

7.1. The application is accompanied by an Environmental Impact Assessment Report (EIAR) which was prepared by Malachy Walsh and Partners on behalf of the applicant. This EIA section of the report should, where appropriate, be read in conjunction with the relevant parts of the Planning Assessment above.

7.2. The application falls within the scope of the amending 2014 EIA Directive (Directive 2014/52/EU) on the basis that the application was lodged after the last date for transposition in May 2017. The application also falls within the scope of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, as the application was lodged after these regulations come into effect on 1st September 2018.

7.3. The impact of the proposed development is addressed under all relevant headings with respect to the environmental factors listed in Article 3(1) of the 2014 EIA Directive.

The EIAR sets out a case regarding the need for the development (Section 2.1). The EIAR provides detail with regard to the consideration of alternatives in Section 4. An overview of the main interactions is provided at Section 16. Details of the consultation entered into by the applicant with Clare County Council and other prescribed bodies as part of the preparation of the project are also set out in a separate document contained within the appendices of the EIAR.

7.4. Article 3 (2) of the Directive requires the consideration of the effects deriving from the vulnerability of the project to risks of major accidents and / or disasters that are relevant to the project concerned. The potential for 'unplanned events' is addressed within the relevant sections of the EIAR.

7.5. The potential for 'flooding' is considered in Section 8 Water. I consider that the requirement to consider these factors under Article 3(2) is met.

7.6. In terms of the content and scope of the EIAR, the information contained in the EIAR generally complies with article 94 of the Planning and Development Regulations 2001, as amended, all studies informing the EIAR are up to date and recently acquired. Additional pre-construction surveys will be required in order to provide up to date information in relation to invasive species, mammals, bats and birds, however such issues can be adequately dealt with by condition. It is of note that an additional breeding bird survey was carried out in 2021 and submitted as part of the significant further information received.

7.7. It is important to note at the outset that the proposed development under consideration within this application does not cross international boundaries and as such the need to consider transboundary effects does not arise.

Alternatives

7.8. The consideration of alternatives is outlined within Section 4 of the EIAR submitted and includes the consideration of alternatives in relation to site selection, alternative designs, alternative processes and a do-nothing scenario. It is stated that some alternative locations were eliminated by Coillte in the early stages of site selection as the goal for this project was to deliver a large-scale wind farm in the range of (100 – 150MW) and a number of sites within their ownership do not have the capacity for such a development. Further sites were discounted under a number of criteria such as being within European designated sites, national parks or having existing wind

development. In selecting sites Coillte reviewed relevant Development Plan and Renewable Energy Strategy provisions for these potential sites and only included sites characterised (at a minimum) “open for consideration” for wind farm development or with more favourable zoning of “acceptable in principle” or “strategic for wind development”. Sensitivity in terms of visual impacts, peat stability, proximity to residential areas, tourist areas and scenic areas were additional criteria utilised to define the site location.

7.9. As part of the site selection process, it was necessary to also consider the potential for grid connection, including in terms of distance to potential connection nodes and the grid capacity at the nodes, in the local area, to accommodate the connection.

7.10. 5 sites were ultimately selected for further analysis and to be brought forward for development with the proposed site emerging as the preferred site at the end of the selection process.

7.11. I note from section 4.3.5 of the EIAR submitted that a total of 12 options were considered for the proposed grid connection. The proposed grid connection route emerged as the preferred option as there is less environmental effects involved in utilising the existing road network.

7.12. In terms of the alternative design, it is stated within Section 4.4 of the EIAR that the EIA process involved the completion of all baseline studies to generate environmental constraints that informed the design for the optimum wind farm layout. It is further stated that the design process is an iterative process, resulting in the assessment of numerous design iterations (or revised designs) to ensure the identified environmental and engineering constraints are applied to successive layout designs. Table 4.5 of the EIAR outlines the physical and environmental sensitivities and resultant design constraints of the proposed development. It is stated that the original layout provided for a 31 turbine development which has been reduced through the design process to a total of 19.

7.13. Alternative access roads and the associated construction methodology are discussed in Section 4.5.2 of the EIAR and a comparison of environmental effects of the alternatives is presented within table 4.7 of the report. Similarly alternative turbine delivery routes are examined in Section 4.5.2.2 and a do-nothing scenario are considered within Section 4.5.2.2 of the EIAR.

7.14. Overall it is clear from the information submitted that the proposed project has been developed through an iterative process which sought to avoid or reduce potential environmental effects through options appraisals and evaluation whilst having regard to consultations and feedback from a range of bodies, agencies, landowners and the public.

7.15. In my opinion reasonable alternatives have been explored and the information contained in the EIAR with regard to alternatives provides an adequate justification for the site, layout, construction methodology and grid connection route chosen and is in accordance with the requirements of the 2014 EIA Directive.

Population and Human Health

7.16. Chapter 5 of the EIAR submitted addresses population and human health. Effects of the construction, operation and decommissioning of the wind farm development in terms of how the proposal could affect population and settlement, economic activity, employment, land use, amenities and tourism, and health and safety are addressed. The Study Area for the purpose of this assessment on Population and Human Health primarily focuses on the local receiving human environment in the vicinity of the wind farm development, including the nearby access route. These include those who reside, work, visit, or use the local road networks in the general area. The grid route is also considered where appropriate within this section of the EIAR.

7.17. With regard to the receiving environment, as outlined above the proposed windfarm development is located in a rural upland area which is sparsely populated, and the grid connection will largely follow public roads to its final destination at Ardnacrusha substation. The nearest urban settlements to the site of the proposed wind farm are the town of Killaloe/Ballina approximately 7km to the south east, and the villages of Bodyke approximately 2.5 km to the north and Broadford approximately 4 km to the southwest.

7.18. I note from Section 5.3 of the EIAR submitted that there are 3 residences (only one of which is occupied) approximately 1km to the nearest proximal wind turbine and approximately 30 residential dwellings within approximately 1-2km of the site. I further note that census data indicates that the area on a whole is experiencing a decline in population. While there are no tourist attractions pertaining specifically to the site of

the proposed wind farm development, there are a number of recreational and cultural amenities in the wider area.

7.19. In term of impacts arising from the proposed development the project is unlikely to have a significant effect on population numbers of the area and there will be no loss of residential dwellings or displacement of the existing population. Overall, throughout construction, operation, and decommissioning, it is expected that the development will have a neutral impact on population numbers.

7.20. During the construction and operational phases, it is predicted that there will be positive impacts on the local economy due to direct and indirect job creation, the proposed construction duration is expected to last 18 months and will employ 100 people. It is also expected that the operational stage of the proposed development would bring added benefit to the local community through the provision of a community benefit fund. This fund would assist local communities to enhance and/or maintain a range of amenities and services for residents in the local towns, villages and surrounding hinterland, which in turn would help sustain existing population levels in the area.

7.21. In terms of amenities there will be no severance, loss of rights of way or public amenities during the operational phase. The improvements to the on-site forestry tracks would provide opportunities for further development and use of some the forest areas for recreation. Therefore, whilst I acknowledge third party concerns relating to recreation I am satisfied that there will be no significant negative effects on potential recreational use.

7.22. The land-use along the grid connection comprises mainly transport, and surrounding land use is mainly agriculture and residential. The grid connection construction works, estimated to be 10 months, will require a road opening licence and temporary traffic management measures along the grid route, including alternating one-way stop/go traffic and temporary road closures with local diversion routes. This will result in disruption to existing traffic and access for local landowners and property owners/residents in the vicinity of the route. The active construction area for the grid connection will be small, ranging from 100 to 200 metres in length at any one time, and it will be transient in nature as it moves along the route.

7.23. The grid connection construction works will therefore have a temporary moderate short-term negative impact for road users and local landowners and property owners/residents in the vicinity of the route. Once in place, the grid connection will not affect existing or further land uses.

7.24. While there is the potential for construction related hazards, serious risks to human health and safety are not envisioned. During construction and decommissioning the site will be managed in accordance with the following safety and health regulations and guidelines which will ensure a high standard of safety both for workers on site and the general public.

7.25. Overall, it is not expected that the Project will result in significant effects resulting in the risk of major accidents and disasters, nor is the project considered vulnerable to risks of major accidents and disasters including fire which has been raised within the submissions received.

7.26. Impacts on health and wellbeing arising from effects of the construction and operation phases of the development specifically in relation to noise, dust and soil material removal and movement operations are considered and discussed under the respective headings of the EIAR.

7.27. Residual impacts on human health and population are not anticipated provided that the proposed mitigation measures are fully implemented. Shadow flicker has been modelled and exceedances of 3 hours in relation to flicker in excess of 30 hours per year are expected, as a result a shutdown system will be installed to prevent any adverse impacts in this regard, I note that the threshold of 30 minutes per day is not exceeded. I note concerns raised within the submissions received in relation to light pollution and note that a warning light system is required for the safety of aircraft. Whilst lighting will also be required at the substation to facilitate access I am satisfied, given the distance of the proposed development from the nearest dwellings that significant light pollution will not arise.

7.28. I have considered all of the written submissions made in relation to population and human health and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on population and human health can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures and with suitable conditions. I am therefore satisfied

that the potential for direct or indirect impacts on population and human health can be ruled out. I am also satisfied that cumulative effects, in the context of existing wind development in the surrounding area and other existing and proposed development in the vicinity of the site, are not likely to arise.

Biodiversity

7.29. Section 6 of the submitted EIAR assesses and evaluates the potential for significant impacts on biodiversity. The impact of the proposed development on European sites is addressed in detail in Section 8 of this report. It is important to note at this juncture that the proposed development is surrounded by and in some areas directly abutting the boundary of the Slieve Bernagh Bog SAC. The site comprises a total land area of 749.69ha which principally consists of conifer plantation, bogland, cutover bogland, and improved grasslands. A 15km ecology survey radius was applied to the site for the desk based studies. The study area includes all lands within the red line boundary and grid route, as well as the adjacent habitats and downstream watercourses ecologically connected to them. The potential ZOI, encompassed the study area, and the full extent of surface water catchments to their coastal outfalls, including the designated sites and Features of Interest which are hydrologically connected to the development site and gird route.

7.30. It is important to note at the outset that the risk of water pollution to other nearby European sites can be excluded due to the mitigation measures proposed and the separation distance from the proposed development site to these sites.

7.31. While the potential for effects on the qualifying interests of these sites is remote due to the level of separation in some instances and mitigation measures proposed, it is necessary to dispel any reasonable scientific doubt that may exist. The NIS Report submitted considers the potential for effects on the aforementioned SACs and SPA both individually or in combination with other plans or projects and considered that the risk of significant effects is unlikely.

7.32. In response to concerns raised by the Department of Culture, Heritage, and the Gaeltacht, the applicant has submitted an up to date breeding bird survey which

investigates concerns raised in relation to breeding Hen Harrier on proposed improvement lands. I note that no breeding pairs have been recorded during this survey. Impacts to Hen Harrier are examined in detail within both Section 7 of the EIAR which specifically examines effects to Ornithology and the Appropriate Assessment section of this report hereunder.

7.33. I am satisfied, based on the information submitted with the file and discussed within the Appropriate Assessment section below, that the applicant has adequately demonstrated beyond reasonable scientific doubt that the proposed development would not adversely affect the integrity of these SPAs and SAC in view of these sites Conservation Objectives.

7.34. Potential impacts on biodiversity associated with the proposed development include loss of habitat and disturbance or displacement of species. It is important to note at this juncture that impacts effecting the hydrological regime of the area are examined in section 8 of the EIAR and an assessment of the impacts on relevant habitat will be assessed in further detail under this heading below.

7.35. The assessment of impacts is supported by an ecological assessment, a desk top study was carried out and field surveys were completed between July 2018 and November 2019 to provide comprehensive overview of the baseline ecology in the study area. Relevant sections of the study area were re-surveyed in January, and April 2020 and as mentioned above additional breeding bird surveys were carried out in 2021. Detailed targeted surveys were carried out for bats, habitats, mammals, invasive species and invertebrates owing to the features and locations of potential ecological significance.

Habitats

7.36. With regard to habitats recorded on site, I note that the dominant species of woodland is Sitka Spruce, Lodge pole pine and Larches. It is stated that the development site has been planted for commercial forestry and diverse flora is therefore absent.

7.37. A number of habitat types including recently felled woodland, Oak-hollywood land, mixed conifer, mixed broadleaved and riparian woodland are present within the study area and have been examined. I note that none of these habitat types correspond with Annex I habitat due to the quality or constraints of the land in and around these areas. In addition a section of bog woodland is present outside of the development boundary

and merges with conifer woodland to the southeast and failed conifer encroached by willow scrub from a water logged western margin of the conifer plantation. This area due to the nature of the surrounding woodland and the quality of the bog woodland present does not correspond with Annex I habitat either.

7.38. Hedgerows and treelines are considered to have local ecological importance for foraging and commuting and resting habitat for fauna.

7.39. Upland Blanket bog occurs in two areas within the site, to the east of T17 and to the west of T16. The blanket bog occurring to the west of T16 has been reduced in depth and the installation of drainage ditches to some extent has resulted in the regeneration of wet heath from the original blanket bog.

7.40. It is stated that blanket bog has been degraded as a result of forestry operations at the site. Both areas occurring within the wind farm site boundary are surrounded by conifer plantation. A large proportion of the peat mass remains, however the drainage ditches have altered the hydrology in these areas. Deep drains have been installed along all the margins of this habitat type, and sometimes overgrown internal drains (sometimes deep, with water flow still present during surveys), bisect through this habitat type. Sphagnum mosses, including red bog moss (sphagnum capillifolium), occur in pockets, and are best described as rare to occasional on this habitat type. During surveys, the scarcity of hollows, and absence of standing water, or pools were noted. Sitka spruce saplings are encroaching into this habitat type, and a number of individual Rhododendron (Rhododendron ponticum) plants occur. All Upland Blanket Bog within the red line boundary is evaluated as County Importance. Areas of Wet Heath are stated to not correspond with Annex I habitat.

7.41. An area of raised bog is present within the development site, the habitat type is not Annex I. The habitat type does contain significant areas that support species of active raised bog or degraded raised bog capable of natural regeneration. This area of bog has been significantly impacted by peat harvesting and continues to be impacted by on-going forestry drainage. Therefore, this habitat type has been evaluated as County Importance. Favourable stripped humid areas to support the Annex I type habitat do not occur.

7.42. With regard to cutoverbog, small isolated sections of this habitat type occur throughout the site, mainly occurring in areas of one time blanket bog that was drained for forestry, or cutaway as a result of peat harvesting, resulting in shallow peat depths.

7.43. The wet grassland habitat type occurring within the wind farm site boundary has come about as a result of the modification of peatland habitats, and the associated agricultural activities. The species recorded and the associations with wet heath correspond to the community type 'Molinia caerulea – Potentilla erecta – Agrostis stolonifera grassland', a species poor wet grassland type as defined by the National Vegetation Classification. The wet grassland habitat type occurring within the site boundary does not correspond to the EU Habitats Directive Annex I habitat.

7.44. In conclusion it is clear from the information submitted and surveys undertaken that there is no Annex I habitat present within the development site as habitats have been interfered with to such an extent that the quality of habitat is poor or occurs in areas whereby conditions are not suitable for such habitats to thrive beyond the current state.

7.45. Further to Section 6.2.4.3 of the EIAR I note that an invasive plant species report is included within Appendix 6-9 of the EIAR in which it is stated that a number of invasive plant species including the following have been recorded at the proposed development site and along the grid connection route:

- Himalayan Knotweed
- Rhododendron
- Japanese knotweed
- Giant Rhubarb

7.46. The location of these species is identified on Figure 6-18 of the EIAR. Management measures for such invasive species are outlined in Section 5 of the Invasive Species Report and based on such measures such as the installation of exclusion zones, the use of appropriately qualified personnel to remove contaminated soils where required and the disposal of such soils at licenced facilities. I am satisfied based on the information provided that the proposed development will not give rise to the spread of invasive species and is therefore acceptable in this regard.

Species

7.47. The wildlife trail camera survey recorded pine marten, badger, fox, and deer. Pine marten were the most common species detected, followed by deer and badger. Whilst badger utilise the site I note that no badger setts were identified during surveys at the study area. Mammal trails were followed, they did not divert into the conifer, but were a continuous, well defined trail around the margin of the field area.

7.48. Pine marten were recorded at 2 of the 5 locations where wildlife cameras were deployed across the site. During targeted surveys in suitable habitat for this species, no breeding pine marten was recorded in these suitable areas.

7.49. Red squirrel was recorded on a number of occasions within and outside the site boundary of the proposed development site. During targeted transect surveys in suitable habitat such as conifer plantation, no breeding sites were observed. The project site is suitable for this species, and they are known to occur in the study area.

7.50. It is concluded within the mammal report that the non-volant mammal species recorded in the study area were pine marten, badger, red squirrel, Irish mountain hare, Red deer, Sika deer, and fox. The forestry and surrounding habitats provides suitable breeding and foraging habitat for all species recorded. While not observed during surveys, it is stated that pygmy shrew, and stoat may be using the site owing to the suitability of the habitats present however, while undertaking surveys in suitable habitats for the aforementioned species, no breeding sites such as setts, holts, dens or dreys were observed in the project footprint.

7.51. In terms of bat activity within the site it is stated within the bat surveys included within the appendices of the EIAR that common pipistrelle, Leisler's bat and soprano pipistrelle maintained a consistent presence at the site albeit at highly variable rates. The levels of activity recorded strongly suggest that the proposed development site is within the foraging range of local populations of these species albeit with low levels of activity indicative of an area at the upper, in terms of elevation, and least used limit.

7.52. On the basis of the numbers of vocalisations recorded, it is concluded that brown long-eared bats and species from the genus Myotis use the site somewhat sporadically. Therefore, while the site is within the extended foraging range of local populations of these species the level of use is indicative of occasional use and not consistent with those expected within the core foraging range.

7.53. With regard to lesser horseshoe bats, on the basis of the numbers of vocalisations recorded and in light of the number of SPs where it was recorded it is concluded that this species' use of the site is rare and the site is not within the core, or extended, foraging range of the local population of this species. The individuals recorded are considered to be vagrants hunting or commuting through the site outside their core foraging grounds.

7.54. Watercourses within the surrounding area of the site were surveyed to determine the fish species and habitats present. The watercourses within the site boundary are elevated and drain predominantly peaty soils. Within the streams surveyed, a relatively small proportion of the riverine habitat was classified as suitable for salmonid spawning.

7.55. I note that sampling results indicated that all feeding groups of macroinvertebrates were present at most study sites i.e. shredders, collectors, grazers and predators. This suggests that watercourses in the study area are reasonably healthy, as stream impairment may be indicated when one or more feeding groups are missing from a stream. No non-native aquatic species were recorded within the study area.

Potential significant effects

7.56. The construction phase of the development will give rise to effects including habitat loss, disturbance/displacement of species, pollution of rivers and streams draining the site and the spread of invasive species.

7.57. With regard to the delivery route impacts will arise in relation to vegetation clearance and removal of 2.3km of hedgerow and treeline, disturbance and displacement due to construction activities. The proposed grid connection has the potential to give rise to river pollution at stream crossing locations.

7.58. It is of note that the applicant refers to replacement forestry lands within the application, the felling and replacement of forestry is subject to the provisions of the Forestry Act and associated regulations and are not a matter the Board can finally determine except with respect to the baseline existing environment and if of relevance, cumulatively.

7.59. Section 6.8.1.1 of the EIAR submitted states that the design phase of the proposed project has avoided the habitat loss of better quality bogland habitat. The proposed

turbines are not located in habitats that are evaluated as Local Importance (Higher Value), or higher. There was one exception to this; T1 requires 0.9ha loss of cutover bog which has been conservatively evaluated as Local Importance High Value. The proposed delivery route will require habitat loss of hedgerow and treeline of 2.3km, and loss of 0.05ha of semi natural woodland. Both these habitat types have been evaluated as Local Importance (Higher Value). I note that the proposed grid connection is confined to public road. There shall be no requirement for hedgerow clearance.

7.60. Areas whereby habitat within the windfarm site is suitable for rare and protected flora species are avoided within the proposed development layout. Along the cable route it is stated that watercrossing points have the most potential for effect through water quality impacts. Noise disturbance is not considered to be significant in the context of the construction works along public roads. Terrestrial fauna utilising the habitats adjacent to the grid route are accustomed to vehicular traffic, and agricultural activities. In addition, the hedgerows and treelines occurring along the route will not be removed to facilitate the grid route construction.

7.61. Table 6-14 of the EIAR outlines the potential impacts on faunal species in which effects are stated to range between moderate to imperceptible. No significant effects are expected to arise as a result of the proposed development based on the baseline conditions carried out and referred to above. Impacts to fish life such as salmon is considered to be slight to moderate given the distance from the site.

7.62. With regard to the operational stage of the development it is stated that the main operational impacts of the proposed project will arise from the rotation of the blades of the proposed 19 wind turbines and, to a lesser extent, from occasional movement of maintenance vehicles and site personnel along access roads, and at turbine locations. Overall, I note from Section 6.8.3.1 that significant effects are not anticipated.

7.63. Operation of the development will not result in any habitat loss and impacts arising from pollution by way of fuel spillages are not expected due to the limited use of plant and machinery during this phase. With regard to bats it is anticipated that once the construction phase ceases, any Key Ecological Receptors temporarily displaced during the construction phase are expected to utilise the habitats in the vicinity of the proposed works, shortly after the construction phase ceases. During the operational

phase, there may be some slight disturbance owing to noise and human activity arising from periodic maintenance. With regard to the potential for collisions with bat species I note that most bats do not migrate at high altitude and rarely fly at heights that intersect with the blades.

7.64. It is further stated within the EIAR that the wind farm is situated in an ecological setting where all of the characteristics that are conducive to high and sustained levels of bat activity are abundantly available in the area extending away from the proposed wind farm site, which is dominated by conifer woodland. As a result the site is of less significance to foraging bats than the diversity of habitats that surround it. While bats from certain species were recorded relatively consistently, the levels of site usage were, even at the highest recorded levels, extremely low. Therefore, a significant negative collision effect is not predicted. The unmitigated collision risk for all bat species is considered a Long-term Slight Negative Effect. I note that for the same reasons outlined, the magnitude of effects in relation to barotrauma is similarly a slight negative effect.

7.65. Impacts to water quality and aquatic species arising from the operational phase are expected to be slight to imperceptible.

7.66. It is important to note that the range of potential impacts identified above are in the absence of mitigation measures being implemented.

7.67. Effects arising from the decommissioning of the development are expected to be similar to the construction phase of the development. It is stated that at the end of its operational life of 30 years, a comprehensive reinstatement proposal, including the implementation of a programme that details the removal of all structures and landscaping, will be submitted to the Clare County Council for agreement prior to the decommissioning work.

7.68. Section 6.8.6.2 of the EIAR considers the potential for cumulative effects to occur, It is stated within this section that agriculture, peat harvesting and forestry has resulted in a loss of upland blanket bog and other peatland habitats such as wet heath. Now, large areas of the remaining bog and peatland habitats are controlled by designations and regulations which manage the activities undertaken that can impact these habitat types. The proposed project has actively avoided bog and peatland habitats by excluding them from the developable area during early constraints analysis at the site.

Therefore, the potential for significant cumulative habitat loss effects with on-going land management practices will not arise.

7.69. The main potential for cumulative effects is through poor water quality impacts in-combination with the existing threats and pressures in the catchment area from sources including other developments, agriculture and forestry.

Mitigation

7.70. Section 6.9.2 of the EIAR outlines the mitigation measures proposed in relation to biodiversity and refers to the preparation of a Construction and Environmental Management Plan and the employment of an environmental manager/ecological clerk of works to oversee the implementation of all mitigation measures specified within the CEMP. I draw the Board's attention to appendix 3-1 of the EIAR which contains said CEMP. I note section 4 of the CEMP sets out mitigation and site management proposals which seek to protect the surrounding environment from adverse effects.

7.71. Measures include the use of bunded areas for fuel storage, interceptor drains to collect run off from tree felling activities, the carrying out of preconstruction surveys to determine up to date site conditions in terms of invasive species, mammals, bats and habitats etc. Best practice will be adhered to should any protected species be encountered and require relocation. Invasive species will be managed or removed in accordance with the Invasive Species Management Plan submitted and contained in Appendix 6-9 of the EIAR. All plant and materials imported to the site will be screened for invasive species and will be thoroughly cleaned prior to leaving the site. It is important to note at this juncture that concerns are raised within the third-party submissions outlined above in relation to the spread of invasive species. I am satisfied that the mitigation measures proposed by the applicant will prevent such spreads from occurring.

7.72. The development site will be clearly demarcated to avoid encroachment of lands outside the development boundary, the use of bog mats will be employed to protect vegetation, and the use of roadside drains will prevent erosion of adjacent lands from surface water runoff. It is also proposed to install collection drains, check dams, the use of low gradient drains, buffered outfalls and settlement ponds. Mitigation in relation to water quality will be discussed in more detail within Section 8 hereunder.

Nonetheless it is important to note that mitigation proposed in this regard seeks to protect aquatic life within the rivers and streams connected to the development site.

7.73. Removal of vegetation will occur outside of the restricted period in order to protect bird species. Where peatland vegetation is of good quality it will be removed and reused within the site. These areas shall then be temporarily fenced off and allowed to regenerate naturally. No fertiliser or herbicide shall be applied to the lands and potential scrub encroachment will be monitored and appropriate measures adopted if required to manage any potential encroachment.

7.74. Buffers in excess of 50 metres will be provided for between woodland and the proposed development to protect habitats and species within the woodland areas. Lighting will be avoided where possible. Where lighting is required, directional lighting will be used to prevent overspill on to forestry edges.

7.75. It is also proposed to carry out a 3 year monitoring programme will be carried out to monitor bat populations in the area.

7.76. All of the aforementioned mitigation measures are common practice and known to be effective. I am therefore satisfied that the mitigation measures proposed within the documentation provided will be effective in the mitigation of effects. I note that it is contended within the EIAR that provided all mitigation measures are implemented in full and remain effective throughout the construction operational, and decommissioning phase of the proposed project, no significant residual impacts on the Key Ecological Receptors are expected from the proposed project. Table 6-18 of the EIAR submitted outlines predicted residual effects, it is clear from this table that the predicted magnitude of residual effects ranges from imperceptible to slight.

7.77. I have considered all of the written submissions made in relation to biodiversity and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on biodiversity can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures or with suitable conditions. Potential for direct or indirect impacts on biodiversity can be ruled out. I am also satisfied that cumulative effects, in the context the proposed grid connection and other existing and proposed development in the vicinity of the site, are not likely to arise.

Ornithology

7.78. Section 7 of the EIAR submitted examines the potential for impacts to arise in relation to Ornithology. It is important to state at the outset that a number of concerns were raised within both the submissions from prescribed bodies and third parties in relation to the presence of breeding Hen Harrier in the locality and the potential for the proposed development to displace these species within a 1 km radius of the development. I note at the outset that the proposed development site is located in a Non-Designated Regional Zone for Hen Harrier and is c. 8km south of the Slieve Aughty Mountains SPA which is designated for Hen Harrier and Merlin.

7.79. The DAU in their submission raised a number of concerns in relation to the displacement of breeding Hen Harrier within 1km of the proposed wind development and the viability of habitat enhancement areas. Concerns in relation to collision risks were also raised, as was the extent of the cumulative assessment which is recommended to cover a 20km radius.

7.80. In order to establish the potential for impacts to arise in relation to birds it was necessary to establish the baseline conditions of the site and surrounds. A desktop survey was undertaken, documents and mapping are referenced in Section 7 of the EIAR. The development site was viewed within the bird sensitivity spatial tool and is largely within an area identified as a 'Low Sensitivity Zone'. Moderate sensitivity zones are located towards the eastern part of the site and there are no highest sensitivity zones within the site. It is important to note that this tool is merely an indicator of sensitivity and is not relied on to any significance within the assessment.

7.81. I note from Section 7.3.2.5 of the EIAR that breeding pairs of Hen Harrier declined within the Slieve Aughty Mountains SPA between 2005 and 2015 but interestingly increased within the same period within the Slievefelim to Silvermines Mountains SPA which his located c. 16.7km to the southeast of the development. It is inferred by the applicant that forestry, which is the main threat to Hen Harrier, is the cause of the decline within the Slieve Aughty Mountains and that birds are relocating to a more favourable habitat in the Slievefelim to Silvermines Mountains SPA.

7.82. Winter and Breeding Bird surveys were carried out between 2016 and 2020 with summer 2020 surveys solely focused on hen harrier. Bird surveys also included wetland sites within 10km of the development site, the survey area extended to 10km as greenland white-fronted geese was identified as a potential target species within

the wider surroundings of the project mainly and Lough O'Grady. It is of note that the study area referred to within section 7 of the EIAR extends to an area 500 metres out from the proposed development boundary.

Hen Harrier Base Line conditions

7.83. With regard to hen harrier I note that surveys in 2016/2017 recorded 124 Hen Harriers flights and of these it is stated that 53 were at potential collision height (PCH). In 2018/19 there was a total of 69 hen harrier observations and of these 20 were at PCH. A targeted hen harrier breeding survey was also undertaken between the months of May, June, July and August 2020 to determine the distribution and use of the site and general area by birds.

Breeding sites

7.84. One nest was recorded within the development site in 2017 which ultimately failed. No other nests were recorded over the three years of surveys within the development site. The location of this nest was c. 400 metres from the nearest turbine.

7.85. In 2018 a nest was recorded outside of the development boundary circa 600 metres from the nearest proposed turbine. It is of note that this nest failed.

7.86. In 2020 three failed nests were recorded outside of the development boundary with the nearest being 500 metres from the closest turbine.

7.87. Over the 3 year survey period other breeding sites were recorded outside of the development boundary within a 2-5km distance from the development site. I note that only one nest recorded was successful in 2019.

Roost Sites

7.88. Hen harrier was observed on five occasions during hen harrier roost surveys over the winter periods of 2016/17 and 2017/18. Two of these observations were made during the same survey on the 23rd March 2017. One was of a male travelling over an area of forestry, while the other observation was of a female, recorded as likely going into roost in an area of heather to the west of the site boundary. The remaining three observations were confined to February and March 2018. There was no evidence of roosting hen harrier between October 2018 and March 2019. A hen harrier roost survey completed during the winter 2019/20 did not identify hen harrier roosting within the study area.

7.89. The results outlined above would indicate that the study area was not used by hen harrier in significant numbers during the winter survey periods.

Habitat loss

7.90. Hen harriers are ground nesting birds that breed in moorland, young conifer plantations and other upland habitats. It is stated that Pre-thicket conifer plantation (first and second rotation) may be used by breeding hen harriers and foraging harriers appear to avoid forest stands less than 3 years and greater than 15 years of age.

7.91. In total c.684ha of forestry (of various rotations) occurs within the red line site boundary of the project. Of this, 167.76ha (24.52% within the site boundary) will be available for nesting hen harrier and 289.95ha (42.39%) will be available for foraging hen harrier. The construction phase of the project will require the loss of c.67.66ha of forestry, of which 18.18ha would be potentially available for nesting hen harrier, and 31.87 would be available for foraging hen harrier (this is inclusive of nesting habitat) in this period. In response to the DAU's concerns the applicant has confirmed that a total of 31.87ha of suitable habitat will be lost. It is stated that 149.58ha of suitable hen harrier nesting habitat will remain within the development site, in addition to 258.08ha of suitable foraging habitat.

7.92. 2,627ha of additional Coillte forestry within 5km of the development has the potential to provide 379ha of nesting habitat and 638ha of foraging habitat. It is also proposed to provide 6 enhancement areas within the surrounding area which will provide a total of 106ha of additional suitable habitat. Enhancement lands will be examined in detail below.

7.93. I note from the information submitted that the most suitable traditional habitats for breeding and foraging hen harrier will not be developed. It is stated that turbine T1 will require loss of 0.9ha of cutover bog, and T8 will require the loss of 0.31ha of wet grassland. However, it is considered that this habitat loss is not significant, given the availability of often more suitable, and traditional hen harrier habitat adjacent, and extending away from the site, including the bogland protected within the Slieve Bernagh SAC extending away from the site.

7.94. Any loss of currently suitable forestry habitat owing to the project will not be significantly above that which would occur and does occur as a result of the forestry

operations at the project site. It is therefore considered the magnitude of the habitat loss described will result in a Long-term, Slight Negative effect on hen harrier.

Barrier Effects

7.95. Impacts from barrier effects arising in relation to the construction element of the development relate to avoidance of the development site due to noise and increased activity. It is stated that the wind farm site is a large site that covers an area of c.749.69ha within the site boundary. The construction phase of the project will be phased, concentrating activity within the site to certain areas, and construction activities at any one time. This will allow hen harriers to use other available suitable areas.

7.96. The applicant refers to previous projects and studies relating to hen harrier behaviour around turbines and notes that behaviours are not significantly disturbed by construction activities at distances in excess of 500 metres.

7.97. The thrust of the applicant's argument is that in a do nothing scenario, the existing development site would be subject to normal commercial forestry management in which trees would be felled and access roads upgraded. The existing habitats would therefore be altered or removed. Essentially the proposed development is a working landscape which will change overtime with previously suitable habitat areas becoming unsuitable for hen harrier and others becoming more attractive due to the changing landscape and tree maturity.

7.98. In order to prevent displacement impacts to nearby breeding hen harrier, it is proposed to carry out preconstruction surveys and construction phase monitoring to identify the presence of breeding hen harrier within 500 metres of works. In the event that breeding hen harrier is encountered within 500 metres of the works, a protective buffer will be provided and no works will be allowed within the 500 metre buffer zone, should the Board be minded to grant permission I recommend that a condition is imposed which specifically states that no works shall be carried out within 500 metres of any nest site.

7.99. In addition all felling, and vegetation clearance will be carried out outside of the breeding period.

7.100. With regard to displacement of foraging birds during the operation of the development, I note that the applicant refers to the findings of at least eight studies of hen harrier

displacement effects in the USA and continental Europe, using several study designs, which were included in a review of wind farm impacts on hen harriers. The review found that only one study documented good evidence of displacement and concluded that, although further studies are highly desirable, if displacement of foraging occurs, it will likely be limited to within 100m of wind turbines, if it occurs at all. The review further concluded that foraging hen harriers have a low sensitivity to disturbance at operational wind farms.

7.101. I note the DAU's concerns in this regard and note that the applicant has reviewed the studies mentioned relating to hen harrier displacement within a distance of 1km within the DAUs submission. In their further information response, the applicants refer to the landscape in which the particular study referenced by the DAU was undertaken and state that it is entirely different to the landscape of the proposed development site. Furthermore, given that many environmental variables are different within the research study area cited, to that of the proposed development site, it is not possible to state that disturbance will occur up to 1km as a direct result of wind turbine operation in every circumstance, external issues such as predators can significantly impact the success of breeding pairs.

7.102. The applicant also refers to a recent study in Ireland investigating hen harrier breeding success in relation to distance from wind turbines where it was recorded that no significant differences in breeding success were found in relation to turbine proximity. Similar studies are referred to in Section 7.5.1.3 of the EIAR and in section 4.1.1 of the further information response to item 1 of the further information request, in which it is stated that during operational phase surveys at Cordal Wind Farm in northeast County Kerry, situated in an upland commercial conifer plantation, with stands of bogland within and extending away from the site, a breeding pair successfully bred within 350m of an operating turbine, with two fledglings recorded. Within the same windfarm, the male hen harrier was regularly observed foraging and commuting at a distance of c.20-50m from the operating turbines.

7.103. The applicant states, while there is evidence of displacement of hen harriers out to 500m from turbines, there is no evidence in the literature of a potentially significant displacement effects to hen harrier within 1km of turbines. It is considered that significant displacement of breeding hen harrier within 1km of turbines is unlikely to

occur and that the displacement effect on hen harrier using the study area, is still considered a Long-term, Slight to Moderate Negative.

7.104. Having reviewed the studies of hen harrier behaviour referenced within the documentation submitted and monitoring results of operational windfarms in Ireland it appears that hen harrier continue to utilise lands in proximity to windfarms during their operational phase. Given that the proposed development site is within an existing commercial forest where the landscape will change and evolve over time due to felling, works to access roads and drainage and general forest maintenance which requires periodic thinning, and that there is ample suitable habitat within the surrounding area I am satisfied that impacts to hen harrier can be mitigated appropriately through avoidance and provision of exclusion zones of 500 metres or more where nests or known breeding sites are present.

7.105. It is important to note that no successful breeding nests were recorded within the development site and the nearest successful nest was over 600 metres from the nearest proposed turbine. The applicant has avoided locations of good quality hen harrier habitat within the site and no works will occur in these areas. Tree felling will only occur outside of the restricted time period and the phasing of the development will ensure that the entire site is not made unavailable to hen harrier during construction works.

7.106. With regard to cumulative impacts, I note the DAU raised concerns in relation to the cumulative impact assessment and the consideration of all pressures operating in the surrounding environment and protected sites. Particular reference is made to forestry planting and felling licence applications. In response to these concerns the applicant states that forestry will continue and will create temporal and spatial changes in hen harrier use as is commonplace in commercial forestry operations.

7.107. It is noted at the outset that a forest management plan was not available for private forestry in the area but a review of aerial photography demonstrated what areas of forestry would likely be felled and replanted between 2025-2058. The details of Coillte's forestry plan were reviewed in the context of cumulative impacts. Overall analysis of forestry operations suggests that the potential suitable foraging and nesting habitat available for nesting and foraging hen harrier remains relatively stable over the

lifetime of the wind farm (2025-2055), with no significant reduction, and will remain available for the population of hen harrier using the area.

7.108. Cumulative impacts assessment also includes windfarms within 20km of the proposed development site, which are referred to both within section 4.1.6 of the further information response and within section 7.7.2 of the EIAR. It is also stated that Section 7.7.2 of the EIAR also refers to cumulative impacts arising from windfarms within 30km of the proposed development. It is concluded that the project and other wind farms in the region are separated by vast areas of agricultural grassland, and the River Shannon and built areas. Due to the separation distance of over 20km it is unlikely that the project and other wind farms in the region will result in cumulative habitat loss impacts on the hen harrier population of the Slieve Bernagh to Keeper Hill Area, or other avian KERs identified. In relation to the grid connection and delivery route all works will be within the public road and where vegetation clearance is required it will be undertaken within outside of the breeding season.

7.109. Thus, having regard to the foregoing and given the nature of the development site and the separation distance from the proposed development to the nearest recorded successful nest I am satisfied that the applicant has demonstrated that the proposed development will not displace or negatively impact hen harrier utilising the surrounding area.

Enhancement areas

7.110. It is acknowledged within the documentation that 31.87ha of potentially suitable hen harrier habitat will be removed as a result of the proposed development. In order to address this loss, it is proposed to provide foraging and potentially suitable nesting habitat for hen harrier over the lifetime of the wind farm through the ecological improvement of existing areas of conifer plantation and the rehabilitation of peatland habitats. Originally two areas of improvement were proposed, however it is important to outline at the outset that in response to the further information request, the applicant is now proposing a total of 6 areas of enhancement.

7.111. The two areas for habitat improvement originally identified are shown on Fig 13 & 14 of section 7 of the EIAR. Habitat management area ‘A’ lies in the townland of Ballymacdonnell, approximately 1.7km northwest of the nearest turbine and comprises 24.12ha. The site is surrounded on almost 3 sides by the Slieve Bernagh Bog SAC

and can be described as protruding into the SAC. The site itself is almost entirely planted with conifer trees since c. 1992 on what would have been blanket bog.

7.112. Area ‘B’ is located to the south of area ‘A’ and lies in the townland of Killuran More, approximately 1.7km northwest of the nearest turbine and comprises 17.83ha. The site is surrounded to the north, east and south by Slieve Bernagh Bog SAC. Similar to Area ‘A’, the site itself is almost entirely planted with conifer trees planted between 1990 and 1993 on what would have been blanket bog and probably other peatland habitats. Neither plantation have been successful due to excessively wet ground conditions.

7.113. The objective for these areas is to rehabilitate the blanket bog and heath habitats to provide suitable habitat for hen harrier prey such as meadow pipit, skylark and small mammals and to improve connectivity with adjacent open peatland habitat.

7.114. The DAU within their submission raised concerns that the original proposed enhancement areas may contain breeding birds including hen harrier. In response to this concern, the applicant carried out a hen harrier specific survey of the lands, none were recorded during the survey. Reference is also made to a breeding raptor survey which was carried out in 2017 and 2018 and included the enhancement areas, no breeding hen harrier were recorded during these surveys.

7.115. Concerns were also raised in relation to the quantum of suitable habitat to be lost within the proposed development which equates to 31.87ha. As mentioned above additional Habitat Improvement Areas have been chosen and are included within the FI response. These areas, Areas C, D, E, F and G lie between 1km and 2km distance of the nearest proposed turbines and except for Area G, which constitutes farmland, comprise of commercial conifer plantation, the locations of all areas are identified on Figure 1 & 2 of the FI response to item 1 and are largely edge sites bounding the SAC.

7.116. It is important to note that there were no records of hen harrier breeding in these additional areas during the previous and more recent bird surveys conducted at the site. These additional lands together with the original areas A & B will provide a total of 106ha of improvement lands for hen harrier habitat.

7.117. I note that the provision of Area G will ensure that 54ha of biodiverse farmland will remain in its current ecologically valuable state for the lifetime of the wind farm and

thus securing its value for the lifetime of the wind farm through a co-operation and annual payment agreement with the landowner.

7.118. The DAU queried within their submission how the applicant proposed to manage the enhancement areas in order to ensure their success and also queried how areas A&B were selected. In this regard I note that a Hen Harrier Management Plan has been prepared and is appended to the FI response, this plan sets out the measures required to achieve enhanced habitat within the identified lands. It is stated that the 6 areas of existing conifer plantation, Areas A to F, were selected on the basis of:

- currently supporting conifer plantation habitat of limited, temporary or no value for hen harrier
- proximity to Slieve Bernagh SAC and open peatland habitat to minimise habitat fragmentation and forest edge to create larger blocks of uniform peatland habitat
- proximity to a previously successful hen harrier nesting area
- lands being within foraging distance for breeding hen harrier
- presence of bog remnants in certain cases
- availability to the applicant for the provision of hen harrier improvement lands

7.119. The lands within the SAC surrounding these parcels of land provide suitable foraging open peatland habitat in various direction. The proposed permanent felling of this forestry will reduce fragmentation caused by forestry blocks, reduce forest edges, increase the amount of contiguous open habitat available to foraging hen harrier, and also offer potential for suitable nesting habitat. I note that failed nests were considered to be as a result of predators in the area, it is expected that the proposed enhancement areas will significantly reduce such incidences by reducing the length of forest edge in these areas and therefore reducing the opportunity for predators to attack nests.

7.120. It is further proposed that monitoring of birds will continue during the operational stage of the development and would do so in relation to forestry operations regardless of whether the proposal proceeds or not.

7.121. Overall, the enhancement areas will provide a net increase of 74.13ha of suitable habitat for hen harrier and will improve connectivity with the Slieve Bernagh SAC

providing more attractive foraging and breeding grounds for the hen harrier than is available at present.

7.122. Based on the foregoing and the information submitted within the further information response, I am satisfied that the applicant has adequately addressed the concerns of the DAU in relation to the proposed enhancement areas and I am further satisfied that the proposed development and loss of 31.87ha of potentially suitable hen harrier habitat is adequately addressed by way of the proposed 106ha of enhancement lands which will, as mentioned above improve connectivity with the SAC and reduce edge effects at these locations, providing an overall improvement of breeding and foraging conditions within the general area for hen harrier.

Collision Risk

7.123. The applicants have considered collision risk within Section 7.5.1.5 of the EIAR. The collision risk has been calculated at a rate of 0.056 collisions per year, or 1.65 birds over the 30 year lifetime of the wind farm. This corresponds to a 2% increase in the background mortality rate of the local population and a 0.1% increase in the background mortality rate of the national population. Therefore, the magnitude of the collision effect is considered Low. The National breeding population of hen harrier is estimated at between 108-157 pairs and the local population is estimated at eight birds. The increase in annual mortality at a Local Level is considered to be Low and at National level is predicted to be Negligible.

Decommissioning

7.124. In relation to decommissioning, it is stated that a detailed reinstatement proposal, including the implementation of a program that details the removal of all structures and landscaping, will be submitted to Clare County Council, and NPWS for approval prior to the decommissioning work. Pre works surveys will also be required to prevent impacts to hen harrier and impacts relating to decommissioning are expected to have similar insignificant effects to that outlined in relation to construction works.

7.125. Overall, based on the information submitted the magnitude of effects in relation to hen harrier are expected to be Long-term, Slight Negative. I am satisfied that through avoidance and mitigation in the form of preconstruction surveys and the implementation of a 500-metre buffer zone from any works that the proposed development will not result in significant effects to hen harrier.

7.126. **Peregrine**

7.127. During vantage point surveys completed between winter 2016/17 and summer 2018, peregrine falcon was observed in flight on three occasions over the entire two-year period. It is stated that the results of the three consecutive years of survey indicate that the site is little used by this species. This species was not observed breeding within the project site.

7.128. The habitats within the site do not provide optimal breeding habitat for this species. The applicant states that the survey results are in line with results of the NPWS data request, which had records of two active peregrine falcon breeding within 5km of the project.

Displacement and Barrier Effects

7.129. For the duration of the operational phase of the wind farm, this species are expected to continue to preferentially select the foraging and breeding habitats, of equivalent or higher value, available in the wider geographical area rather than any of the habitat types present within the footprint of the project.

Collision

7.130. A collision risk assessment has been completed and outlined within appendix 7-3 of the EIAR, as this site is not regularly used by this species the collision risk for this species is calculated at zero collisions per year.

7.131. It is concluded that the magnitude of effects to this species is expected to be slight to imperceptible and the development will not result in significant effects to peregrine.

Merlin

7.132. This species was observed on two occasions between winter 2016/17, and summer 2018. The observations were in April, 2017 and May, 2017. Both observations were of a single bird, in low flight, below potential collision height (PCH). The desk study did not identify any documented records of merlin in the area. The results of the surveys completed at the study area, indicate that the site is little used by this species.

7.133. The loss of foraging habitat for this species is minimal, as conifer plantation is not optimal foraging habitat for this species. While merlin is known to occasionally use woodland for breeding, there are vast areas of bogland, and more optimal suitable breeding extending away from the site.

Displacement and Barrier effects

7.134. Disturbance during construction phase is unlikely to discourage flight activity or foraging in the vicinity of the project particularly given the low levels of activity recorded. Given the short-term duration of the construction works, and the availability of suitable habitats in the surroundings, the magnitude of the Effect is assessed as Low.

7.135. During the operational phase of the wind farm significant displacement and barrier effects are not expected, mainly due to the low levels of activity recorded. Post construction, extensive suitable foraging and breeding habitat will remain, as there is an abundance of suitable habitat extending away from the site.

Collision

7.136. It is stated that collision risk modelling could not be carried out for this species. I note that during the three years of VP survey completed at the study area there was no flight activity of merlin recorded within the potential collision risk zone. Collision risks are predicted as being zero for this species.

7.137. Overall, the magnitude of effects to this species is considered to be neutral. Significant effects are not expected to arise.

Sparrowhawk

7.138. During vantage point surveys completed between winter 2016/17 and summer 2018, this species was observed in flight on forty-nine occasions throughout the entire survey period. Four of these flights were at PCH. Observations were dispersed throughout the study period. Most flights were of individual birds either commuting or hunting. Breeding activity was also recorded during vantage point surveys in the breeding season of 2018, with fledged chicks and adults carrying prey observed on a few occasions at the study area.

7.139. Eight territories of sparrowhawk were observed for this species during the summers of 2017 and 2018. Breeding was confirmed in 2017 towards the south western part of the site where an adult female was observed carrying prey towards a nesting area. During the 2018 breeding season an active nest and fledged young were observed on site towards the south centre part of the site. Begging young were also heard just to the north of the site boundary, confirming successful breeding at this area also. During

2019 breeding bird surveys one territory for sparrowhawk was identified towards the east centre of the site.

Displacement and Barrier effects

7.140. The construction phase of the project may temporarily result in some disturbance, or displacement for sparrowhawk. However, any displacement impacts are not considered significant given the availability of similar and suitable breeding and foraging habitat within and surrounding the site.

7.141. Displacement is not expected to arise during the operational phase of the development as previous studies have found low levels of turbine avoidance. Disturbance from operation is unlikely to significantly discourage breeding attempts and sparrowhawk are expected to continue to habituate to the project site during the operational phase of the project. The widespread distribution of sparrowhawk limits the potential for ecologically significant effects.

Collision

7.142. A collision risk assessment has been completed for this species and is contained in Appendix 7-2 of the EIAR. The collision risk for this species is calculated at 0.004 collisions per year, or 0.12 collisions over the lifetime of the wind farm. Collision risk is predicted to be very low with no collisions predicted during the 30 year operational lifetime of the project. This species is stated to be extremely agile with a wide spread distribution. It is therefore concluded that the magnitude of effects to this species is expected to be negligible.

Kestrel

7.143. During vantage point surveys completed between winter 2016/17 and summer 2018, this species was observed in flight on 144 occasions throughout the entire survey period. Sixty six of these were at PCH. There was a total of 43 flight paths between winter 2018/19 and summer 2019 survey period. The majority observed during the breeding season.

7.144. During the breeding seasons of 2017 and 2018, nine territories were recorded for this species during the survey period. Two of these territories are located over 2km away from the site boundary and are therefore not considered to be of significance to the project. The remaining territories are located towards the periphery of the site

boundary, around the site. In 2018 breeding was confirmed within the study area to the south of the site.

Displacement and Barrier effects

7.145. The construction phase of the project may temporarily result in some disturbance, or displacement for kestrel. However, any displacement impacts are not considered significant given the availability of similar and suitable breeding and foraging habitat within and surrounding the site. Disturbance from operation is unlikely to significantly discourage breeding attempts and kestrels are expected to continue to habituate to the project site during the operational phase. The widespread distribution of Kestrel limits the potential for ecologically significant effects. The magnitude of effects arising from the construction and operation of this development are expected to be negligible.

Collision

7.146. The collision risk has been calculated at a rate of 0.365 collisions per year, or 11 birds over the 30 year lifetime of the project. The annual increase in background mortality for the local population is estimated to be 2% and for the national population is estimated to be 0.01%. The magnitude of the effect at a local level is assessed as Medium for this common and widely distributed raptor in Ireland. Overall the magnitude of effects is predicted as being negligible.

Buzzard

7.147. During vantage point surveys completed between winter 2016/17, and summer 2018, this species was observed in flight on 23 occasions throughout the survey period. Sixteen of which were at potential collision height (PCH). Most flights were observed during the breeding season period with birds typically recorded as hunting or soaring.

7.148. Two breeding territories were recorded for this species during the 2017 and 2018 breeding season. No breeding attempt was observed however breeding activity was recorded approximately 2km to the southwest of the site boundary in 2018.

7.149. Based on the conservation status of this species, the low numbers recorded on site (over three consecutive years), the wide-ranging nature of the species and the availability of suitable habitats in the surroundings (i.e. conifer plantation, scrub, bogland, heathland, and grassland), the habitat loss required for the project is not significant.

Displacement and Barrier effects

7.150. The construction phase of the project may temporarily result in some disturbance, and or displacement for buzzard. However, any displacement impacts are not considered significant given the availability of similar and suitable breeding and foraging habitat within and surrounding the site.

7.151. Given the lack of breeding sites recorded during bird surveys within the development site and within adjacent lands it is not considered that the operation of the windfarm will impact breeding activities for this species.

Collision

7.152. The collision risk has been calculated at a rate of 0.12 collisions per year, or 3.5 birds over the 30 year lifetime of the project. Based on the conservation status, widespread distribution, calculations, and documented avoidance rates (98%), it is considered that the project will not result in significant collision effects on buzzard.

7.153. Overall it is conclude that the magnitude of effects to this species is expected to be negligible.

Woodcock

7.154. Woodcock was recorded on three occasions during surveys and breeding activity was recorded at two locations. It is also of note that this species was also referred to within the third party submissions received. Targeted nocturnal woodcock surveys were undertaken in June and August 2019. During the June transect surveys, a woodcock was observed in an area south of VP7A and north of VP1A at 22.00. The bird was roding and circling several times before being disturbed by a Kestrel. A second woodcock was observed roding to the north north-west of the original location at 22.22. A third woodcock was flushed from an access track to the north-west of VP4A and flew east at 23.30.

Displacement and Barrier effects

7.155. It can be assumed that some temporary displacement may occur for woodcock. However, the results of the extensive surveys undertaken at the site indicate that the project site is not used in significant numbers of this species. there is ample foraging, breeding and roosting habitat within and extending away from the site. Given the extent of suitable habitat within the site, in the wider area, in addition to the crepuscular

nature, and nocturnal habitat of the species, significant displacement of this during the construction phase is not anticipated.

7.156. It is stated within section 7.5.6.3 of the EIAR that following the construction phase, extensive foraging and breeding habitat will remain within and extending away from the site. Disturbance during the operational phase of the project is unlikely to discourage birds passing through the site or foraging or any breeding activity at the location of the project.

Collision

7.157. This species was not recorded flying at the potential collision risk zone during the extensive vantage point surveys completed over three consecutive years of surveys at the site.

7.158. It is concluded that the magnitude of effects ranges from slight to negligible for this species.

Golden Plover

7.159. During vantage point surveys completed between winter 2016/17 and summer 2018, this species was observed in flight on 21 occasions during the 2016-2018 survey period. Six of which were at potential collision height (PCH). Many of the observed flights occurred during the migration period for this species (October and March). Numbers ranged from a single bird to a flock of 450 birds. The majority of the observations were outside the site boundary, c.850m to the southeast of the site.

7.160. Golden plover was not observed within the site boundary during winter walkover surveys completed at the site (between winter 2016/17, and winter 2018/19). Nor was there any evidence of breeding activity recorded over the three breeding seasons.

7.161. The zone of sensitivity for golden plover as 800m during the breeding season only. During VP surveys completed over the three years of survey at the study area golden plover were seen on the ground on very few occasions. All these observations were c.850m to the southeast of T13. It is possible that the birds use this area to feed, or roost while passing through. This habitat is readily available extending away from the site. It is contended within the EIAR that disturbance during the construction phase is unlikely to discourage flight activity over the site.

Displacement and Barrier effects

7.162. Displacement occurs within 200 metres of turbines, as mentioned above Golden Plover were observed 850 metres from the nearest turbine and as such displacement affects are not expected to arise in relation to this species.

Collision

7.163. Collision risk is outlined in section 7.5.4.4 of the EIAR and is supported by a collision risk assessment contained within appendix 7-2 of the EIAR. It is stated that collision risk associated with golden plover is 3.98 per year, this is based on the over wintering population of the Shannon-Fergus Estuary and as such the magnitude of effects from arising from collisions is considered to be negligible.

7.164. Overall effects on Golden Plover are expected to be long term slight negative in term of significance.

Red Grouse

7.165. Slieve Bernagh is a known for the occurrence of red grouse. This species was recorded on 100 occasions during vantage point surveys completed between winter 2016/17 through to breeding season of 2018. Nineteen of these observations related to observed flight activity, and all were below PCH. Eighty one of the records were of calling birds with no visual observations. Numbers ranged from one to two birds.

7.166. Breeding activity was primarily located to the south of the site, I note section 7.5.5.2 of the EIAR states that the closest breeding site located approximately 380m outside of the site boundary and according to the information submitted is in excess of 500 metres from the proposed development.

7.167. Significant habitat losses effects are not expected, given the specific habitat requirements of this ground nesting species and that the footprint of the project is dominated by conifer plantation.

Displacement and Barrier effects

7.168. During the construction phase of the project, it is unlikely that foraging and breeding red grouse attempts will occur within the site boundary, as the birds will continue to select the more suitable areas of habitat, located outside the site boundary, mainly to the south and west of the site. The construction activities will be buffered by the conifer plantation occurring, between the bogland to the south.

7.169. The applicant refers to a study undertaken by Douglas et.al (2011) which found no significant changes in the relationships between the occurrence of red grouse, and turbines, or access track proximity. This study also did not find any evidence of the re-distribution of red grouse in response to wind farm operations.

7.170. I note that no important flight routes have been identified within the site boundary of the project and all flight activity of red grouse was of birds flying low, below rotor blade height. No barrier effects are therefore expected.

Collision

7.171. During the extensive three years of surveys at the study area, red grouse were not recorded within the rotor sweep of the turbines. No flight activity was recorded within the potential collision risk zone. Collision risk for this species is zero.

7.172. Overall the magnitude of effects expected in relation to red grouse is neutral.

Cormorant

7.173. One cormorant was recorded within both the 2016/17 and the 2018/9 surveys flying over the site in a southerly direction. This bird species was observed on numerous occasions during waterfowl surveys on lakes including Lough Derg. No significant impacts are expected in relation to this species as the site is not suitable habitat for this species and it does not appear to have a flight path through the site.

Passerines

7.174. Red listed species recorded during breeding and winter bird surveys undertaken at the study area included meadow pipit and grey wagtail. Meadow pipits were confirmed to be breeding within the study area, and probable breeding of grey wagtail was recorded.

Waterfowl-Wetland Survey Results

The following species were recorded during wetland surveys undertaken between winter 2016/17 and Winter 2018/19:

- Whooper swan (Annex I)
- Herring Gull (BoCCI red-listed)

- Lesser Black-backed Gull (SCI species for Lough Derg SPA)
- Little Egret (Annex I)
- Kingfisher (Annex I)
- Tufted Duck (Red Listed, SCI species for Lough Derg SPA)
- Goldeneye (Red Listed, SCI species for Lough Derg SPA)
- Black-headed Gull (Red Listed) Curlew (BoCCI red-listed) W
- Wigeon (BoCCI red-listed)
- Lapwing (BoCCI red-listed)
- Shoveler (BoCCI red-listed)

7.175. The wetland surveys undertaken did not identify any regular flight paths or usage of the project by a number of target species. Of the species listed above, lesser black back gull, and herring gull were observed on one occasion commuting over the site, across the three consecutive years of ornithological surveys completed at the study area. Of the remaining species listed above, there was no evidence of these species within the project, or within the proximity of the wind farm site. No regular flight paths, or migratory routes of the species listed above were identified. Therefore, due to the aforementioned, the project will not result in habitat loss, or disturbance, displacement (including barrier effect), or collision impacts on the species listed above.

Summary

7.176. I note at the outset that the design of the project is stated to be driven by a process of mitigation by avoidance as well as a principle of using existing infrastructure to the maximum possible extent. The Carrownagowan wind farm site is a large site that covers an area of c.749.69ha within the site boundary. It is proposed that the construction phase of the project will be phased, concentrating activity within the site to certain areas, and construction activities at any one time. This will allow hen harriers and other species to use other available suitable areas.

7.177. I note that the most valuable traditional nesting habitats have been excluded from the wind farm site and will be excluded from the works during the construction phase.

7.178. In conclusion, it is stated within the EIAR that with the avoidance measures (mitigation by design), and best practice in place (mitigation by management), and provided all mitigation measures are implemented in full, and remain effective throughout the construction phase, operational phase, and decommissioning phase of the project, significant residual effects on avian Key Ecological Receptors are not expected.

7.179. I have considered all of the written submissions made in relation to ornithology and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on ornithology can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures or with suitable conditions. Potential for direct or indirect impacts on ornithology can be ruled out. I am also satisfied that cumulative effects, in the context of the proposed grid connection and other existing and proposed development in the vicinity of the site, are not likely to arise.

Water

7.180. Section 8 of the EIAR examines the potential impact of the development on hydrology and hydrogeology. A desk study, field mapping and a walkover survey between August and December 2018, including surface water flow and hydrochemistry tests, were undertaken to inform the EIAR. The impacts were also informed by the testing, logging and assessments undertaken as part of the consideration of the impacts of the project on land, soil and geology.

Windfarm development

7.181. I note that the majority of the proposed wind farm site is located in the Bunratty-Ballymacdonnell River sub-catchment, while the western edge of the proposed development site is located within the Bunratty-Killuran sub-catchment. The Bunratty-Ballymacdonnell and the Bunratty-Killuran are sub-catchments of Owenogarney (Ratty) River within the regional Shannon Estuary North catchment.

7.182. There are two main rivers which flow northwards through the proposed development site, namely the Carrownagowan River and the Coumnagun River, which converge at the centre of the proposed development site to form the Inchaluchoge River. A smaller unnamed stream flows to the north close to the wind farm site entrance and drains into Lough O'Grady.

7.183. The far west of the proposed development site drains westward towards the Killuran River within the associated Bunratty-Killuran sub basin. Four tributaries of the Killuran river emerge within the boundary of the proposed development site and these flow west towards the Killuran River. The Killuran River and the Ballymacdonnell River eventually merge before flowing into Doon Lough which is situated approximately 3.5 km southwest of the proposed development site.

7.184. On site investigations confirm that the north-eastern section of the development site actually drains into the Bunratty-Ballymacdonnell catchment, rather than discharging into Graney Anamullaghaun catchment as mapped by the EPA.

7.185. The windfarm site is underlain by a Locally Important Aquifer (LI) – moderately productive only in local zones. Groundwater flow is expected to follow the topography, flowing north/northwest and discharging into the rivers mentioned earlier. Groundwater vulnerability at the proposed development site is described by the GSI as High to Extreme and is of good status under the WFD.

7.186. I note there is a significant drainage pathway along the boundary of the Slieve Bernagh Bog SAC to the south of the proposed development site. This drainage pathway is man-made and is the firebreak excavation which runs along the edge of the planted lands and separates the planted lands from the open peatland on higher ground.

Delivery Route

7.187. The delivery route works are located at the northern side of the R352 in the townland of Coolready, approximately 1.1km southwest of Bodyke village, in land between the R352 and R465 in the townland of Coolready and land between the R464 and the L-8221 local road in the townland of Drummod. This element of the development is also located in the Bunratty-Ballymacdonnell River sub-catchment. There are no significant watercourses present at the delivery route work sites.

Grid Connection

7.188. The proposed grid route, which is c.25km in length, runs from the proposed Carrownagowan substation to Ardnacrusha. The route follows local roads through Kilbane town to the south of the proposed development site, then along the R446 and R471. From the R471 the route continues south along local roads towards the

Ardnacrusha hydroelectric station. The grid route is drained by the Killuran River, the Broadford River, the Snaty River and the Blackwater River and is located within the same hydrological region (the Lower Shannon catchment) as the proposed wind farm. As the grid route is within the road, drainage regimes will remain as before within pre-existing ditches/dykes along these roads.

7.189. The grid route is underlain by a Poor Aquifer (Pl) generally unproductive except for local zones). Groundwater flow is expected to be in a southerly direction towards the Shannon River. Towards the very southern end of the grid route, near Ardnacrusha, there is a transition into a Regionally Important Karstified Aquifer (Rkd) as the mapped bedrock changes to Carboniferous Limestones. Groundwater vulnerability along the grid route ranges from moderate to high. Groundwater status of the grid route which passes through two water bodies, is good under the WFD.

Ground water

7.190. Having established the status of groundwater as already referred to above, the applicant located both public water supplies and private wells in order to assess the potential for impacts to arise. The location of these sources are documented in table 8-17 and 8-18 of the EIAR. I note that it is stated that the nearest private wells to the windfarm site are downgradient of the development, and it is considered, given the separation distance from the proposed development and taking into account the underlying bedrock and the drainage pattern which flows in a westerly direction away from the existing houses to the north and north west that impacts to private wells will not arise. In addition, given the distance from public supplies and that the development is outside of the zone of influence for these supplies it is also not considered that impacts will arise in this regard.

7.191. I further note that all excavations required for roads, construction compounds and the substation will be relatively shallow, with the exception of the borrow pits. It is stated that the proposed borrow pits will be located on elevated ground, no significant groundwater dewatering will be required as rock excavation will progress in a horizontal manner into the side of outcropping bedrock. No significant impacts on groundwater are therefore expected to arise.

7.192. The primary risk to groundwater at the proposed development site would be from cementitious materials, hydrocarbon spillage and oil or chemical leakages, however

these are common potential impacts on all construction sites and mitigation measures such as the use of bunded areas for the storage of fuels and refuelling is proposed to prevent such impacts from arising. Subject to the implementation of appropriate mitigation measures which will be detailed hereunder, the magnitude of effects to ground water is expected to be negligible.

Surface Water

7.193. It is important to note at this juncture that the proposed development is not located within any European protected sites, however there is connectivity with a number of European sites via surface watercourses. Impacts to such designated sites will be examined in detail within the Appropriate Assessment section of this report and will therefore not be repeated hereunder

7.194. Nonetheless it is important to note at this juncture that the proposed windfarm is largely down gradient of the SAC with a number of fire breaks, streams and access roads separating the designated site from the windfarm development and it is concluded by the applicant that there is no likelihood of significant effects arising from the proposed development to this designated site.

7.195. It is also prudent to note that 434m of the proposed grid connection lies within the Glenomra Wood SAC, this element of the SAC has no ecological value as it forms part of the road carriageway. It is therefore concluded that there is no likelihood of significant effects to this SAC arising from the proposed grid connection.

7.196. With regard to the wind farm site, I note that monitoring of stream discharge of the main watercourses passing through the proposed wind farm development site was undertaken on several occasions between August 2018–June 2019. Measured flows can be considered to be low- medium flows, as no high/extreme rainfall occurred prior to sampling events. Water sampling was undertaken at 8 locations on two occasions and the result of this testing are outlined in table 8-9 and 8-10 within the EIAR.

7.197. Q values are available for the Inchaluchoge River (EPA: Owenogarney River) at two locations. River waters achieved a Q value of 4-5 at a bridge located c.1 km north of the proposed development site upstream of Ballymacdonnell (RS27O010100). A further location exists c.1.5 km downstream at Ballymacdonnell Bridge (RS27O010200) where the waters achieved a Q5.

7.198. With regard to the grid route, I note that surface water sampling was undertaken in January/February 2019 along the proposed grid route. 10 no. sampling points were selected along the path of the grid route where waterbodies were intersected. Field chemistry and flow estimates were completed on all 10 no. locations, water samples for laboratory analysis were also taken from 4 of the 10 no. locations. The results of the field data and laboratory data are included in Table 8-12 and Table 8-13 respectively.

7.199. Surface water impacts are likely to arise as result of hydrocarbon, sediment and / or concrete release during construction or storage during operation, such impacts relate to both the wind farm site and the grid connection, and to a lesser extent to the delivery route works. Additional impacts relate to the diversion, culverting or bridging water crossings within the development boundary which can result in morphological changes, changes to drainage patterns and alteration of aquatic habitats, and surface water run off from hard stands within the site.

7.200. I note 7 no. new stream crossings (4 no clear span, and 3 no. piped culvert crossings) and 6 no. existing stream crossing upgrades will be required to facilitate the proposed wind farm development.

7.201. With regard to the grid route, 9 no. bridge crossings and 18 no. culvert crossings will be required. These crossings will be carried out by a number of methods which include directional drilling under bridges and water crossings and flatbed formation over bridges and crossings over the bridge using standard trefoil formation.

7.202. Mitigation measures are proposed in relation to the protection of watercourses within the proposed development site, delivery route and grid connection route and relate to all phases of the development. Such measures are outlined in full within section 8.5 of the EIAR and refer to the following :

- Provision of buffers and set backs from watercourses of no less than 50 metres and 75 in particularly sensitive areas.
- The blocking of existing drainage during felling and use of silt traps to collect sediment.
- Silt traps will be strategically placed down-gradient within forestry drains near streams.

- Double silt fencing will also be put down slope of felling areas which are located inside the 75 metre buffer zone.
- No direct discharge of such ditches to watercourses will occur. Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities.
- Brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur.
- Timber will be stacked in dry areas, and outside a local 75 metre watercourse buffer. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites.
- Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff.
- Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required.
- Pre construction inspections of all areas, drains, and areas of unusual ground conditions will be carried out. Surface water sampling will be carried out before, during and after the felling activity.
- It is proposed to use interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems.
- Other measures include the use of attenuation ponds, temporary storage lagoons, sediment traps and siltbusters.
- No stockpiling of materials near to watercourse will be permitted.
- Runoff during construction of turbines will be discharged at each turbine through stilling ponds and buffered outfalls onto vegetated surfaces.

- Works will be suspended during times of heavy rain which will be pre-empted by the reviewing of forecasting.
- There will be no waste discharge from welfare facilities, all waste shall be collected in individual tanks and removed from site.
- No wet batching of wet cement products will occur on site and precast elements for culverts and concrete works will be used.
- It proposed that new watercourses crossing will use clear span pre-cast concrete culvert crossings such as a bottomless arch or bottomless box culvert.
- With regard to drilling, it is stated that the area around the drilling fluid batching, pumping and recycling plants shall be bunded using terram and sandbags in order to contain any spillages.
- Minimum buffer zones between works area and the SAC boundary will be no less than 150 metres.

7.203. Mitigation measures outlined above are common practice within such development sites and are known to be effective, I am therefore satisfied the adequate mitigation has been proposed to protect the water environment both within and surrounding the development site.

7.204. It is stated within the EIAR that subject to the implementation of mitigation measures outlined within section 8.5 of the EIAR, no significant impacts on the water environment from the proposed development will occur during construction, operation, or during decommissioning phases of the wind farm, the grid connection.

7.205. Cumulative impacts have been considered in conjunction with all other existing, approved or proposed projects and given the nature of the proposed works are considered to be unlikely.

Flood Risk

7.206. A site specific flood risk was carried out in relation to the windfarm development and is contained in Appendix 8-2 of the EIAR. No recurring flood events within the EIAR site boundary were noted from the OPW's river and coastal flood map. A recurring flood event is mapped near Bodyke, approximately 2.3 km north of the site. This

recurring flood event is caused by the Anamullaghaun River which flows northwest towards Bodyke. At its closest, it is approximately 1 km north of the site.

7.207. The OPW PFRA map for the area, indicates that sections of the Carrownagowan, Coumnagun, Ballymacdonnell and Killuran Rivers, within the proposed development site, are mapped within the 100-year fluvial flood event areas. These areas however are within an acceptable distance (50m) of any proposed turbine locations.

7.208. Small areas of pluvial flooding are mapped within the site within areas of low relief and/or relatively impermeable soils/subsoils.

7.209. A walkover survey and stream discharge monitoring were conducted between August 2018 and June 2019. Monitoring of flows was undertaken within 7 watercourses throughout the proposed development site. During the walkover survey of the route there was little evidence of historic out-of-bank flow from within the various river channels with the exception of the Coumnagun River whereby historic alluvium deposits were noted. High flows were observed in several channels during site visits following preceding days with heavy rainfall. No localized or regional flooding was observed during these site visits, all flow was contained within the channels.

7.210. I note that no infrastructure is proposed within 50 metres of a flood zone A and all proposed infrastructure is within flood zone C. The proposed development is therefore acceptable from a flood risk perspective.

7.211. The site drainage system was designed integrally with the wind farm layout as a measure to ensure that the proposal will not change the existing flow regime across the site, will not deteriorate water quality and will safeguard existing water quality status of the catchments from wind farm related sediment runoff.

7.212. It is concluded within the FRA that residual flood risks associated with potential fluvial flooding at the affected sections of the proposed route can be managed by way of avoidance during flooding, standard road drainage measures and scour protection measure. The overall risk of flooding within the proposed site boundary is therefore estimated to be low.

7.213. I have considered all of the written submissions made in relation to water and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on water can be avoided, managed and/or mitigated by measures that form

part of the proposed scheme, by the proposed mitigation measures and with suitable conditions. I am therefore satisfied that the potential for direct or indirect impacts on water can be ruled out. I am also satisfied that cumulative effects, in the context of existing and permitted development in the surrounding area and other existing and proposed development in the vicinity of the site, are not likely to arise.

Lands and Soils

7.214. Section 9 of the submitted EIAR assesses and evaluates the potential for significant impacts on lands and soils and geology. Investigations undertaken by the appellant comprised desk studies of the windfarm site, the grid connection route and the surrounding study area, alongside geotechnical investigations during 2019, including 790 peat probes, a peat stability assessment and the logging of findings.

7.215. According to the baseline assessment, blanket peat is the dominant soils type on the northern lower lying section of the site and also on the more elevated eastern and western sections of the site, along with pockets of deep poorly drained mineral soils. Poorly draining peaty soils are mapped in the central and south-central area of the site (towards the summit of Slieve Bernagh). Areas of rock outcrop are mapped close to the Coumnagaun River channel, as well as at the western and northern edge of the site. Peat depth range from 0.05 to 4 metres. 20 no. trial pits have also been completed by MWP between 08th July 2019 – 21st August 2019.

7.216. There are no geological heritage sites locally at the proposed development site. The closest geological heritage site is located in a small quarry at Ballymalone approximately c.3.1km northeast of the proposed development site.

7.217. I note that a peat stability assessment was undertaken in relation to the wind farm site only, and is attached in appendix 9-2 of the EIAR. It is important to note at this juncture that the applicants have had regard to the Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments prepared by the Scottish Government in 2017, in the assessment examination of peat stability in the development site.

7.218. The applicant states that the Carrownagowan wind farm was designed from the outset with a constraints-driven approach to place turbines in low-risk areas. Extensive walkovers and surveys of the site between May 2018 and November 2019 were carried out, with initial constrains relating to the set back from housing, watercourse

buffering, buffering of designated areas and areas of high conservation forestry, and buffering of areas of ecological interest. After analysis which is outlined in section 9.2.7.1 of the EIAR, it was concluded that at 24 no. infrastructure locations the risk ranged from Negligible through Very Low for the majority of the site to Low.

7.219. Further investigation was carried out for the entire site which included an Infinite Slope Stability Analysis (ISSA) using the peat probe data and slope data from the LiDAR DEM to calculate the Factor of Safety (FoS) against peat slide for each location probed. ISSA analysis was completed at 790 locations.

7.220. I note that the DAU raised concerns within their submission in relation to peat stability in the context of changes to the hydrology and flow patterns within the site. Additional queries were raised in relation to whether the rainfall prediction rating had considered Climate Change predictions into the Hazard Rating Criteria. Similar issues were also raised within the third party submissions whereby reference is made to a peat slide in the area in the 1980's.

7.221. The applicant specifically addresses these concerns within the further information response to item no. 2. With regard to the hydrological conditions of the site it is stated that current conditions will remain unchanged, due to the hydrological mitigation measures proposed within section 8 of the EIAR. The applicant has considered landslides such as that which occurred in 2020 and states that none of the hydrological conditions that were present in other slides occur at or in close proximity to the proposed wind farm layout at Carrownagowan. All existing watercourses, designated areas, areas of high conservation forestry and areas of ecological interest have been buffered by design. It is stated that MWP also analysed the historical peatslide at Slieve Bearnagh in 2003 and concluded that the slide was associated with deep peat coincidental with a break in slope. The proposed development has been designed to avoid these conditions.

7.222. The applicant states that this was achieved by using the area excluded by buffering and ecological constraints and excluding areas of high slope from the output of the ground slope analysis. Significant site investigation works including peat probing, shear vane measurements, and trial pitting were carried out within the development site. Data from the peat probing and the slope analysis output from the Lidar DEM was

overlaid on these layer areas allowing flat areas of deeper peat leading to breaks in slope to be identified and thus avoided for new infrastructure.

7.223. It is reiterated by the applicant within the further information response that the peat stability risk assessment was undertaken in a two-step fashion with the final conclusion being that peat landslide presented a Negligible Risk to the infrastructure of the Wind Farm.

7.224. As aforementioned in relation to the hydrological regime, it is stated that there is no proposal within the wind farm layout to alter or change in any significant manner the existing hydrology of the site, all existing drainage pathways will be maintained. The wind farm is designed to utilise the existing Coillte road and drainage network as much as possible. This will have a reducing effect on the peat stability risk associated with construction risk at new work faces.

7.225. With regard to climate change considerations in relation to rainfall levels, it is stated that by adding 20 % it would have the effect of increasing the Negligible risk level of peat slide areas to Very Low. None of the Low locations would increase to Low-Moderate and therefore it would not change the output of the existing PSRA.

7.226. With regard to queries relating to the fire break referred to within the EIAR, I note that Section 2.4 of the further information response to item no. 2 provides a detailed description of this feature. It is stated within this section that the fire break was inspected during the EIAR baseline characterisation of the site. The break excavation ranges from 2-3m deep and 8-10m wide and is a definitive slice into the peat mass, representing a clear and significant break in the peat mass and its associated hydrology.

7.227. I note that the firebreak separates the SAC from the proposed development site. South of T1, T2, T3, T4, T8, T12, T13, it is apparent that the SAC occurs on higher ground above the proposed wind farm site. East of the proposed wind farm site the SAC occurs over the brow of a hill, and the ground within the SAC slopes away from the proposed wind farm site. There is no pathway for a peat slide on the proposed wind farm site to travel towards Slieve Bernagh SAC. It is clear that the SAC is physically separated from the development site, I am therefore satisfied based on the information submitted within both the EIAR and the FI response that the applicant has adequately

addressed the issues raised within the DAU submission and other third party submissions in this regard.

7.228. It is stated within section 9.4.1.2 of the EIAR that the total volume of peat to be excavated is 131,837m3 and the total volume of spoil is 124,899m3. It is proposed to reuse 35% of the excavated materials as site won aggregate and the remainder will be reused as landscaping, roadside berms and placement in deposition areas at the 3 no. borrow pits.

7.229. Potential construction impacts relate to the mobilisation of soils through peat slippage or erosion and the potential for contamination to occur in relation to hydrocarbons. Peat stability has been examined above and I am satisfied that the site does not pose a significant threat to such an event.

7.230. In terms of the operational phase of the development there may be a requirement for minor excavations in the event of an infrastructure fault occurring. There is also a potential for leaks to occur in relation to the transformer equipment within the substation element of the development.

7.231. Potential effects in relation to the decommissioning of the development will be similar to that of the construction phase.

7.232. Major accidents are considered in the context of peatslide which as aforementioned has been examined above.

Mitigation measures

7.233. Section 9.5 of the EIAR outlines proposed mitigation measures in relation to the proposed development, which refer to the following:

- Placement of turbines and associated infrastructure in areas with shallow peat where possible;
- Where possible, use of the existing forestry access road network to reduce peat excavation and borrow pit volumes;
- Use of floating roads (where acceptable to do so) to reduce peat excavation volumes;
- The peat and subsoil which will be removed during the construction phase will be localised to the turbine location and access roads;

- No turbines or related infrastructure will be constructed near or on any designated sites such as NHAs or SACs; and,
- A minimal volume of peat and subsoil will be removed to allow for infrastructural work to take place in comparison to the total volume present on the site due to optimisation of the layout by mitigation by design.
- The retention of vegetated peat layers for reinstatement.
- The use of brash mats to support vehicles on soft ground.
- With regard to peat stability it is proposed to employ a geotechnical engineer experienced in working in the upland peat environment to ensure the implementation of best practice in this environment. The methodology of all civil works will be reviewed by this engineer and the monitoring posts will be the subject of a dedicated inspection on a weekly basis by the geotechnical engineer.
- With regard to the cable route, excavated material will be reused for backfilling trenches.

7.234. Mitigation measures in relation to the prevention of hydrocarbon contamination are similar to those outlined in above within the water section of this report and will not be repeated hereunder. It is of note that an emergency plan to deal with accidental spillages will be contained within the Construction Environmental Management Plan. Additionally, I note that oil storage tanks, will be in a concrete bund capable of holding 110% of the oil in the transformer and storage tanks.

7.235. All mitigation measures proposed in relation to land and soils are common practice on such development sites and are known to be effective, I am therefore satisfied that the proposed mitigation will adequately protect the surrounding environment. I note that no significant residual effects are expected.

7.236. I have considered all of the written submissions made in relation to lands and soils and the relevant contents of the file including the EIAR. I am satisfied that the potential for direct or indirect impacts on lands and soils can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures and with suitable conditions. I am therefore satisfied that the potential for direct or indirect impacts on lands and soils can be ruled out I am also

satisfied that cumulative effects, in the context of existing and permitted development in the surrounding area and other existing and proposed development in the vicinity of the site, are not likely to arise.

Noise

7.237. Section 10 of the EIAR submitted examines the baseline noise conditions and outlines the predicted noise levels arising from the proposed development. A full noise assessment and predictive modelling has been carried out by the applicant to inform the EIAR. Background noise values were recorded and correlated with the particular wind speed at the time. In total, 6 noise monitoring locations (NML) were selected to characterise the existing noise environment and derive the noise limit criteria for potentially impacted locations. Background noise monitoring was undertaken over the period 12th September to 11th October 2018.

7.238. Prevailing background noise levels are outlined in table 10-3 and 10-4 of the EIAR. Predicted noise levels in relation to construction are outlined in table 10-5, 10-6 and 10-7 of the EIAR and it is of note that worst case scenario results show that noise outputs at the nearest sensitive receptor to each element of the development does not exceed the construction noise threshold as per British Standard BS 5228:2009 Noise and Vibration Control on Construction and Open Sites.

7.239. With regard to borrow pit activity I note that a blast management plan will set out noise and vibration limit values set out in the Environmental Protection Agency's, Environmental Management in the Extractive Industry in addition to the mitigation measures to prevent significant impacts arising as a result of this activity. Such mitigation will be considered hereunder within the relevant section.

7.240. With regard to the operation of the development it is important to note that the current Wind energy Development Guidelines (2006) permit a maximum of 45dB in relation to noise emissions. The preferred draft approach as set out within Section 5.7.4 of the draft Wind Energy Development Guidelines 2019, propose noise restriction limits consistent with World Health Organisation Guidelines of 5dB(A) above existing background noise within a range of 35 to 43Db(A) with 43dB(A) being the maximum noise limit permitted day or night. These noise limitations are below those permitted under the 2006 guidelines.

7.241. Table 10-12 outlines the predicted noise levels at all noise sensitive locations. At all locations and at all wind speeds the predicted noise emissions do not exceed the derived limit criteria for both the quiet daytime and night-time periods as set out in the 2006 guidelines and in many cases noise emissions are significantly below maximum noise limits.

7.242. Noise predictions in relation to the proposed grid connection are associated with construction only and will be carried out during restricted hours.

7.243. I note that the EIAR also refers to amplitude modulation (AM) and tonal noise which can arise from transient stalls in blade rotation. These sounds are low frequency and can travel extensive distances. It is stated that the applicant will be seeking a warranty from the turbine manufacturer guaranteeing no tonal content at the nearest noise sensitive receptors. With regard to AM I note that at present there is no way of predicting OAM at any particular location before turbines begin operation due to the general features of a site or the known attributes of a particular turbine. The applicant therefore states that should AM arise it will be investigated thoroughly and if a complaint is justified, the required mitigation measures will be undertaken.

7.244. With regard to the proposed substation, I note that it is located approximately 700m from the nearest noise sensitive receptor. The noise level associated with the operation of the substation at the nearest noise sensitive receptor is predicted to be 22 dB(A). No significant noise impacts are therefore expected to arise in this regard as background noise will be higher than that emitted from the substation at this location. There will be no significant cumulative impact including the Wind Farm on overall noise levels at any noise sensitive receptor within the study area.

Mitigation

7.245. Section 10.4 of the EIAR outlines mitigation measures proposed in relation to noise emissions and includes the measures to reduce noise and vibration during construction, it also refers to the use of a nominated community liaison officer tasked with responding in a prompt manner to any noise and vibration complaints which may arise. Wherever possible the contractor will inform residents where appropriate of the proposed blasting times and any deviation from this programme in advance.

7.246. Mitigation in relation to AM includes, slowing down or stopping the relevant wind turbine, altering the pitch of the blades and/or realigning the yaw of the rotor (i.e. changing the angle at which the turbine rotor faces into the wind.

7.247. Significant residual impacts are not expected to arise. Cumulative noise emissions were also modelled and are not considered to be significant in relation to any phase of the proposed development.

7.248. I have considered all of the written submissions made in relation to noise and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on noise can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures and with suitable conditions. I am therefore satisfied that the potential for direct or indirect impacts on noise can be ruled out. I am also satisfied that cumulative effects, in the context of existing wind development in the surrounding area and other existing and proposed development in the vicinity of the site, are not likely to arise.

Landscape and visual assessment

7.249. Section 12 of the EIAR submitted examines the potential for impacts arising from the development to landscape and the visual amenity of the area. Field visits were undertaken in order to establish baseline conditions. Reference was also made to the landscape designations within the Clare Development Plan and the Landscape Character Assessment for the County. Visual mapping and baseline data which include viewpoint locations are based on a radial area of 30 kilometres. This exceeds the area recommended by the DOEHLG (2006) Guidelines of a 20 kilometre radius Zone of Theoretical Visibility for wind turbines of 100 metres (or more) in height, and 25 kilometres where there is a landscape of national importance. The ZTV map indicates that the locations at which the majority of turbines would be visible. The ZTV map is a topographical tool and does not take into account buildings or vegetation. In order to properly determine the actual visibility of the turbines, 27 no. specific locations identified within the ZTV were assessed in detail. Of the 27 locations and photomontages examined within the EIAR, visual impacts for turbines were examined and the significance of effects for all but one of the viewpoints ranged from no effect to moderate. Viewpoint no. 7 gives rise to a significant effect, this will be examined in detail hereunder.

7.250. The proposed development is located in a Settled landscape as identified within the Clare County Development Plan, such landscapes accommodate roads, power-lines, quarries and piped services that service settlements and industry. An area of Heritage Landscape is located to the east (approximately 1.1 kilometres) of the proposed development, from the east of the peak of Moylussa and along the shores of Lough Derg from Killaloe to the southeast to Mountshannon in the northeast. This area includes the village of Ogonelloe as well as a number of islands in Lough Derg, including Inis Cealtra or Holy Island and part of the lake itself. A number of areas classified as Heritage landscape (Lough Graney and the southern Slieve Aughties) are also located approximately 8 kilometres to the north of the proposed turbines. These areas are collectively described in the Plan as Heritage Landscape 1, having regard to the LCAs of Slieve Aughty Uplands, LCA 6 Lough Graney and Unit 6 Lough Graney and Unit 7 Lough Derg Basin.

7.251. Several scenic routes are in the vicinity of the proposed development. However only some of these scenic routes will experience visibility, as is seen from the overlay of the ZTV map. Scenic Routes 26, 27, 28, and 32 are most likely to be potentially affected by the proposed development. The closest scenic route to the proposed development is Route 32, from Church at Ballylaghan crossroads to Caherhurly.

7.252. The site of the proposed development is located within LCA 8, Sliabh Bernagh Uplands, which is characterised as Mountain Moorland. Such areas are described as having peaked ridged or rolling mountains and upland with steep sides or gently formed valleys, landcover comprising blanket bog, a mottling of heather, wild grasses and some rush in wet flushes and being a landscape type of relative remoteness and often comprising pristine, unspoilt and remote landscapes.

7.253. The LCAs in the surrounding area are considered in detail under section 12.2.1 of the EIAR and I note all of which were considered in detail in the preparation of the Clare County Wind Energy Strategy in which the proposed site is identified as being in a Strategic Area/Acceptable in Principle for wind energy development.

7.254. It is important to note that the applicant also considered the LCAs within the North Tipperary Plan, Galway County Development Plan and the Limerick County Development Plan, details of which are outlined in section 12.2.1 of the EIAR.

7.255. It is important to note at this juncture that Failte Ireland within their submission refer to presence of the proposed development in proximity to the Heritage Landscape in Clare

County Development Plan the visibility of the development from a designated Area of Primary Amenity in the North Tipperary Development Plan. Both designations have been identified as high sensitivity landscapes, including the lake itself, which play a regionally important role as tourism and amenity features. It is stated that this role will only increase in significance with the development of Fáilte Ireland's newest brand proposition 'Ireland's Hidden Heartlands' and initiatives such as the Shannon Tourism Masterplan. I am satisfied that the applicant has adequately considered all of the relevant landscape designations within the assessment of visual and landscape impacts and I will consider such impacts in more detail throughout this section of the report.

7.256. I note that details pertaining to the immediate environs of the site are described in Section 12.2.2.6 and subsequent sections of the EIAR.

7.257. The proposed turbines are the element of the wind farm most likely to cause visual effects. Visual receptors to the north include residents of Bodyke and Tuamgraney/Scarriff, Feakle and parts of though some screening by built form is likely. to the west, O' Callaghansmills and Quin have theoretical visibility while to the south, Parteen and Castleconnell, Newport and Limerick show theoretical visibility, Certain settlements, including Kilbane, Broadford, Ogonelloe, Killaloe/Ballina, O' Briensbridge, Nenagh and the majority of Tulla will not have visibility of the proposed development as indicated on the ZTV, no visual effects will therefore occur.

7.258. Residential receptors include residents in close proximity to the turbines which have open views of the turbines, especially in locations where views are of high value, and viewers engaged in recreation and focussed on the landscape such as those walking or hiking on trails or at recreation areas. There are some residences, though relatively few in number, often in clusters, along the roads immediately east of the site (on and near the R465) and those on minor local roads in more elevated locations east and west of this road which have theoretical visibility.

7.259. A total of 27 viewpoints were identified informed by the site visits and ZTV mapping and are listed in table 12.7 of the EIAR, representing a range of visual receptors from a variety of locations, directions and elevations and landscape context and character. Locations represent receptors at the following locations: Settlements, Residential clusters, Cultural heritage and tourist attractions, Cultural Heritage sites, recreation trails, amenity areas, Rural and regional roads, including scenic routes.

7.260. Receptors also include those along local roads northwest of the site near Caherhurly wherever there are open views, though the coniferous forestry is likely to restrict visibility to some extent. Visibility is illustrated by Viewpoints 13 (Caherhurly) which represents views close to the crossroads and school, though high hedgerows and vegetation restrict open views in parts of this road. View 14 which represents a part of The Bog Road with relatively open views where the turbines will be visible. Viewpoint 15 illustrates that there is no visibility from the St Mary's Church, due to screening, and there is only partial visibility of blade tips from the vicinity of the road where the houses are located due to screening. Receptors are also located in Ballyboughan where the ZTV shows visibility, though there is considerable screening in the vicinity of the dwellings.

7.261. Guidance in relation to the assessment of visual impacts within the current guidelines, relates to the siting, layout and landscape setting of the proposed windfarm. Section 6.3 of the 2006 guidelines refers to the positive effects of forestry within the setting of a turbine and the counterbalance that such landscape features can provide. Refence is also made to the preferable positioning of the proposed turbines on a rising slope. Visual stacking of turbines should be avoided and the location of staggered turbines in an open landscape is preferable.

7.262. These requirements are also contained within the draft Wind Energy Guidelines 2019, within which it is a requirement for visual impact assessment to extend to lands within a 15km radius. The draft guidelines state that the potential for visual disturbance can be considered as dependent on the scale of the proposed turbine and the associated distance. Thus, a setback which is the function of size of the turbine should be key to setting the appropriate setback. A setback distance of 4 times the tip height should apply between a wind turbine and the nearest point of the curtilage of any residential property in the vicinity of the proposed development subject to a mandatory minimum set back of 500 metres. I note that it is stated within the documents submitted that there are no dwellings within 1km of the proposed wind development. However, whilst carrying out a site inspection I noted a dwelling within the forested lands which appeared to be in closer proximity to the development site. The dwelling is secluded within a densely wooded area but removed from the proposed development site to an appropriate degree as to ensure that the minimum setback distance can be achieved.

Potential for significant visual and landscape effects

Construction stage

7.263. Potential impacts to landscape arise in relation to both the construction stage and the operational stage of the proposed development. The Clare WES defined the sensitivity of the Sliabh Bernagh Uplands LCA to wind energy developments as Low to Medium, while noting that certain areas of the LCA (the Heritage Landscape) were considered of High sensitivity. I note that the development site is considered to be of low sensitivity with landcover dominated by coniferous forestry and access roads. The sensitivity of the immediate vicinity of the site, which includes the rest of the Slieve Bernagh range and slopes, is considered Medium to High. The landscape sensitivity of the lands adjacent to the site to the north, south and west is considered Medium. The lands to the north and west have a more complex pattern of landcover and settlement, but no landscape designations, while the lands to the south include open and exposed moorland which is valued for its scenic qualities.

7.264. The land to the east, of the site, including the Heritage Landscape, east of the peak of Moylussa, which slopes towards the shores of Lough Derg, contains a number of designations and is a scenic area with characteristics which include long distance views to the lake and the Arra Mountains, is considered High sensitivity.

7.265. The magnitude of change to these landscapes is considered within section 12.3.1 of the EIAR.

7.266. With regard to the windfarm site the magnitude of change during the construction phase is considered to be High in both the site and immediate vicinity due to the quantum of tree felling and the resultant change to the landscape arising from this activity.

7.267. The magnitude of change to the delivery route is considered to be negligible to low with the removal of hedgerows, some forested lands and agricultural grasslands and no change will occur to the wider landscapes.

7.268. In relation to the grid connection route the magnitude of change is considered to be low given the development is within the carriageway of the road.

7.269. Visual impacts during the construction stage of the development are likely to be similar in terms of magnitude to that outlined above in relation to landscape, and are outlined within section 12.3.1 of the EIAR also. No significant effects are expected to arise.

7.270. **Operational stage**

7.271. The introduction of the proposed wind turbines will result in a change to the landscape character of the site and immediate vicinity, which is a large area of coniferous forestry on the northern slopes of the Slieve Bernagh hills. The character of the site is dominated by coniferous forestry, and the site is relatively remote. The proposed windfarm will be large in scale, resulting in a change to the immediate vicinity including the landscape character in the vicinity of the site itself. It should be noted that the magnitude of change to the local character is likely to be most evident on the site itself as well as to the north and west, but less evident to the east in the highly sensitive Heritage landscape, east of Moylussa. The magnitude of change on the site and immediate vicinity is considered to be of Medium magnitude of change. The magnitude of change in the wider LCA 8 Slieve Bernagh Uplands will vary with the visibility, the magnitude of change, and varies from Moderate change, to Negligible or No change across this landscape character area. There is a similar range in the magnitude of effects in relation to other LCAs. The impact changes with the degree of visibility.

7.272. I note that the magnitude of change at each of the 27 no. viewpoints identified is examined in table 12.8. and range from moderate to slight to no impact, with the exception of viewpoint no. 7 which gives rise to a significant effect. This viewpoint is the view from bodyke road east of the pub on R352. The photomontage shows all 19 of the proposed turbines will be visible from this location. The location of the turbines on the lower slopes means that the towers and some of the hubs are seen against the backdrop of the hills, while the blades protrude over the ridgeline. The staggered layout of the turbines responds to the gently rolling topography of the hills as is required within the guidelines.

7.273. With the exception of this single viewpoint I consider the remaining views where turbines are visible to be laid out in a manner that responds adequately to the topography of the lands, resulting in a development that does not overly dominate the views from these locations. Views are broken up with intervening vegetation and/or buildings and the full windfarm development is therefore not clearly visible from most of the viewpoints thus reducing and softening the magnitude of change from these viewpoints. It is also of note that many of the viewpoints are located some distance from the development site and low number of turbines are visible from these areas, in such instances effects are likely to be slight in terms of magnitude.

7.274. In response to the concerns raised by Failte Ireland and third parties, in relation to the landscape character setting of Lough Derg and the views afforded across it, I note that the applicant within the visual impact assessment examines two views taking in this location. The first view towards the site of the proposed development shows an elevated, panoramic view overlooking Lough Derg of a somewhat managed, agricultural landscape. This is taken from Tountinna, in the Arra Mountains, and shows extensive views with some moorland, fields and forestry plantations in the foreground, but the main views are across Lough Derg and the lake itself. The lake occupies a considerable extent of the view, and across the lake, the land rises towards the Slieve Bernagh hills which are visible. The higher ground along the ridge has extensive conifer plantations and some open moorland areas, such as on Moylussa. It is stated that the Slieve Bernagh hills are visible as far as Ballykildea mountain to the left of the view, with Caher Mountain and Ogonelloe visible to the right of the image. This view has high scenic qualities, the key elements include the lake itself, the topography on the opposite shore.

7.275. The second view illustrates the expansive panoramic view to the northwest and north to the upper reaches of Lough Derg. In the foreground, the lower slopes of the Arra Mountains are visible, with the flatter lands sloping to the lakeshore on the right of the image. The lake itself is a key element in the view, with the Co. Clare coastline and parts of Co. Galway visible across the lake. To the left of the image, the Slieve Aughty hills form a ridge of higher ground on which the distant Derrybrien turbines are just visible. The visual sensitivity of these views are considered to be high.

7.276. The photomontage shows that seven of the turbine hubs (nacelles) are visible above the forested ridge to the right of Moylussa. The tips of three other blades are just visible above the ridge. Though the turbines are visible, they are in a cluster with a limited spatial extent and are seen behind a ridge, and are adjacent to the higher ground to the left, so they do not compete with the height of Moylussa but complement it. The magnitude of change is therefore considered to be low to medium.

7.277. Having reviewed the documentation and photomontages in relation to this viewpoint I am satisfied that the layout of the proposed windfarm is in accordance with the requirements of the guidelines and objective CDP13.2 of the Clare County Development Plan 2017-2023 in this regard and will not give rise to significant visual affects in the context of Lough Derg.

7.278. Cumulative impacts were considered in the context of existing and permitted windfarm development within the vicinity of the site and forestry operations and it was concluded within the EIAR that cumulative impacts would not arise.

7.279. Mitigation measures are outlined in Section 12.4 of the EIAR and refer to localised measures which include refilling borrow pits and reinstatement of habitat where it has been disturbed for construction compounds and facilities. Operational mitigation is stated as being integral to the design of the project in relation to the siting of turbines to minimise effects.

7.280. Decommissioning of the development is not likely to give rise to significant landscape or visual effects. The landscape will be allowed to regenerate, and, in this case, it is likely that the landscape will return to a similar state as it is today, with forestry operations also continuing.

7.281. Overall, the proposed development will introduce new structures into the landscape which will be visible from a number of locations, however I am satisfied, based on the information submitted, that whilst the development can be seen as a visual intrusion within the landscape it will not create an unacceptable obstruction to views within the landscape and will for the large part form an additional element to a view rather than form the central dominant element to a view as such I consider landscape and visual effects to be acceptable and would not be of such a magnitude as to warrant a refusal of the development on this basis.

7.282. I have considered all of the written submissions made in relation to Landscape and Visual Amenity and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on Landscape and Visual Amenity can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures and with suitable conditions. I am therefore satisfied that the potential for direct or indirect impacts on Landscape and Visual Amenity can be ruled out. I am also satisfied that cumulative effects, in the context of existing wind development in the surrounding area and other existing and proposed development in the vicinity of the site, are not likely to arise.

Cultural Heritage

7.283. Section 13 of the EIAR examines the potential for impacts to arise on cultural heritage. A desktop survey was carried out in order to identify constraints or features of

archaeological / cultural heritage potential within or near to the development site. A field inspection was carried out between October 2018 and February 2020. No unrecorded features of archaeological or cultural heritage were identified within the site. There are no Recorded Monuments or National Monuments in State Care or monuments subject to Preservation Orders within 2km of the proposed Project. Albeit there are four National Monuments and three monuments subject to a Preservation Order located within 10km of the proposed Project.

7.284. There are also no Protected Structures within 2km of the proposed wind farm project. However, there is one located along the route of the proposed grid connection and two located within 250m, as listed in Table 13.4 of the EIAR. There are also two Protected Structures, which are also listed on the NIAH, located within 500m of Works Area 2. Townlands and vernacular buildings were also examined with both the development site and the receiving environment.

Potential impacts

7.285. In the absence of any recorded monuments within the windfarm site, grid connection route and works areas, there are no predicted impacts to the recorded archaeological resources during the construction phase. Construction impacts to the setting of BH 5, Ford Edward, will be indirect and moderate adverse due to the location of the house, 20m east of Works Area 2. There is one Protected Structure, BH 1 Kilbane Bridge, located along the grid connection route. The grid connection, where it crosses the bridge, will be directionally drilled to a depth of 1.5m, therefore there are no predicted direct impacts to the Protected Structure.

7.286. No cultural heritage assets will be directly impacted by the construction of the proposed wind farm, grid connection or works areas. Construction of the proposed grid connection will have a direct impact on one designed landscape, that at Ballyquin House (DL 3). However, as the grid connection traverses an existing road, which already extends through the demesne, the predicted impact is imperceptible.

7.287. Construction works at Works Area 2 will impact on the designed landscape of St. Catherine's (DL 4). The Works Area is located at the eastern side of the designed landscape and does not form part of the core of the demesne, as it is separated from the main area by the R445. Construction impacts are considered to be moderate negative on

the demesne as a whole, however no identified individual demesne features will be impacted.

7.288. A number of Areas of Archaeological Potential have been identified within the development site and construction works therefore have the potential to disturb undiscovered archaeological material.

7.289. Impacts arising from operation are negligible and impacts in relation to decommissioning are not predicted.

7.290. Mitigation measures are outlined in the EIAR and include pre-construction archaeological testing and monitoring of groundworks during construction. I consider these mitigations measures to be appropriate and acceptable to ensure that impacts do not arise in relation to archaeology and cultural heritage.

7.291. In terms of cumulative impact a number of potential impacts have been identified which are associated with the grid connection. Having regard to the mitigation measure proposed within the EIAR, I consider that cumulative impacts will not be significant.

7.292. I have considered all of the written submissions made in relation to archaeology and cultural heritage and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on archaeology and cultural heritage can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures and with suitable conditions. I am therefore satisfied that the potential for direct or indirect impacts on archaeology and cultural heritage can be ruled out. I am also satisfied that cumulative effects, in the context of existing wind development in the surrounding area and other existing and proposed development in the vicinity of the site, are not likely to arise.

Air Quality and Climate Change

7.293. Section 14 examines the impacts of the development on climate and air. Local Climate conditions are outlined in Section 14.2.3 of the EIAR and are based on data from the synoptic station located at Shannon Airport collected over a 30 yr period.

7.294. Potential air quality impacts are anticipated to be short term confined to the construction phase of the development. Emissions will be solely associated with construction vehicles and the generation of dust.

7.295. It is proposed to mitigate such emissions by maintaining machinery and vehicles in good working order and employing measures which reduce the number of delivery vehicles to the site. No significant effects on air quality are considered likely.

7.296. Carbon losses and savings are also examined and it is stated within Section 14.3.3.4 of the EIAR. It is stated that the proposed development will result in some carbon losses due to the manufacturing process of the wind turbines and the drainage and excavation of organic soil/ peat during the construction phase.

7.297. While there is peat across the site, it is not by definition a fen or acid bog. The site is highly modified and has been drained to facilitate commercial forestry. The hydrological regime across the site has already been significantly altered.

7.298. The proposed wind farm will result in a total carbon loss of 159,754 tonnes over a 30 year life span but will displace 2,825,310 tonnes of CO2 over the same period. It is therefore stated that the predicted carbon losses will be 'paid back' within 1.8 years of the operation of the turbine.

7.299. The decommissioning of the windfarm has also been considered in the context of air and climate change and it is stated that the scale of works involved during the decommissioning phase will primarily involve the dismantling and removal of the Wind Farm infrastructure off-site and the dust generating activities will be greatly reduced when compared to the construction phase. Similarly, emissions from plant and machinery exhausts will be lower than anticipated for the construction phase. Where possible materials will be recovered and recycled minimising the energy required for disposal. Overall impacts are not considered to be significant.

7.300. Cumulative impacts were considered under Section 14.3.5, developments within the vicinity of the site were considered and it was concluded within the EIAR that cumulative impacts would not arise. The potential cumulative impact with other renewable energy projects will be a long term significant positive effect on air quality and climate.

7.301. I have considered all of the written submissions made in relation to Climate and Air and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on Climate and Air can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures or with suitable conditions. I am therefore satisfied that the potential for

direct or indirect impacts on Climate and Air can be ruled out. I am also satisfied that cumulative effects, in the context of existing wind development in the surrounding area and other existing and proposed development in the vicinity of the site, are not likely to arise.

Material Assets

7.302. Section 15 of the EIAR examines the likely significant effects on material assets which includes, transport infrastructure, electricity supply and infrastructure, telecommunications, aviation, water and wastewater infrastructure and waste management. In addition, having regard to the projects setting within an active forest plantation, commercial forestry resources have also been considered as a relevant material asset.

Transport Infrastructure

7.303. With regard to transport infrastructure, section 15.2.1 of the EIAR outlines the details of the surrounding road network to the windfarm site which comprises many local and regional roads. The grid connection route which runs between the Carrownagowan wind farm and an existing substation in Ardnacrushna will follow both local and regional roads for its duration.

7.304. The applicant has prepared a traffic management plan which is contained in appendix 3-4 of the EIAR and states that construction of the wind farm will result in an increase in traffic on the L-8221 local road as all traffic entering and exiting the site will do so via an existing site entrance to the wind farm. The site is connected to the R455 Regional road via the L-8221 Local road.

7.305. All construction transport including deliveries of quarry and building materials, will use the L-8221 local road as the designated delivery route for the wind farm. During the construction of the access roads, crane hardstands and substation buildings, a worst case scenario estimates that the maximum number of loads to be delivered to the wind farm work area would be approximately 8,655.

7.306. Turbine base construction will require 85-90 loads of concrete in one day. This volume of traffic is compared to the same level of use as a 35ha silage harvest. Local residents will be notified of these pours a day in advance and an escorted vehicle will be used to maintain construction traffic safety.

7.307. In relation to the turbine delivery route turbines will be delivered by cargo ships to either Foynes Port in County Limerick or Galway Port in Galway City. The components for each turbine will be delivered in separate loads, some of which are abnormal in terms of their width and length. Pre and post-construction surveys will be carried out to ensure the structural integrity of the selected haulage route. Repairs will be carried out on the public road network, as necessary, during the construction phase, to ensure that the condition does not deteriorate below a standard that could affect the use of the site, as required. Following completion of construction, the condition of the public road network will be of at least the same standard as it was prior to commencement of construction. It is stated that the transport of abnormal loads will be subject to a permit. Deliveries are over a short duration and will not give rise to significant traffic impacts.

7.308. Works are required to facilitate the delivery of turbines and are detailed within section 3.1.3.4 of the traffic management plan. Works will be required at Coolready on the R352, the junction of the R352 and R465 Regional roads in Bodyke and the preceding bend on the R352.

7.309. The existing junction of the R465 Regional road and L-8221 Local road at Drummod is bound on two sides by private houses and will require a new section of access road through third party lands for turbine deliveries to successfully turn onto the L-8221 Local road from the R456 Regional road. All material generated from the excavation works at these areas will be reused where possible or will be brought to an authorised waste facility. Any imported crushed stone and capping aggregate required for these works will be sourced from local quarries in the area where possible.

7.310. Widening of the Local road network to the wind farm site is envisaged along the L-8221 Local road from its junction with the R465 Regional road to Caherhurly. This road has a paved width of between 3.0m to 3.5m between there and the site entrance for a distance of approximately 2.3km and will require widening to 5.0m to facilitate the delivery of turbine components. This increased width will allow for two cars or a car and a truck to pass by each other. This section of road will be strengthened also.

7.311. The existing site entrance to the wind farm on the L-8221 Local road will require widening on its eastern side to allow the long turbine component loads turn south at this point. The widened area of the junction will be cordoned off to a radius of 10m for

normal traffic and the space will only be made available specifically for turbine delivery. Following completion of the project the widened area will remain in place by cordoning off the area with a permanent fence installed to a 12m junction radius. This area will only be made available for any replacement turbine component deliveries.

7.312. Two new junctions will be constructed on the L8218 Local road so that access can be provided from the main site entrance on the L-8221 Local road to the rest of the wind farm. Permanent access to the wind farm during the operational phase will only be from the L-8221 and L-8218 Local road entrances. Operational access from the L-8221 and L-8218 Local roads will be limited to cars and light goods vehicles. The L-30302 Local road to the south of the site will not be used for access to the wind farm and does not require any widening or strengthening works.

7.313. The proposed duration of the works will extend to 18 months. Whilst the grid connection will be the subject of a separate consent I note that details of the route are outlined in section 3.2 of the traffic management plan In order to examine any potential cumulative effects of the development.

7.314. I note that the carrying capacity of effected roads has been assessed and are found to be operating within and below capacity limits and therefore have capacity to cater for the proposed development. Construction works are expected to have a slight to moderate short term effect.

7.315. With regard to the operation of the development, effects are expected to be imperceptible, due to the low levels of traffic associated with the operation of the windfarm.

7.316. Decommissioning of the windfarm will give rise to similar effects associated with the construction of the development.

7.317. Having regard to the foregoing, whilst I acknowledge that the proposed development will give rise to traffic disturbance within the construction period, this is for a limited period of time and as such will not be significant.

Aviation

7.318. With regard to aviation, the potential for impacts raised by Shannon Airport are outlined within a previous section of this report and will not be repeated hereunder. No significant effects are expected.

Telecommunications

7.319. Impacts in relation to the telecommunications - Baseline conditions were established, and network providers were consulted to identify potential risks arising from the development. No issues in relation to interference with telecommunications were raised by any operator.

Water and Waste water management

7.320. Water needs for construction activities will be low and limited to truck washing, wheel wash, dust suppression and sanitary facilities. It is proposed that this water requirement will be sourced from on-site rainwater collection systems and settlement ponds. It is estimated that up to approximately 3,000 litres per day of potable water will be required during peak construction for construction employees. It is proposed that this water requirement will be imported in bulk water tanks. Potable water for during the operational and maintenance phase is estimated to be approximately 60 litres. This water will be supplied as bottled water. The volumes of water required are minimal and would have a negligible impact on the water supply utilities.

7.321. During the construction time period, sanitary wastewater, estimated to be 3,000 litres per day, will be collected in portable toilets during construction. Disposal of sanitary wastes will be managed through a contract with a licenced waste contractor. During the operational phase, wastewater from welfare facilities on site, estimated to be approximately 60 litres per day, will drain to integrated wastewater holding tanks associate with the toilet units. The stored effluent will then be collected on a regular basis from site by a permitted waste contractor and removed to a licenced waste facility for treatment and disposal. The volumes of wastewater requiring disposal are minimal and would have a negligible effect.

7.322. Similarly, waste generated from the site will be removed by a licenced waste facility for treatment and disposal.

7.323. In relation to decommissioning, approximately 85% of turbine components, including steel, copper wire, electronics and gearing, can be recycled or reused. Decommissioning will be a moderate negative impact of the development and likely to require provision of new treatment technologies and/or facilities.

7.324. Residual impacts are considered to be slight to moderate and temporary in nature. The implementation of mitigation measures will adequately address these impacts and as such whilst I acknowledge that impacts will occur, I consider that they can be adequately controlled by condition should the board be of a mind to grant permission.

7.325. In terms of cumulative impact a number of potential impacts have been identified which are associated with the grid connection, and in relation to the increase in traffic movements arising from the development and existing traffic volumes in the area however having regard to the mitigation measures proposed above, I consider that cumulative impacts will not be significant.

7.326. I have considered all of the written submissions made in relation to material assets (transport infrastructure, electricity supply and infrastructure, telecommunications, aviation, water and wastewater infrastructure and waste management) and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on material assets can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, by the proposed mitigation measures and with suitable conditions. I am therefore satisfied that the potential for direct or indirect impacts on material assets can be ruled out. I am also satisfied that cumulative effects, in the context of existing wind development in the surrounding area and other existing and proposed development in the vicinity of the site, are not likely to arise.

Interactions between the Factors and Cumulative Impacts

7.327. I have considered the interrelationships between factors and whether these may as a whole affect the environment, even though the effects may be acceptable when considered on an individual basis. Section 16 of the EIAR provides a matrix of the impact interactions.

7.328. I consider that there is potential for population and human health to interact with all of the other factors (biodiversity, water, air and climate, noise, landscape and visual, cultural heritage and material assets – traffic). The details of all other interrelationships are set out in Section 16 of the EIAR which I have considered.

7.329. I am satisfied that effects as a result of interactions, indirect and cumulative effects can be avoided, managed and / or mitigated for the most part by the measures which form part of the proposed development, the proposed mitigation measures detailed in the EIAR, and with suitable conditions.

Reasoned Conclusion

7.330. Having regard to the examination of environmental information contained above, to the EIAR and supplementary information provided by the applicant and the submissions received, the contents of which I have noted, it is considered that the main significant direct and indirect effects of the proposed development on the environment are as follows.

- Negative impacts on **human health and population** arising from construction include noise, traffic and dust disturbance to residents of neighbouring dwellings. All of these impacts are low to moderate. Adequate mitigation measures are proposed to ensure that these impacts are not significant and include adequate mitigation for operational noise.
- Benefits/positive impacts on the **Air and Climate**, the proposed development will have a significant positive effect on human health and population due to the displacement of CO_2 from the atmosphere arising from fossil fuel energy production.
- Negative impacts on **Water** could arise as a result of accidental spillages of chemicals, hydrocarbons or other contaminants entering the drainage system and discharging to the river thereafter during the construction and operational phases. These impacts will be mitigated by measures outlined within the application and can therefore be ruled out.
- Negative **Noise and Dust** impacts arise during the construction phase from construction activities. These impacts will be mitigated through adherence to best practice construction measures. Noise disturbance from the operation of turbines is not likely to arise given the separation distances between turbines and residential properties. Impacts arising from noise and dust disturbance during both the construction and operational stage can therefore be ruled out.
- Negative **traffic** impacts arise during the construction phase of the development, these impacts will be mitigated through the implementation of a traffic management plan and a construction management plan. Impacts arising from traffic can therefore be ruled out.

7.331. The EIAR has considered that the main significant direct and indirect effects of the proposed development on the environment would be primarily mitigated by

environmental management measures, as appropriate. Thus, having regard to the foregoing assessment, I am, therefore, satisfied that the proposed development would not have any unacceptable direct or indirect effects on the environment.

8.0 Appropriate Assessment

8.1. The NIS dated November 2020 has been prepared by Malachy Walsh and Partners on behalf of Coillte. The NIS describes the proposed development, its receiving environment and relevant European Sites in the zone of influence of the development. It was informed by a desk top study, maps and ecological and water quality data from a range of sources and site surveys, including bird surveys between 2016 and 2020, Marsh Fritillary survey 2018, Non-volant mammal survey, 2018, Bat surveys over Spring, Summer and Autumn, 2018 and 2019, and habitat surveys and mapping, 2018.

8.2. The report concluded that, taking into account the project design and the implementation of mitigation measures identified in the NIS, the proposed development will not result in adverse effects on the integrity of any Natura 2000 site.

8.3. Having reviewed the NIS, the supporting documentation and the further information submitted, I am generally satisfied that it provides adequate information in respect of the baseline conditions, identifies the potential impacts, uses best scientific information and knowledge and provides details of mitigation measures. I am satisfied, that the information provided is generally sufficient to allow for appropriate assessment of the development.

Stage 1 Screening

8.4. Notwithstanding the submission of a NIS, it is prudent to review the screening process to ensure alignment with the sites brought forward for AA and to ensure that all sites that may be affected by the development have been considered.

8.5. Having regard to the information and submissions available, nature, size and location of the proposed development and its likely direct, indirect and cumulative effects, the source pathway receptor principle and sensitivities of the ecological receptors, I consider the following European Sites are relevant to include for the purposes of initial

screening for the requirement for Stage 2 appropriate assessment on the basis of likely significant effects**.** I note that the applicant has included a screening document

Table 1.0

European Site **Name & Code**	**Distance**	**Qualifying Interest**	**Source-pathway-receptor**	**Considered further in screening**
Slieve Bernagh Bog SAC (002312)	**140m south of T1, 370m north-west of T9, 320m north-east of T15**	Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130]	Site intersects with SAC at entrance and abuts the SAC elsewhere.	**Yes,** There is intersection with this SAC at the site entrance and a section of the development site will drain towards this SAC. There is, therefore, potential for habitat loss/alteration/ fragmentation effects to occur indirectly through water quality impairment and the spread of invasive species.
Glenomra Wood SAC (001013)	7.6km south of T13 Grid connection intersects SAC along public road This element will be subject to separate application	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Old Oak Woodland habitat occurs immediately adjacent to the public road.	**No,** The SAC is delineated by a fence line separating the woodland from the public road. Any interaction between the construction works and the roadside vegetation will be incidental and will not have the potential to cause a significant effect to the conservation of area.
Danes Hole, Poulnalecka SAC (000030)	**6.6km south-west of T1**	Caves [8310] Old sessile oak woods with Ilex and	There is no meaningful hydrological	**No,**

	5.8km south-west of grid connection	Blechnum in the British Isles [91A0] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	connectivity to this site as connectivity is via Doon Lough c. 3.5 km SW of the site.	There is no meaningful pathway. The volume of the lake will provide natural attenuation and retention of silts and sediments.
Lower River Shannon SAC (002165)	15.2km south of T1 1.4km south of grid connection	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] 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 colonising mud and sand [1310] Atlantic salt meadows (GlaucoPuccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410]	There is no meaningful hydrological connectivity to this site as connectivity is via Doon Lough c. 3.5 km SW of the site before ultimately draining to this SAC 20km downstream.	**No,** The volume of the lake and the intervening river system, which is in excess of 20 km in length, provides natural attenuation and retention of silts and sediments.

		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 (AlnoPadion, Alnion incanae, Salicion albae) [91E0] 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]		

Lough Derg (Shannon) SPA (004077)	**4.2km east of T13 7.6km east of grid connection**	Cormorant (Phalacrocorax carbo) [A017] Tufted Duck (Aythya fuligula) [A061] Goldeneye (Bucephala clangula) [A067] Common Tern (Sterna hirundo) [A193] Wetland and Waterbirds [A999]	There is no hydrological connection to this site. Site is within foraging distance to SPA.	**No,** The habitats within the project are unsuitable for the SCIs of this SPA. Furthermore, there is no hydrological connection between the development area and the SPA as the development area is drained to the west by the Owenogarney (Ratty) River within the regional Shannon Estuary North catchment, which ultimately drains to this SPA via Doon Lough, c. 20km downstream.
Slieve Aughty Mountains SPA (004168)	8.0km north of T9 9km north of grid connection	Hen Harrier (Circus cyaneus) [A082] Merlin (Falco columbarius) [A098]	No hydrological connection. Hen harrier and merlin were observed at the development site.	**Yes,** A population of 3-5 Hen harrier pairs are known to breed in and around the wind farm site. There is potential for disturbance to foraging and breeding Hen Harrier as a result of noise and vibration from construction works and noise disturbance and collisions during operation of turbines.
Slievefelim to Silvermines Mountains SPA (004165)	16.7km southeast of T13 13.2km east of grid connection	Hen Harrier (Circus cyaneus) [A082]	There is no plausible source-receptor pathway to the habitats or	**No,** The only SCI of this SPA is Hen harrier. The project site is located outside the core and maximum foraging range of the Slievefelim to

			watercourses within this SPA.	Silvermines Mountains SPAs resident population of Hen harrier. Therefore, it is considered that there are no ecological processes or pathways by which the project may significantly impact the SPAs resident population of Hen harrier.
River Shannon and River Fergus SPA (004077)	18.7km south of T1 4.8km south-west of grid connection	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]	There is no meaningful hydrological connectivity to this site as connectivity is via Doon Lough c. 3.5 km SW of the site before ultimately draining to this SAC 20km downstream	**No,** The volume of the lake and the intervening river system, which is in excess of 20 km in length, provides natural attenuation and retention of silts and sediments.

		Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Knot (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]		
Kilkishen House SAC (002319)	11km southwest of T1 10.4km west of grid connection	Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	Site is outside of foraging distance from this SAC.	**No,** There will be no decline in the condition of the LHB roost (damage or disturbance) or the habitats within 2.5km of this roost arising from the project.

Ratty River Cave SAC (002316)	13.3km southwest of T1 10km west of grid connection	Caves not open to the public [8310] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	Site is outside of foraging distance from this SAC.	**No,** There will be no decline in the condition of the LHB roost (damage or disturbance) or the habitats within 2.5km of this roost arising from the project.
Glendree Bog SAC (001912)	13.5km west of T19 14km north-west of grid connection	Blanket bogs (* if active bog) [7130]	No pathway to site	**No,** The project site is located within a different sub-catchment.
Loughatorick South Bog SAC/pNHA (000308)	14.2km north of T16 18km north-east of grid connection	Blanket bogs (* if active bog) [7130]	No pathway to site	**No,** The project site is located within a different sub-catchment.
Newgrove House SAC (002157)	15.2km north-west of T1 15.2km north west of grid connection	Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	Site is outside of foraging distance from this SAC.	**No,** There will be no decline in the condition of the LHB roost (damage or disturbance) or the habitats within 2.5km of this roost arising from the project.
Clare Glen SAC (000930)	19.8km south-east of T13 14.6km east of Grid Connection	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Trichomanes speciosum (Killarney Fern) [1421]	No pathway to site	**No,** The project site is located within a different sub-catchment.

Screening Determination

8.65. The Screening Report submitted screens out all Natura 2000 sites on the grounds that they are removed from the development and will not be affected by disturbance with the exception of the following:

- Slieve Aughty Mountains SPA (004168)
- Slieve Bernagh Bog SAC (002312)

8.66. I have considered additional European sites as listed above, as well as those considered within the applicants NIS, and consider that the applicant's approach is reasonable. Based on my examination of the NIS report and supporting information submitted, the scale of the development, its likely effects by way of the potential to contaminate or create disturbance to qualifying interests of the Slieve Aughty Mountains SPA (004168) and Slieve Bernagh Bog SAC (002312) by way of water pollution and sedimentation and noise disturbance and vibration during construction, I would conclude that a Stage 2 Appropriate Assessment is required for these Natura 2000 sites. It is important to note that mitigation measures have not been considered in the Appropriate Assessment Screening.

Stage II Appropriate Assessment

8.67. The following Appropriate Assessment of the implications of the proposed works alone and in combination with other relevant plans and projects will be carried out in relation to the following European sites in view of their conservation objectives:

- Slieve Aughty Mountains SPA (004168)
- Slieve Bernagh Bog SAC (002312)

8.68. The NIS submitted on behalf of the applicant concluded that the proposal will not, beyond reasonable scientific doubt, adversely affect the integrity of any Natura 2000 designated sites either directly or indirectly.

8.69. The following is a summary of the objective scientific assessment of the implications of the project on the qualifying interest features of the European sites using the best scientific knowledge in the field. All aspects of the project which could result in adverse effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are considered and assessed.

Potential for direct and indirect effects

8.70. As outlined within table 1.0 the potential for adverse effects relates to noise disturbance and vibration, changes to water quality arising from pollution and sedimentation of watercourses arising at various locations and associated with various operations during the construction of the development as follows and the deterioration of habitats and/or sedimentation arising from the spread of invasive plant species. It is important to note at this juncture that there will be a 95m intersection with the Slieve Bernagh SAC, close to the wind farm entrance, where road widening along the haul route is proposed. QI habitats are not present in this section.

8.71. Locations at which effects may arise:

8.72. The Slieve Bernagh Bog SAC: This site extends both north and south of the wind farm and is connected hydrologically to the development area. The development area will require a number of stream crossings in the area that drains towards the SAC. The southern part of the Slieve Bernagh Bog SAC is at a higher elevation (up-gradient) to the proposed wind farm site, therefore no part of the development area will drain towards this section of the SAC. However, the northern part of Slieve Bernagh Bog SAC extending away from the L-8221 is situated at a lower elevation (down-gradient) than the proposed wind farm, and part of the wind farm will drain towards this section of the SAC. There is potential for habitat loss/alteration/fragmentation effects to occur indirectly through water quality impairment.

8.73. Slieve Aughty SPA: This site is located c. 8km to the north of the development site, the proposed development has the potential to give rise to ex-situ effects within the development site and immediate vicinity in relation to this SPA with regard to Hen Harrier.

8.74. With regard to the Zone of Influence relating to such impacts it is of note that pollution and sedimentation can have an indirect effect by way of degradation of habitats from the changes in water quality and can also indirectly affect SCIs of Natura 2000 sites by adversely affecting habitats on which SCIs rely.

8.75. With regard to noise and vibration a defined ZoI is applied. I note from the NIS submitted that a conservative and precautionary approach has been adopted in defining the ZoI which has been set at 500 metres in relation to Hen Harrier.

8.76. I note that potential for impacts to arise from dust, and human activity are also considered within the NIS. Such impacts are not considered likely to give rise to significant adverse effects and occur largely outside of the relevant ZoI.

8.77. Impacts arising from the potential to spread invasive plant species are also examined and are considered in relation to each European site as follows.

Slieve Bernagh SAC

8.78. Slieve Bernagh Bog is situated to the west of Lough Derg, in the south-east of Co. Clare. The site comprises the Slieve Bernagh mountain range, with the highest peaks at Moylussa (532 m) and Cragnamurragh (526 m), and the surrounding peatlands that flank its northern slopes. It is a site of considerable conservation importance as it contains a range of peatland types, including active blanket bog, a habitat listed with priority status under the E.U. Habitats Directive. It is one of the last remaining areas of intact open moorland habitat in this part of the country. Coniferous forest plantations are the sites greatest threat.

8.79. In relation to the qualifying interests of this site North Atlantic wet heaths, European dry heath and blanket bog are sensitive to changes in hydrology, there is therefore potential to impact this QI as a result of the development which will require excavation of peat soils from the site which could potentially change the hydrological regime of the area.

8.80. With regard to the spread of invasive plant species, Himalayan Knotweed and Rhododendron have been recorded within the wind farm site. In the absence of mitigation the potential spread of these species through construction phase impacts (removal of trees/vegetation and earth moving works) could lead to habitat alteration effects to the SAC.

Slieve Aughty Mountains SPA

8.81. The Slieve Aughty Mountains SPA is a very large site that extends southwards from just south of Lough Rea, County Galway to Scariff in County Clare. The site consists of a variety of upland habitats, though approximately half is afforested. The coniferous forests include first and second rotation plantations, with both pre-thicket and post-thicket stands present. Substantial areas of clear-fell are also present at any one time. The principal tree species present are Sitka Spruce (Picea sitchensis) and Lodgepole

Pine (Pinus contorta). Almost one-third of the site is unplanted blanket bog and heath, with both wet and dry heath present. Well-developed blanket bog occurs at several locations, notably Sonnagh, Loughatorick South and Glendree.

8.82. The Slieve Aughty Mountains are a stronghold for Hen Harrier and support the second largest concentration in the country. A survey in 2005 recorded 27 pairs, which represents over 12% of the all-Ireland population.

8.83. The site also supports a breeding population of Merlin. The population size is not well known but is likely to exceed five pairs. Red Grouse is found on many of the unplanted areas of bog and heath – this is a species that has declined in Ireland and is now Red-listed.

8.84. The Slieve Aughty Mountains SPA is of ornithological significance, as it provides excellent nesting and foraging habitat for nationally important breeding populations of Hen Harrier and Merlin, two species that are listed on Annex I of the E.U. Birds Directive.

8.85. The potential for impacts to arise in relation to this SPA relate to ex-situ effects in relation to roosting or breeding Hen Harrier. Hen harriers are ground nesting birds that breed in moorland, young conifer plantations and other upland habitats. It is stated that Pre-thicket conifer plantation (first and second rotation) may be used by breeding hen harriers and foraging harriers appear to avoid forest stands less than 3 years and greater than 15 years of age. The felling of suitable habitat has the potential to give rise to displacement effects to this species in conjunction with constriction activities which may result in further displacement of these birds from the site and surrounding area as a result of noise and disturbance.

8.86. Whilst Merlin were seen flying over the site there was no evidence of breeding or roosting Merlin at the site and the use of the site by this species was not considered to be likely.

Potential in-combination effects

8.87. In combination effects are examined within section 4.3 of the NIS submitted. The proposed works were considered in combination with impacts arising from forestry, habitat alteration and fragmentation, peat harvesting and other development and windfarms in the area.

8.88. In-combination effects have also been considered in the context of climate change and the potential for climate change to impact erosion and therefore water quality within rivers.

8.89. The NIS submitted for the proposed project concludes, having considered the aforementioned activities and development that subject to mitigation measures relating to the protection of water quality and noise and vibration, no significant in-combination effects are identified with the proposed development.

Mitigation

8.90. Mitigation measures have been set out within Section 5 of the NIS submitted and are extensive in number, it is important to note that not all mitigation proposed will be listed hereunder, however I have examined all mitigation proposed and considered such measures in relation to the potential impacts arising from the proposed development.

8.91. With regard to surface water effects, I note that a site-specific Surface Water Management Plan has been designed for the proposed Carrownagowan Wind Farm to avoid and minimize impacts to water quality within the site. A surface water run-off drainage system will be constructed at each of the turbine locations and along the new sections of road, to separate and collect 'dirty water' run-off from the turbines and road and to intercept clean over land surface water flows from crossing internal roadways. Drains carrying construction site runoff will be diverted into settlement ponds that reduce flow velocities, allowing silt to settle, thereby reducing the sediment loading.

8.92. Settlement ponds will require regular inspection and cleaning when necessary. This will be carried out under low or zero flow conditions so as not to contaminate the clean effluent from the pond. Where necessary, check dams, sandbags, silt fences will be installed in adjacent drainage roadside drainage ditches to ensure optimum standard of water running into adjacent streams from the roadside drainage. During periods of heavy precipitation and run-off, works will be halted or working surfaces/pads will be provided to minimise soil disturbance. Additional measures relating to surface water include the installation of silt fences, check dams on drains and minimising of areas of exposed peat. Surface water will be inspected daily.

8.93. Mitigation measures in relation to excavated material are set out in section 5.1.1.3 of the NIS and include the prevention of stockpiling of materials and the reuse of materials within the site. Excess/unsuitable material will be immediately removed to a

Material Deposition Area. Appropriate siltation measures will be put in place prior to excavations. Stockpiles will be temporarily stored a minimum of 20m back from rivers/streams on level ground with a silt barrier installed at the base.

8.94. For all grid connection trenching along the local road, any unsuitable backfill material excavated will be immediately taken away from the works area in trucks and disposed of under license from CCC.

8.95. With regard to dewatering, ground water/surface water will not be pumped directly into roadside drains/watercourses, such water which has become silted within the turbine foundations will be pumped to the surface water drainage system. Where this is not feasible, temporary storage will be provided within the excavations and dewatering carried out at a flow rate that is within the capacity of the settlement ponds.

8.96. A suitably qualified and experienced project ecologist will be employed during the construction phase of the project. Duties will include the review of all method statements, delivery of toolbox talks and monitoring of construction phase to ensure all environmental controls and mitigation is implemented in full.

8.97. Measures to prevent against the spread of invasive plant species are outlined in section 5.1.2.2 of the NIS submitted. A pre-construction survey will be carried out prior to commencement of construction and all stands of such species within the ZoI will be clearly marked out. The services of an Invasive Alien Species Specialist will be required to review, and oversee the implementation of the Site Specific Management Plan.

8.98. Prior to being brought onto the site, all plant and equipment will be cleaned and free of soil/mud/debris or any attached plant or animal material. Prior to entering the site, all plant/equipment will be visually inspected by the ECoW to ensure all adherent material and debris has been removed.

8.99. Forestry felling and vegetation clearance will be undertaken outside of the bird breeding period, March to August, inclusive. If there is any remaining clearance during that period, it will only be completed following survey by the ECoW to confirm nesting birds are absent from the area to be cleared/felled.

8.100. With regard to concrete, washout of concrete trucks will occur off-site at a designated, contained impermeable area at supplier's depot. No disposal of concrete remnants will be permitted on site.

8.101. Mitigation in relation to temporary construction compounds and refuelling is outlined in section 5.1.2.8 and 5.1.2.9 respectively and includes the diversion of surface water to an oil interceptor to prevent pollution, the use of a bunded containment area within the compound for the storage of fuels, lubricants, oils etc, the use of 110% capacity double bunded mobile bowsers, plant nappies or absorbent mats, long term storage of wastes and oils will not be permitted on site.

8.102. A CEMP has been submitted as an appendix to the NIS submitted and outlines all mitigation proposed in relation to the entire project.

8.103. All mitigation measures will be examined in relation to the potential for likely significant effects on the aforementioned Natura 2000 sites within the following integrity test.

8.104. **The integrity Test**

8.105. I have considered the NIS along with the information submitted with the application and have had regard to the mitigation measures outlined. Potential for impacts to arise in relation to the leakage of oils and diesels or other such contaminates from construction vehicles has been dealt with within the mitigation measures outlined in Section 5 of the NIS submitted and the appended CEMP. All machinery will be checked prior to entering the works area and all fuel, lubricants and hydraulic fluids will be kept in a secure bunded area removed from watercourses with a buffer of 75m from rivers and 50m from streams.

8.106. Stream crossings will be using clear span pre-cast concrete culvert crossings such as a bottomless arch or bottomless box culvert. The design of a clear span pre-cast concrete culvert crossing will ensure that the existing stream/river bank is maintained during the construction phase, which will avoid the need for in-stream works. This design will ensure that the existing channel profile within each watercourse is maintained and gradients within the watercourse are not altered. The existing hydrological regime of each watercourse will be maintained.

8.107. These mitigation measures are standard in nature and are known to be effective. I am therefore satisfied that the mitigation measures outlined in relation to hydrocarbon

contamination of soils and waters are acceptable and will prevent impacts from such sources to the designated sites listed above.

Northern Atlantic wet heaths, European dry heaths, Blanket bogs

8.108. It is of note that European dry heath occurs on the southern summits of steeper slopes within the SAC, south of and outside the project site at a higher elevation, and thus will not be adversely affected by potentially significant water quality or resource impacts at source or downstream/downgradient of the wind farm. Wet heath is considered to occupy the greatest surface area of the SAC. Indirect impacts of the project, such as dewatering could lead to adverse effects to this habitat through lowering the water table, thus leading to aerobic conditions and increased decomposition, which, if significant, could alter the nutrient status and overall character of the habitat. The applicant proposes to maintain the hydrological regime of the development site and notes that there is a considerable bounding fire break as well as dividing forest roads located between the works area and the SAC located to the south, which breaks any hydrological link between ground water associated with the project site and the SAC to the south. Furthermore, the southern part of the Slieve Bernagh bog is at a higher elevation (up-gradient) to the proposed development site, therefore no part of the proposed development site will drain towards this section of the SAC.

8.109. The northern part of Slieve Bernagh Bog SAC is situated at a lower elevation (down-gradient) than the proposed wind farm, and part of the proposed development site will drain towards this area. Where the SAC occurs to the north of the site (T19 and Met Mast are the closest proposed infrastructure) the natural elevation changes along this boundary are such that the ground elevation at the turbine location in the northern section is c.25m lower than at the SAC boundary over a distance of c.432.5m. There is an east-west flowing stream between the proposed development and the SAC to the north. All natural drainage in this area flows from east to west towards the Owenogarney River. The stream effectively breaks any hydrological link between the water levels to the south of the stream and the SAC to the north.

8.110. It is also proposed to implement an invasive species management plan in order to prevent the spread of such species within the development site and therefore prevent impacts arising to the above QIs.

Hen Harrier

8.111. The project is outside the 2km core foraging range of the Slieve Aughty Mountains SPA population of Hen harrier. The development site is within the maximum foraging range (10km) of the Slieve Aughty Mountain SPA population of Hen harrier. It is possible that the SPA population of Hen harrier occasionally loaf or commute towards the development site. However, SNH (2016) guidance states that the maximum foraging range should only be a consideration in impact assessment in 'exceptional circumstances'. There is an abundance of suitable habitat available inside the boundary of the Slieve Aughty Mountains SPA.

8.112. Notwithstanding the degree of afforestation within the SPA (c.one half), and the use of pre-thicket forestry, the availability of these traditionally suitable habitats inside the SPA together with the wider availability of similar habitats between the SPA and the development site, indicates that the development site is unlikely to be of inherent value to the SPA population of Hen harriers.

8.113. The design of the project was driven by a process of mitigation by avoidance as well as a principle of using existing infrastructure to the maximum possible extent. Construction of the project will be phased which will concentrate activity within the development site to certain areas at a time, leaving other areas relatively less disturbed. The most valuable foraging and breeding habitats for upland birds have been excluded from the developable area and will be outside the areas of construction works. Connectivity within the development site and between the development site and the SPA will therefore be maintained during the construction phase.

8.114. A study at the Derrybrien wind farm in County Galway found that Hen harriers continued to hunt over the area following construction of the wind farm, often passing within 10-50m of turbines (Madden & Porter 2007). The distance between each turbine in the proposed Carrownagowan Wind Farm will be at least 500m.

8.115. A Collison Risk Model (CRM) was undertaken for the project. The collision risk for the local Hen harrier population has been calculated at a rate of 0.056 collisions per year, or 1.65 birds over the 30 year lifetime of the wind farm. This corresponds to a 2% increase in the background mortality rate of the local population and a 0.1% increase in the background mortality rate of the national population. Therefore the magnitude of the collision effect is considered Low.

8.116. While located within the 10km maximum foraging range, no exceptional circumstance has been identified to indicate that the development site is an ecologically valuable resource for the SPA population of Hen harrier. It is considered that there are no ecological processes or pathways by which the project may significantly impact the SPAs resident population of Hen harrier. Hen harriers frequently recorded within the study area during recent breeding seasons are part of the Slieve Bernagh to Keeper Hill Regional population. The number of breeding pairs recorded during surveys is consistent with NPWS data for this Regional Area. It is also proposed to carry out a pre construction survey to identify roosts and to monitor the area for hen harrier during the course of works. In the event that hen harrier are present within the zone of influence works will cease. No works will be carried out within 500 metres of hen harrier roosts or breeding sites.

Merlin

8.117. Merlin were noted flying over the site infrequently. The development site is outside of the 5km foraging range of the Slieve Aughty Mountains SPA Merlin population., impacts to the Slieve Aughty Mountains SPA Merlin population are therefore not expected.

8.118. Nonetheless, similar to the hen harrier, the design of the project was driven by a process of mitigation by avoidance as well as a principle of using existing infrastructure to the maximum possible extent. Construction of the project will be phased which will concentrate activity within the development site to certain areas at a time, leaving other areas relatively less disturbed. The most valuable foraging and breeding habitats for upland birds have been excluded from the developable area and will be outside the areas of construction works. Pre construction surveys will ensure that Merlin are not present within or adjacent to the works areas and will therefore prevent any impacts from arising.

8.119. On the basis of the information provided with the application, including the Natura Impact Statement, and in light of the assessment carried out, I am satisfied 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. (004168) or (002312) in view of these sites Conservation Objectives. It is of note in this context

that the applicant held pre-planning discussions with Bird Watch Ireland and no observations to the appeal have been received from this organisation.

Table 2 AA summary matrix – Slieve Bernagh Bog SAC

Slieve Bernagh Bog SAC, site code: (002312) **Summary of likely significant effects** • **Habitat Loss** • **Water Quality and water dependant habitats** **Conservation Objectives: To maintain or restore the favourable conservation status of habitats and species of community interest**					
		Summary of Appropriate Assessment			
Qualifying Interest feature	**Conservation Objectives**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**
Northern Atlantic wet heaths with Erica tetralix [4010] Blanket bogs (* if active bog) [7130]	To maintain favourable conditions.	Impacts due to a change in the hydrological regime of the area, water pollution.	Surface water management plan, installation of construction buffers and pollution and sediment control measures.	Additional development in area including grid connection	**Yes**
Overall conclusion: Integrity test Following the implementation of mitigation, the construction and operation of this proposed development will not adversely affect the integrity of this European site.					

Table 3. AA summary matrix – Slieve Aughty Mountains SPA

Slieve Aughty Mountains SPA, site code: **(004168)** **Summary of likely significant effects** • **Habitat Loss** • **Disturbance** **Conservation Objectives: To maintain or restore the favourable conservation status of habitats and species of community interest**					
		Summary of Appropriate Assessment			
Qualifying Interest feature	**Conservation Objectives**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**

Hen Harrier Merlin	To maintain favourable conditions.	Habitat loss, displacement and disturbance.	Preconstruction surveys, provision of buffers and work stoppages if bird encountered.	Additional development in area including grid connection	Yes
Overall conclusion: Integrity test Following the implementation of mitigation, the construction and operation of this proposed development will not adversely affect the integrity of this European site.					

8.120. **Conclusion**

8.121. In overall conclusion, having regard to the foregoing assessment, I consider, based on the information submitted, that the proposed development, in terms of the principle of development, the likelihood of significant environmental effects and the likelihood of significant adverse effects with regard to European designated sites is acceptable subject to conditions set out hereunder. As is outlined above, the potential for adverse impacts has been adequately mitigated for and no significant residual impacts remain.

8.122. The provision of a secure and reliable energy supply within Ireland is essential to the country's economic growth and the prosperity of the population and this is supported in policy at a European, national, regional and local level within the Clare County Development Plan 2017-2023. The proposed development is an essential infrastructure project located in an area identified as a Strategic Area for wind, which will assist in Irelands move to a low carbon economy and is in accordance with the sustainable development of the country.

9.0 Recommendation

9.1. I recommend that permission is granted subject to the following conditions:

10.0 Reasons and Considerations

In coming to its decision, the Board had regard to the following:

European legislation, including of particular relevance:

- Directive 92/43/EEC (Habitats Directive) and Directive 79/409/EEC as amended by 2009/147/EC (Birds Directives) which set the requirements for

Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union.

- EU Renewable Energy Directive 2009/28/EC which aims to promote the use of renewable energy

National and regional planning and related policy, including:

- National policy with regard to the development of alternative and indigenous energy sources and the minimisation of emissions from greenhouse gases,
- the provisions of the Wind Energy Development Guidelines – Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government in June, 2006,

Regional and local level policy, including the:

- Regional Spatial Economic Strategy for the Southern Region

The local planning policy including:

- Clare County Development Plan 2017- 2023
- other relevant guidance documents
- the nature, scale and design of the proposed development as set out in the planning application and the pattern of development in the vicinity,
- the likely consequences for the environment and the proper planning and sustainable development of the area in which it is proposed to carry out the proposed development and the likely significant effects of the proposed development on European Sites
- the submissions made to An Bord Pleanála in connection with the planning application, and
- the report and recommendation of the Inspector, including the examination, analysis and evaluation undertaken in relation to appropriate assessment and environmental impact assessment.

10.1. **Proper Planning and Sustainable Development**

10.2. It is considered that the proposed development would accord with European, national, regional and local planning and that it is acceptable in respect of its likely effects on

the environment and its likely consequences for the proper planning and sustainable development of the area.

Appropriate Assessment:

The Board agreed with and adopted the screening assessment and conclusion carried out in the inspector's report that the Slieve Bernagh Bog SAC and Slieve Aughty Mountains SPA are the European sites for which there is a likelihood of significant effects.

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposal for the Slieve Bernagh Bog SAC and Slieve Aughty Mountains SPA, in view of the Sites Conservation Objectives. The Board considered that the information before it was adequate to allow the carrying out of an appropriate assessment.

In completing the assessment, the Board considered, in particular, the

i. Likely direct and indirect impacts arising from the proposal both individually or in combination with other plans or projects, specifically upon the Slieve Bernagh Bog SAC and Slieve Aughty Mountains SPA
ii. Mitigation measures which are included as part of the current proposal,
iii. Conservation Objective for these European Sites, and
iv. Views of prescribed bodies in this regard.

In completing the appropriate assessment, the Board accepted and adopted the appropriate assessment carried out in the Inspector's report in respect of the potential effects of the proposed development on the integrity of the aforementioned European Sites, having regard to the site's conservation objectives.

In overall conclusion, the Board was satisfied that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of the site's conservation objectives.

Reasoned Conclusion for EIA

The Board considered that the Environmental Impact Assessment Report, supported by the documentation submitted by the applicant, provided information which is reasonable and sufficient to allow the Board to reach a reasoned conclusion on the significant effects of the proposed development on the environment, taking into

account current knowledge and methods of assessment. The Board is satisfied that the information contained in the Environmental Impact Assessment Report is up to date and complies with the provisions of EU Directive 2014/52/EU amending Directive 2011/92/EU. The Board considered that the main significant direct and indirect effects of the proposed development on the environment are those arising from the impacts listed below.

The main significant effects, both positive and negative, are:

- Negative impacts on **human health and population** arising from construction include noise, traffic and dust disturbance to residents of neighbouring dwellings. All of these impacts are low to moderate. Adequate mitigation measures are proposed to ensure that these impacts are not significant and include adequate mitigation for operational noise.
- Benefits/positive impacts on the **Air and Climate**, the proposed development will have a significant positive effect on human health and population due to the displacement of CO_2 from the atmosphere arising from fossil fuel energy production.
- Negative impacts on **Water** could arise as a result of accidental spillages of chemicals, hydrocarbons or other contaminants entering the drainage system and discharging to the river thereafter during the construction and operational phases. These impacts will be mitigated by measures outlined within the application and can therefore be ruled out.
- Negative **Noise and Dust** impacts arise during the construction phase from construction activities. These impacts will be mitigated through adherence to best practice construction measures. Noise disturbance from the operation of turbines is not likely to arise given the separation distances between turbines and residential properties. Impacts arising from noise and dust disturbance during both the construction and operational stage can therefore be ruled out.
- Negative **traffic** impacts arise during the construction phase of the development, these impacts will be mitigated through the implementation of a traffic management plan and a construction management plan. Impacts arising from traffic can therefore be ruled out.

Having regard to the above, the Board is satisfied that the proposed development would not have any unacceptable direct or indirect effects on the environment. The Board is satisfied that the reasoned conclusion is up to date at the time of making the decision.

11.0 **Conditions**

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application and the further information response submitted to the Board dated 6th November 2020, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to commencement of development and the development shall be carried out and completed in accordance with the agreed particulars.

   Reason: In the interest of clarity.

2. The period during which the development hereby permitted is constructed shall be 10 years from the date of this order.

   Reason: In the interests of clarity.

3. This permission shall be for a period of 30 years from the date of the first commissioning of the wind farm.

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

4. The developer shall ensure that all construction methods and environmental mitigation measures set out in the Environmental Impact Assessment Report and associated documentation are implemented in full, save as may be required by conditions set out below.

   Reason: In the interest of protection of the environment.

5. The developer shall ensure that water levels are monitored at regular frequency throughout all seasons of each year over the life of the development and shall ensure that water levels are maintained at a level required to maintain viable and active peat habitat within and adjacent to the site. Details of such monitoring shall be agreed in writing with the Local Authority prior to the commencement of development. Monitoring shall occur both within the site at various locations and along the development boundary of the site and shall include the use of appropriate means such as piezometers to measure ground water levels, as agreed by the Local Authority.

   Reason: In the interest of protection of the environment.

6. The operation of the proposed development, by itself or in combination with any other permitted wind energy development, shall not result in noise levels, when measured externally at nearby noise sensitive locations, which exceed:

   (a) Between the hours of 7am and 11pm:

   i. the greater of 5 dB(A) $L_{90,10min}$ above background noise levels, or 45 dB(A) $L_{90,10min}$, at standardised 10m height above ground level wind speeds of 7m/s or greater

   ii. 40 dB(A) $L_{90,10min}$ at all other standardised 10m height above ground level wind speeds

   (b) 43 dB(A) $L_{90,10min}$ at all other times.

Prior to commencement of development, the developer shall submit to and agree in writing with the planning authority a noise compliance monitoring programme for the subject development, including any mitigation measures such as the de-rating of particular turbines. All noise measurements shall be carried out in accordance with ISO Recommendation R 1996 “Assessment of Noise with Respect to Community Response,” as amended by ISO Recommendations R 1996-1. The results of the initial noise compliance monitoring shall be submitted to, and agreed in writing with, the planning authority within six months of commissioning of the wind farm.

Reason: In the interest of residential amenity.

7. Prior to commencement of development, the developer shall submit to and agree in writing with the planning authority a Shadow flicker compliance monitoring programme for the subject development, including any mitigation measures such as the use of appropriate equipment and software to suitably control shadow flicker at nearby dwellings, including control of turbine rotation, in accordance with details which shall be submitted to, and agreed in writing with, the planning authority. Shadow flicker arising from the proposed development, by itself or in combination with other existing or permitted wind energy development in the vicinity, shall not exceed 30 hours per year or 30 minutes per day at existing or permitted dwellings or other sensitive receptors.

   Reason: In the interest of residential amenity.

8. Prior to the commencement of development, the applicant shall submit to and agree in writing with the planning authority, details of an obstacle warning light scheme which can be visible to night vision equipment.

   Reason: in the interest of aviation safety.

9. The construction of the development shall be managed in accordance with a Construction Environment Management Plan, which shall be submitted to, and agreed in writing with the planning authority prior to commencement of development. This plan shall provide details of intended construction practice for the development, including hours of working, noise management measures and off-site disposal of construction/demolition waste.

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

10. Water supply, wastewater treatment and surface water attenuation and disposal shall comply with the requirements of the planning authority for such works and services.

    Reason: In the interest of public health

11. The following design requirements shall be complied with:

(a) The wind turbines including masts and blades, and the wind monitoring mast, shall be finished externally in a light grey colour.

(b) Cables within the site shall be laid underground.

(c) The wind turbines shall be geared to ensure that the blades rotate in the same direction.

(d) No advertising material shall be placed on or otherwise be affixed to any structure on the site without a prior grant of planning permission.

Reason: In the interest of visual amenity.

12. The delivery of large-scale turbine components for the construction of the windfarm shall be managed in accordance with a Traffic Management Plan, which shall be submitted to, and agreed in writing with the planning authority prior to commencement of development. This plan shall provide details of the road network to be used by construction traffic, including over-sized loads, and detailed arrangements for the protection of bridges, culverts or other structures to be traversed, as may be required. The plan should also contain details of how the developer intends to engage with and notify the local community in advance of the delivery of oversized loads.

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

13. On full or partial decommissioning of the turbines or if the turbines cease operation for a period of more than one year, the mast and the turbine concerned shall be removed and all decommissioned structures shall be removed, and foundations covered with soil to facilitate re-vegetation, within three months of decommissioning.

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

14. In the event that the proposed development causes interference with telecommunications signals, effective measures shall be introduced to minimise interference with telecommunications signals in the area. Details of these measures, which shall be at the developer's expense, shall be submitted to, and

agreed in writing with, the planning authority prior to commissioning of the turbines and following consultation with the relevant authorities.

Reason: In the interest of protecting telecommunications signals and of residential amenity.

15. Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. Prior to commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the as constructed tip heights and co-ordinates of the turbines and wind monitoring masts.

    Reason: In the interest of air traffic safety.

16. The developer shall ensure that all plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.

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

17. The developer shall retain the services of a suitably qualified and experienced Ecologist to undertake pre-construction surveys at the various project elements, including any river crossings, immediately prior to commencing work in order to check for the presence of protected species in the vicinity.

    Reason: In the interest of protecting ecology and wildlife in the area.

18. The developer shall facilitate the preservation, recording and protection of archaeological materials or features that may exist within the site. In this regard, the developer shall –

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

(b) Employ a suitably-qualified archaeologist who shall monitor all site investigations and other excavation works, and

(c) Provide arrangements, acceptable to the planning authority, for the recording and for the removal of any archaeological material which the authority considers appropriate to remove.

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

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation and protection of any remains that may exist within the site.

19. The developer shall retain the services of a suitably qualified and experienced bird specialist to undertake appropriate annual bird surveys of this site. Details of the surveys to be undertaken and associated reporting requirements shall be developed following consultation with, and agreed in writing with, the planning authority prior to commencement of development. These reports shall be submitted on an agreed date annually for five years, with the prior written agreement of the planning authority. Copies of the reports shall be sent to the Department of Housing, Local Government and Heritage.

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

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

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

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

    Reason: In the interest of orderly development and visual amenity and to ensure satisfactory reinstatement of the site.

22. The developer shall pay to the planning authority a financial contribution in respect of public infrastructure and facilities benefiting development in the area of the planning authority that is provided or intended to be provided by or on behalf of the authority in accordance with the terms of the Development Contribution Scheme made under section 48 of the Planning and Development Act 2000, as amended. The contribution shall be paid prior to the commencement of development or in such phased payments as the planning authority may facilitate and shall be subject to any applicable indexation provisions of the Scheme at the time of payment. Details of the application of the terms of the Scheme shall be agreed between the planning authority and the developer or, in default of such agreement, the matter shall be referred to the Board to determine the proper application of the terms of the Scheme.

Reason: It is a requirement of the Planning and Development Act 2000, as amended, that a condition requiring a contribution in accordance with the Development Contribution Scheme made under section 48 of the Act be applied to this permission

Sarah Lynch
Senior Planning Inspector

31st August 2022

Appendix 1

Observers

1. **Ailish and Brian O'Dwyer**
2. **Brian Penny and Sinead Cooney**
3. **Charles Scanlan**
4. **Darragh and Deirdre Hogan**
5. **Donal O'Connor**
6. **Kathleen Horgan and Eamon Cregan**
7. **Michael and Siobhan Cooney**
8. **Michael McNamara**
9. **Noel and Ailish Daly**
10. **Oisin Slattery**
11. **Oliver Donnellan**
12. **Paul O'Driscoll and Maria Svensson**
13. **Piotr Kowalewicz and others**
14. **Susan McMahon**
15. **Ute and Conrad Rumberger**
16. **Bodyke GAA Club**
17. **Tommy Melody and Michael Moloney**
18. **Cathal Hogan**
19. **Nicola Henley**
20. **Raheen Hospital Support Group**
21. **Tuamgraney Development Association**