



An
Bord
Pleanála

Inspector's Report

ABP-318689-23

Development

Construction of 7 wind turbines. Natura Impact Statement and Environmental Impact Assessment Report submitted with application.

Location

In the townlands of Croghan, Clohaskin, Caherhoereigh, Ballykinash, Tinnakilly, Arragh More, Ballyloughnane, Faddan Beg, Coolderry, Tinlough, Sharragh, Doughkill, Ballaghgar, Faddan More, Cloncorig, Killeen and Cornhill, Co. Tipperary

Planning Authority

Tipperary County Council

Planning Authority Reg. Ref.

2360763

Applicant(s)

Carrig Renewable Energy Limited

Type of Application

Normal Planning Appeal

Planning Authority Decision

Refuse Permission

Type of Appeal

First Party V Refusal

Appellant(s)

Carrig Renewable Energy Limited

Observers

1. Shiela Hctor
2. Michael Mahon & Regina Hctor
3. Derek and Patrick Deane
4. Patrick & Alma Carney
5. Tom & Norma Shanahan
6. John Dooley

Date of Site Inspection

25th September 2024

Inspector

Laura Finn

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1.0 Site Location and Description

The appeal site which measures c. 78.91ha, is located c. 2km west of the village of Carrig in Co. Tipperary, c.5.7km to the southwest of Riverstown, Co. Tipperary and 7km southwest of Birr, Co. Offaly.

The windfarm is located in the townlands of Lissernane, Sharragh, Faddan More, Coolderry, Cloncorig, Arragh More and Clohaskin in County Tipperary and the Grid Connection is located in the townlands of Faddan More, Ballaghgar, Doughkill, Faddan Beg, Caherhoereigh, Ballykinash, Tinlough, Cornhill, Tinnakilly, Killeen, Ballyloughnane and Croghan in Co. Tipperary and the townlands of Townparks, Dovegrove, Woodfield or Tullynisk and Clondallow in County Offaly.

The majority of the proposed development including the 7 no. turbines and associated infrastructure, on-site substation and 10.4 kilometres (km) of the underground grid connection cabling route is located in Co. Tipperary with the remaining 3.3km of the grid connection cabling route located in Co. Offaly.

The grid connection includes for underground 38kV cabling from the proposed onsite 38kV substation in the townland of Faddan More, to the existing Dallow 110kV substation in the townland of Clondallow, Co. Offaly. The c. 13.7km underground cabling route to Dallow is located primarily within the public road corridor, of which 10.4km is located in Co. Tipperary and 3.3km is located within Co. Offaly. (Planning permission has been secured for the section of the grid connection in Co. Offaly (OCC Reg. Ref. 2360140).

It is proposed to access the site via a new access track off the L5040 Local Road to the southeast of the site.

The proposed development site is currently in use for coniferous forestry, peat-cutting and agriculture. Current land-use along the grid connection comprises of public road corridor, public open space, urban fabric, and agriculture. Land-use in the wider landscape of the site comprises a mix of agriculture, peat cutting, quarrying, low density residential and commercial forestry.

2.0 Proposed Development

The application is for a ten-year permission for a windfarm with an operational lifespan of 35 years from the date of commissioning and includes -

- 7 no. wind turbines with a total tip height range of 179.5m – 185m and associated hardstands (all located in Co. Tipperary).
- The wind turbines will have a rotor diameter ranging from 149m – 163m and a hub height range of 103.5m to 110.5m.
- Construction of 1 no. permanent 38kV electrical substation including a single storey control building with welfare facilities, all associated electrical plant, battery energy storage system, security fencing, all associated underground cabling, wastewater holding tank and all ancillary structures and works.
- All works within Co. Tipperary and Co. Offaly relating to the construction of underground electrical cabling (38kV) to the existing Dallow 110kV substation in Co. Offaly to connect the windfarm to the national electricity grid. These works include the provision of 14 no. joint bays, communication chambers and earth sheath links along the underground cabling route.
- Reinstatement of the road or track surface above the proposed cabling trench along existing roads and tracks.
- All associated underground electrical and communications connecting the wind turbines to the windfarm substation.
- Construction of 1 no. meteorological mast with a height of 107m above ground and associated foundation and hard-standing area (within Co. Tipperary)
- Provision of a new permanent site entrance off the L5040 local road and upgrade of existing tracks and roads and the provision of new site access roads.
- Provision of 5 no. new access and egress points along the L5041 local road in the townlands of Cloncorrig, Faddanmore and Coolderry.
- Provision of 4 no. peat repository areas and 3 no. spoil repository areas.

- Construction of 2 no. temporary construction compounds with associated temporary site offices, parking areas and security fencing.
- Accommodation works along the public road network along the N52 to facilitate the delivery of turbine components and other abnormal sized loads.
- All associated site development works, ancillary works and apparatus including site drainage, tree felling (in Co. Tipperary) and operational signage.

The route of the proposed 38kV underground cabling is primarily under existing public road corridors and the applicant states that these works will be carried out by a statutory undertaker and therefore Article 22(2)(g)(ii) of the Planning and Development Regulations 2001 (as amended) applies.

The proposed development includes accommodation works within the curtilage of Protected Structure RPS Ref. TRPS336 (Ballyloughnane Bridge) and underground cabling works located within the public road corridor within the curtilage of Protected Structure RPS Ref. TRPS336 (Ballyloughnane Bridge) and Protected Structure RPS Ref. TRPS519 (Croghan Bridge).

Part of the grid connection was subject to a separate planning application to Offaly County Council (Planning reference 2360140). This was GRANTED planning permission by Offaly County Council on 02/05/2024. (See Planning History Section of this report for detail)

The EIAR details that on the basis of 7 no. wind turbines, the windfarm is expected to have a combined generating capacity of 43.4MW, with each turbine having an output of 6.2MW.

Planning permission is sought for a 10-year permission period, with construction estimated to take 12-18 months, with a 35-year operational life from the date of commissioning of the entire windfarm. The underground electrical cabling route and onsite substation will remain in place as it will be under the ownership and control of the ESB and EirGrid.

There are 61 habitable dwellings located within 2 kilometres of the proposed turbine locations.

An Environmental Impact Assessment Report and Natura Impact Statement (Stage 2 Appropriate Assessment) have been prepared in respect of this application.

2.1. Accompanying Documents

The application is accompanied by –

- Statutory Site Notices
- A Planning Policy Rationale Report prepared by MKO
- An Environmental Impact Assessment Report prepared by MKO & EIAR Portal Confirmation Notice
- A Natura Impact Statement & AA Screening prepared by MKO
- Planning Drawings & Schedule of Drawings
- Letters of Consent from landowners to making of the planning application for their lands

3.0 Planning Authority Decision

3.1. Decision

Tipperary County Council REFUSED permission for the proposed development on 16th November 2023 for three reasons as follows –

1. Notwithstanding the general Planning Policy support for wind energy generation at national, regional and local policy level, including: Policy 3-1 which seeks to '*promote and facilitate renewable energy development, in accordance with the policies and objectives of the Tipperary Renewable Energy Strategy 2016 (and any review thereof), and the Tipperary Climate Adaptation Strategy 2019*', **the proposed development is located on lands identified as an area unsuitable for new wind energy development within the Tipperary Renewable Energy Strategy.** Furthermore, it is considered that **the proposed development would not, come within the limited circumstances provided for in policy TWIND 4.14.** of the Wind Energy Strategy in the Renewable Energy Strategy.

Accordingly, it is considered that **the proposed development would contravene materially the policies and objectives of the Tipperary County Development Plan 2022 - 2028**, specifically Volume 3, Appendix 2, Tipperary

Renewable Energy Strategy, Wind Energy Strategy, Policy TWIND 4. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.

2. Policy 11-16 of the Tipperary County Development Plan states that *“In assessing proposals for new development to balance the need for new development with the protection and enhancement of the natural environment and human health. In line with the provisions of Article 6(3) and Article 6 (4) of the Habitats Directive, no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects¹)”*.

Having regard to the proximity to a number of European Sites with conservation objective to maintain or restore the favourable conservation conditions of a number of bird species. Having regard to the EIAR and NIS submitted with the applications and submissions made on the applications, and notwithstanding mitigation measures proposed, **the Planning Authority is not satisfied that the likelihood of significant effects on the environment can be excluded.** The applicant has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network. **The Planning Authority considers that the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species,** and in this context, the proposed development would, therefore, be contrary to the proper planning and sustainable development of the area, development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive, which forms the basis of the classification of that site.

3. Policy 12-4 of the Tipperary County Development Plan, 2022 - 2028 seeks to maintain and protect the safety, capacity and efficiency of Tipperary's road network and associated junctions in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012) and the

Trans-European Networks Regulations. The Planning Authority considers that **the applicants' have failed to demonstrate that the proposed development would not have a significant detrimental impact on the capacity and operation of such road network.** Accordingly, it is considered that the proposed development would **materially contravene 12-4 of the Tipperary County Development Plan 2022 - 2028** and would be contrary to the proper planning and sustainable development of the area.

4.0 Planning Authority Reports

4.1. Planning Report

The Planning Report (dated 16th October 2023) prepared by TCC recommended the refusal of the proposed development (without recourse to a further information request), noted the internal reports, submissions and prescribed bodies reports made in relation to the proposed development as well as summarising the relevant third-party submissions. In addition, it provides an analysis of the EIAR and NIS. The Planning Report also notes the following:

- Accepts the findings of EIAR that no significant residual impacts are likely on population and human health, biodiversity, land, soils and geology, hydrology and hydrogeology, air, climate, noise, landscape and cultural heritage. In addition, the Local Authority concur with the applicant that the proposal does not present a risk of major accident and/or disaster.
- Concurs with the DAU that discounting impacts on birds having regard to a 5km core range radius is not acceptable noting that some species migrate to Ireland from significant distances.
- The EIAR is deficient with regard to ornithological assessments.
- The potential impact of the proposed development cannot be adequately mitigated and is likely to result in a significant impact on the environment.
- Notwithstanding the need for additional renewable energy projects nationally, the precautionary principle should apply in view of the significant environmental sensitivities that relate to the area and the application should be refused.

- The Planning Authority has concerns with the proposed development and considers that it has not been adequately proven that the proposed development individually or in combination with other plans or projects, will not adversely affect the integrity of sites within the Natura 2000 network locally and will not adversely affect a number of sensitive bird species listed on Annex I the Birds Directive and/or on the Red list of Birds of Conservation Concern.
- Recommends permission is refused as per the reasons attached to the Notification of Decision to Refuse Permission.

4.2. Road Section Planning Report

The Roads Section dated 26th November 2023 had no objection subject to the following conditions;

- **Grid Connection Route:** Condition requested in relation to preferred option of laying cable outside the paved areas of the public road network and to carry out a Level 1 Falling Weight Deflectometer survey and Level 2 Analysis design.
- **Reinstatement Details:** Condition requested in relation to reinstatement of National, Regional and Local Roads.
- **Duct Crossings at Bridges and Culverts:** Condition requested in relation to cable ducting being laid either around or under all bridges and culverts along the proposed route and a Principle Inspection Report for each bridge being submitted to the Planning Authority.
- **Joint Boxes:** Condition requested in relation a standard detail and construction methodology for the installation of joint boxes to be agreed with the Planning Authority.
- **Traffic Management Arrangements:** Condition requested for a Traffic and Transport Assessment with regard to the traffic regime at the junction of the N52 / L-5040 to be submitted to and agreed with the Planning Authority prior to the commencement of the development.
- **Special Contribution for works on the L-5040 Local Road:** Condition requested for a special contribution of €409,000 to allow for works on the L-

5040 arising from the windfarm development. (Calculations for Special Contribution outlined in Appendix 1 of Road Section Planning Report)

- **L-5041 Local Secondary Road – Special Contribution:** Condition requested for a survey of the entire L-5041 and resurveyed on a 6 month cycle during the construction phase to be submitted in writing to the Planning Authority and a special contribution of €190,000 to allow for works on the L-5040 arising from the windfarm development. (Calculations for Special Contribution outlined in Appendix 2 of Road Section Planning Report)

5.0 Submissions & Observations

5.1. Prescribed Bodies

Of the prescribed bodies notified, submissions have been received from the following:

1. **Transport Infrastructure Ireland (TII)**
2. **Dept. of Housing, Local Government and Heritage (DAU)**
3. **Irish Aviation Authority (IAA)**
4. **Uisce Éireann (UE) (Irish Water)**

A summary of the Prescribed Bodies submissions is outlined below.

5.1.1. **Transport Infrastructure Ireland (TII)** (31st October 2023)

- The proposal is at variance with official policy in relation to control of development on/affecting national roads, as outlined in the DoECLG Spatial Planning and National Roads Guidelines for Planning Authorities (2012), as the proposed development by itself, or by the precedent which a grant of permission for it would set, would adversely affect the operation and safety of the national road network.
- The applicant/developer should consult with all PPP Companies, MMarC Contractors and road authorities over which the haul route traverses to ascertain any operational requirements such as delivery timetabling, etc. and to ensure that the strategic function of the national road network is safeguarded.

- Any proposed works to the national road network to facilitate turbine component delivery to site shall comply with TII Publications and shall be subject to Road Safety Audit as appropriate.
- It is critical a full assessment by the applicant/developer of all structures on the national road network along the haul route should be undertaken, where relevant, and all road authorities along the haul routes should confirm their acceptance of proposals by the applicant.
- No details in relation to grid routing around two national road structures on the section of N52 appears to be provided in the subject application.
- The provision of cabling along the national road network represents a number of significant implications for TII and road authorities in the management and maintenance of the strategic national road network and TII is of the opinion that grid connection cable routing should reflect the foregoing provisions of official policy and therefore, avoid grid connection routing proposals along national roads. Alternative routing not utilising the national road network appears to be available.

5.1.2. Dept. of Housing, Local Government and Heritage (DAU) (27th October 2023)

5.1.2.1. Natura Impact Assessment

The Dept. has determined that insufficient information was submitted with the application to fully assess the impact on Natura 2000 sites and biodiversity in general. Areas where further information is sought include ornithological issues to be addressed in the EIAR and NIS as follows;

- Potential adverse hydrological impacts on sensitive water dependant Special Areas of Conservation (SACs) and Natural Heritage Areas (NHSSs) in the catchment of the development.
- Concern regarding potential adverse hydrological impacts on sensitive water dependent SACs and NHAs in the catchment of the development. Protected bird species occur within the zone of influence of the development and it is not established that a number of these species will not be adversely affected.

- References the Southern Regional Assembly Regional Spatial and Economic Strategy (RSES) policy RPO1 which relates to '*no adverse effects on the integrity of European sites and no net loss of biodiversity*'. Not established that the proposed project would not cause a net loss of biodiversity nor does the Dept. accept that ex-situ adverse impacts on any European site have been ruled out.
- Dept. owns 63ha of wetland at Sharragh which is managed for conservation and directly adjoins the proposed development site. This includes an area of open water which provides a regular nighttime roost for the Annex I bird species whooper swan.
- Dept. also owns 33ha of wetland at Abbeyville 2km west which is managed for wintering wildfowl. They own other lands comprising SPAs and SACs in close proximity to the site which are all managed for conservation and where there has been substantial investment in measures to restore damaged wetlands. The Dept. consider that it has not been established that wildfowl using the area in the zone of influence of the proposed site, do not originate from or alternatively use nearby European Sites.
- Depts view is that protected SPA birds may range far more widely and can therefore be affected by windfarms outside the SPA boundaries, particularly on transit to other feeding and/or roosting sites outside the SPA.
- The Dept. does not accept the findings of the EIAR/NIS in relation to a 5km core range for bird species. The Dept. considers it entirely possible that there may be movement between the sites, constituting ex-situ usage of the development zone of influence by qualifying interest species from the SPA. Some data from surveys carried out may support this view. Dept. concerned about the threat to nationally significant 'Lackabrack flock' of whooper swan located c. 2km east of the proposed turbines. Any threat to such a nationally significant flock is of concern even if not within an SPA.
- Bird Surveys carried out during daylight hours and some limited nocturnal surveys for limited species. No nocturnal surveys of migration or nocturnal commuting movements of wildfowl over or in the zone of influence of the site.

A range of wildfowl known to carry out movements at night, which the daylight surveys would have missed.

- Acoustic recording of calls from migrating birds over fixed points at night (nocmig) is now widely used and should be used to indicate bird usage in the zone of influence of the proposed development. Also, radar could be used to quantify bird movements above a certain height. Depts view is that the full impact of the development cannot be assessed without this information.

5.1.2.2. Collision Risk Assessment

- Only bird sightings from daytime vantage point surveys were included, but surveyors did note nighttime movement of whoopers on at least one occasion. No nighttime collision risk analysis carried out despite significant potential for nighttime movements of birds. Depts view that this is an inadequate quantification and potentially significant underestimate of any risks posed. It is proposed to locate the turbines within a pre-existing regularly used whooper swan flight line. These birds could be displaced or if they maintain current usage be at greater than normal collision risk. The Dept. also notes extensive flight observations of other protected bird species in the proposed turbine area.
- On the significance of collision risk assessments, the calculations are not definitive and can be unintentionally influenced by a range of factors such as fog, low cloud ceiling or precipitation.
- Dept. further notes that collision mortality or displacement could be considerable for species which are already in serious decline, e.g. there are c. 105 breeding pairs of curlew left in Ireland, therefore the loss of one pair would equate to almost 1% of the national breeding population.
- No reference in ornithological impact assessment to the proposed lighting of the turbines or site. Dept. assumes lighting at the tips will be compulsory. While lighting may reduce collision risk from lack of visibility. In bad weather conditions night migrating birds congregate around lighted structures. Lighting is an important consideration in minimising collision risk and the recommendation is that they should not be strongly illuminated. Some guidance available on this with factors such as colour, flashing and intensity

important factors. Dept. found no evidence that this has been assessed in the application.

5.1.2.3. Displacement

- Referenced displacement distances were estimated on earlier studies where wind turbines were smaller than the turbines currently proposed. Depts view is that displacement distances will be greater and will adversely affect sensitive species identified in the surveys over a greater distance than the applicants EIAR and NIS recognise. This is a concern because the habitats and species concerned are not widespread or abundant. The raised bog habitat is ecologically valuable and an important island of habitat for species which are of significant conservation concern and in decline in the surrounding vastly greater area of improved agricultural landscape. It also serves as a supporting habitat and connection to other nearby islands of habitat such as the nearby designated European Sites for species which are in decline such as merlin and curlew. Depts view is that the wind turbines will damage connectivity and create a barrier effect within the habitats concerned potentially making even adjoining areas unsuitable for species like the globally threatened breeding curlew. This would also remove the potential for species to move within habitats or expand should habitat quality improve through various measures in adjoining properties. Previous studies posited a reduction in breeding density of up to 42% within 500m of wind energy sites and significant levels of flight avoidance by curlews within 800m.
- The development would in the Depts view remove a significant section of territory and potential nesting area for Annex I species Merlin.
- Any assessment of displacement would also need to take into consideration other infrastructure such as roads, lighting, increased use of the site by humans etc. and the associated avoidance behaviours this will cause in sensitive species which in some cases may exceed the displacement caused by infrastructure.

5.1.2.4. **Drainage and Hydrology**

- Concern about the removal of large volumes of water due to extensive drainage and excavation works including in the groundwater zone. Accepted that damage due to drainage already exists on site for annexed habitats. Development proposes to increase this substantially exacerbating existing ecological and carbon sequestration problems, at a time when re-wetting peatlands nationally has been recognised as of great importance in order to restore habitats and to reduce the loss of carbon to the atmosphere. It does not appear that this carbon release and loss of potential carbon retention has been factored into the carbon budget presented in the EIAR.
- Dept. is concerned about the full impacts of the proposed development on the adjoining designated Natura 2000 Sites which are fully dependent on existing water levels. Any lowering of water levels would very seriously damage the wetlands sites. Example of consented windfarm with unforeseen difficulties in relation to groundwater entering foundations has led to further consent application requiring further drainage works.
- Already significant problems in relation to the drying out of areas in nearby conservation sites due to past damage and significant works have taken place by Dept. to retain water and meet states obligations under the Habitats Directive to protect these areas.
- Proposals should consider how climate change and predicted longer dry periods would exacerbate drying out of bog habitats. Suggested that consent authority be certain that the drainage and excavation/pile driving works required in this case will not affect the hydrological regime in adjoining designated wetlands and that consent should not be granted if this is not guaranteed.

5.1.2.5. **DAU Conclusions**

- The Dept. is not able to conclude that the proposed development individually or in combination with other plans or projects will not adversely affect the integrity of any European Site and in addition the Dept. cannot conclude that the proposed development will not adversely affect a number of sensitive bird species listed on Annex I of the Birds Directive and/or the Red list of Birds of

Conservation Concern. The Dept. believes that this proposed development is not in a good site from an ecological point of view. Further Information is required in relation to the planning application.

5.1.3. Irish Aviation Authority (IAA) (17th October 2023)

- **Air Nav Ireland Consultation** – Applicant should engage with Air Nav Ireland to confirm that the windfarm and cranes used during construction are reviewed for potential impact on en-route communication, navigation and surveillance equipment.
- **IAA Consultation** - No objection, subject to condition. Recommended a condition required the applicant to contact IAA to agree warning lights, provide as constructed coordinates and notify IAA of commencement of crane operations.

5.1.4. Uisce Éireann UE (Irish Water) (26th October 2023)

- Requests that the applicant engage with Uisce Éireann Diversions Team by submitting a Diversion Application Form in order to assess the potential interactions with public water / wastewater infrastructure.

5.2. Third Party Observations

There were 40 no. public submissions made to the Local Authority in respect of the proposed development, which are summarised in the Planner's Report. Issues raised relate to the following;

- Questioning legality of application and appropriateness having regard to Draft Wind Guidelines.
- Lack of consultation with landowners / Inadequate consultation or engagement with local community / Concerns regarding the consistency of the community consultation efforts outlined in the Community Engagement Report which did not include any consultation event in the parish of Lorrha and Dorrha among other local areas. No detail has been provided about how the Community Benefit Fund would benefit such areas.

- Impact on property/ devaluation of property
- Impact on the visual amenity of the area due to scale of proposed turbines / Impact on tourism and local business / Impact on the character of the landscape
- Traffic Impacts due to increased traffic on local roads / Unsuitability of proposed access including capacity of L5040 / Traffic disruption / Insufficient consideration of impact of proposed development particularly along haul route on vulnerable buildings.
- Impact on equine health and safety / Impact on horse riders / Impact on farm animals
- Contravention of Tipperary County Development Plan / Proposed Development in an area deemed unsuitable in the Development Plan / The proposed development is within an area indicated to be in “Areas Unsuitable for New Wind Energy Development” as per the Tipperary County Development Plan 2022 – 2028.
- Contrary to NPWS recommendations.
- Impact on hydrology to ground water, water table and water quality / Impact on local private wells.
- Impact on biodiversity and ecology / local Natura 2000 sites and protected species and other animals including bats, badgers, red squirrel, whooper swans and owls, curlew, cuckoos, meadow pipets, golden plover, buzzard, kestrel, insects, wild deer and hares / Ecological surveys inadequate / potential migration of species out of the area / EIAR demonstrates that the proposed development would have a negative impact on ecology in particular ornithology, pats, protected wetland integrity and ecology generally. The development would impact ecological corridors connecting a range of protected sites / Potential impact on Special Area of Conservation and Sharavogue Bog. / The submission is supported by a Bird Survey report by Oran Ecology which confirms that Clonfinane bog provides potential nesting habitat for curlew and makes 8 recommendations to improve curlew conservation in the area. / The proposed site is a potential habitat for march Fritillary butterfly

- Proposed development site is part of an ecological corridor connecting a range of ecologically valuable sites including Ballyduff/Clonfinnane Bog SAC, Arraghmore Bog SAC, Arraghmore Bog NHA, Kilcareen-Firville Bog, SAC
- The damage which would be done during the construction period would damage the further recovery of the landscape.
- Impact of noise and vibration / Noise assessment based on 2006 wind guidelines without regard to 2019 guidelines / Lack of detail of turbine model results in uncertainties regarding noise assessment / Inconsistency in EIAR between Appendix 12 regarding noise and noise levels in the non-technical summary / Noise assessment does not have regard to neighbouring European and National conservation sites.
- Impact on health of residents with special needs.
- Lack of consideration of Carrig National School including the associated bus transport / Impacted by the disruption to school traffic.
- Anomalies in EIAR, Section 5.7
- Shadow flicker assessment based on 2006 wind guidelines. If based on 2019 guidelines, 31. no dwellings will result in unacceptable incidence of shadow flicker / The proposed development would result in unacceptable exposure to shadow flicker and noise / The proposed development will result in shadow flicker for 16 no. houses.
- Cumulative impact does not have regard to proposed new windfarm between Carrig and Shinrone / Cumulative impact with existing windfarms is excessive / A Peat Extraction Site at Sharragh/Walsh Park (within 1.5km of the proposed development) does not seem to be listed on the EIAR Appendix 2-3 - Cumulative Assessment Project List.
- Construction Impacts – noise, dust, traffic disruption, pedestrian safety, air pollution.
- Operational Impacts – nuisance with noise pollution and shadow flicker, light pollution from warning lights on turbines, traffic including cyclists (from noise and wind turbulence).

- Impact on amenity value of the loop walk, impact on mental and physical health
- Proposed development would not meet setback from local roads, in particular turbines will overhang the local road, L5041/Required setback distances between turbines not achieved.
- Impact on hydrogeology including a threat to the integrity of the local NPWS managed wetlands.
- Impact of turbine haul route accommodation on protected structures in particular Ballyoughnane Bridge (TRPS522) and TRPS336 – Map 4.
- Impact on the I-Lofar Radio Telescope in Birr.
- Archaeological Impacts - Bogs harbour ancient relics of profound archaeological significance. The submission notes significant local finds close to the development site including the Fadden More Psalter / Impact on Holy Well.
- Impact on a local 13th Century Anglo-Norman Structure, Clohaskin Hall House.
- Loss of carbon sequestering peat is not appropriate / Loss of bogland which acts as a natural carbon sink.
- Turbine no 3 impacts on turbary rights which is the right to access the bog to cut and carry away the turf.
- Raised concerns regarding access to the bog land for turf cutting and the potential compensation if such access is unavailable.
- Proposals to dig a drainage ditch across a landowners property, which will impact the drainage and composition of same. (Read J Brendan Quigley Sol on behalf of Sophie Fogarty)

6.0 Planning History

There is no recent planning history on the subject site.

The proposed development involves the construction of a grid connection comprising 13.7km of 38kV transmission line between the subject site and the existing Dallow

110kV substation. The portion of the grid connection located within County Offaly has been approved planning permission as follows;

- **Offaly County Council - File Ref. 23/60140** – Planning permission was approved by Offaly County Council on 02/05/2024 subject to 10 no. conditions which consists of the provision of 3.3km of underground electrical cabling (38kV) and associated infrastructure and works from the townland of Townparks to the existing Dallow 110kV substation in the townland of Clondallow to facilitate the connection of the proposed Carrig Renewables Wind Farm (the application subject to this appeal) development to the national grid. This application was not appealed to An Bord Pleanála.

6.1. Other Relevant Planning History

ABP File Ref 304056-19 (Offaly Co. Co. - File Ref – 18/230) – An Bord Pleanála overturned a refusal of planning permission on 28/05/2020 for the installation of c. 12.5km of 38kV electricity transmission line from the permitted Cloghan Wind Farm 38kV substation in Stonestown, Co. Offaly to the existing 110kV Dallow electricity substation in Clondallow, Co. Offaly.

The direction of the Bord notes;

‘In deciding not to accept the Inspector’s recommendation to refuse permission because of the potential for adverse impacts on the N62 arising from differential settlement, the Board considered that potential impacts could be addressed through the agreement of the detailed construction and reinstatement methodology following a programme of pre-construction site investigations between the development and the planning authority which could be satisfactorily addressed by condition. In reaching this conclusion, the Board noted that the Inspector was satisfied that there were no unacceptable environment impacts on material assets but that the recommendation for refusal related to traffic safety, carrying capacity and the operational efficiency of the material asset (road). Furthermore, the Board did not consider that the proposed development would materially contravene Policy STAP-17 of the Offaly County Development Plan 2014-2020 by causing adverse impacts on the capacity and efficiency of National Roads.’

7.0 Policy Context

7.1. Introduction

Regard is had to the following European, National, Regional, County and Other Relevant Policy documents:

7.1.1. European Policy

- RED III (European Renewable Energy Directive (EU/2023/2413))
- European Wind Power Action Plan
- REPowerEU Plan 2022 and Directive EU 2018/2001, as amended 18.05.2022
- European Green Deal 2020

7.1.2. National & Regional Policy & Guidelines

- National Planning Framework 2018-2040 (NPF)
- The National Development Plan 2021-2030 (NDP)
- Climate Action and Low Carbon Development Act 2015, as amended
- Climate Action Plan 2024 (CAP 2024) and Climate Action Plan 2025 (CAP 2025)
- Energy Security in Ireland to 2030, Energy Security Package, Nov. 2023
- National Energy Security Framework, April 2022
- Policy Statement on Security of Electricity Supply, November 2021
- Long-Term Strategy on Greenhouse Gas Emissions Reductions (April 2023)
- National Climate and Energy Plan 2021-2030 (NCEP)
- National Biodiversity Action Plan (NBAP)
- National Landscape Strategy for Ireland 2015-2025 (NLS)
- Regional Spatial Economic Strategy for the Southern Region 2020-32 (RSES)
- National Landscape Strategy for Ireland, 2015-2025
- The National Peatlands Strategy 2015 – 2025 (DAHG, 2015)
- The Wind Energy Development Guidelines, Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government (June 2006) (WEDG, 2006)
- Draft Wind Energy Development Guidelines 2019

7.1.3. County Policy

- Tipperary County Development Plan 2022 – 2028 (the Plan)

7.2. Renewable Energy Policy Context (European, National and Regional)

7.2.1. RED III (European Renewable Energy Directive (EU/2023/2413))

The revised Directive EU/2023/2413 came into force on 20th November 2023. RED III sets an overall renewable energy target of at least 42.5% binding at EU level by 2030, but it is aiming for 45%. This target is raised from the previous 32% target. It means almost doubling the existing share of renewable energy in the EU. This Directive is in force but is awaiting transposition.

7.2.2. European Wind Power Action Plan

The EU target of at least 42.5% of renewables by 2030 will require the installed capacity to grow from 204GW in 2022 to more than 500 GW in 2030. Globally, annual wind capacity additions should reach at least 329GW per year until 2030 to achieve net-zero emissions by 2050, more than quadrupling today's deployment levels of 75GW. The plan identifies six pillars of concerted action by EC Member States and industry including acceleration of deployment through increased predictability and faster permitting, improved auction design, access to finance, creating a fair and competitive international environment, skills and industry engagement and Member State commitments.

7.2.3. REPowerEU Plan 2022 and Directive EU 2018/2001, as amended 18.05.2022

This plan was prepared in response to the Russian invasion of Ukraine. It focuses on the need to end the EU's dependence on Russian fossil fuels and to tackle the climate crisis. It includes the accelerated rollout of renewable energy. It amends the Directive on the Promotion of the Use of Energy from Renewable Sources (Directive EU 2018/2001) to require that 45% of energy is from renewable sources.

7.2.4. European Green Deal 2020

The aim of this policy is to make Europe climate neutral by 2050. In 2021, the European Climate Law made greenhouse gas emission targets a legal obligation. These targets were increased from 40% to 55% by 2030.

7.2.5. **National Planning Framework 2018-2040 (NPF)**

National Strategic Outcome (NSO) 8 is to transition Ireland to a low carbon and climate resilient society. NSO 54 & 55 - to reduce our carbon footprint by integrating climate action into the planning systems & promotes the use of renewable energy.

7.2.6. **The National Development Plan 2021-2030**

The Plan sets out the investment priorities that will underpin the implementation of the NPF, one of which is climate action. Section 3.7 refers to an 80% target for renewable sources, which is described as an unprecedented commitment to the decarbonisation of electricity supplies.

7.2.7. **Climate Action and Low Carbon Development Act 2015, as amended**

The Act commits Ireland to the objective of becoming a carbon-neutral economy by 2050, reducing emissions by 51% by the end of the decade.

Section 15(1) of the 2015 Act (as substituted by section 17 of the Climate Action and Low Carbon Development (Amendment) Act 2021 (the “**2021 Act**”)) provides that:

“A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—

- (a) the most recent approved climate action plan,*
- (b) the most recent approved national long term climate action strategy,*
- (c) the most recent approved national adaptation framework and approved sectoral adaptation plans,*
- (d) the furtherance of the national climate objective, and*
- (e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.”*

7.2.8. **Climate Action Plan 2024 (CAP 2024) and Climate Action Plan 2025 (CAP 2025)**

CAP 2024 (December 2023) sets out a roadmap to deliver on Ireland's climate ambition, of 51% reduction in GHG emissions from 2021-2030 and net-zero emissions by 2050. The plan aligns with the legally binding economy-wide carbon budgets and sectoral ceilings that were agreed by Government in July 2022. The Climate Action Plans have outlined precise goals for renewable energy, focusing on solar, onshore wind, and offshore wind generation. The Key Target for Onshore Wind is to achieve 6GW by 2025 and 9GW by 2030. The Climate Change Advisory Council has made a number of recommendations for actions in the electricity sector in particular around

the need for laws to ensure access to information from smart meters, private wire connections, phase-out of coal use, storage, demand management, and the need to streamline the planning process for windfarms. Climate Action Plan 2025 builds upon CAP 2024 by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings and it should be read in conjunction with Climate Action Plan 2024.

7.2.9. Energy Security in Ireland to 2030, Energy Security Package, Nov. 2023

The document confirms that Irelands future energy will be secured by moving to an **electricity-led system** maximising our renewable energy potential.

7.2.10. National Energy Security Framework, April 2022

This sets out the Governments response to the impacts of the war in Ukraine on the energy system in Ireland. Para. 7.2 states that

‘The replacement of fossil fuels (such as gas used in electricity generation) with renewable energy (such as onshore wind, offshore and solar power) is a key method of reducing Ireland’s reliance on imported fossil fuels. The process of moving away from fossil fuels is well underway. The Climate Action Plan commits to increasing the share of electricity demand generated from renewable sources in Ireland to up to 80%, without compromising security of electricity supply, reflecting the national target to reduce emissions by 51% by 2030, and to achieve climate neutrality by 2050 at the latest.’

7.2.11. Policy Statement on Security of Electricity Supply, November 2021

This states that the Programme for Government requires a 51% reduction in greenhouse gas emissions by 2030 and that 80% of electricity consumption will come from renewable sources by 2030. Ensuring energy security is a national priority, as the electricity system decarbonises towards net zero emissions.

7.2.12. Long-Term Strategy on Greenhouse Gas Emissions Reductions (April 2023)

Section 1, Security of Supply, notes that in the transition to a climate neutral future, the pathway to decarbonisation must be underpinned by affordability and security in how we access and use energy. In the short-term, we need to address capacity

shortfalls in the electricity system and ensure adequate conventional generation is in place to support the elevated levels of renewable electricity being generated.

7.2.13. **National Climate and Energy Plan 2021-2030 (NCEP)**

Ireland's target to reduce greenhouse gas emissions increased from 40% to 55% by 2030. It refers to reaching 70% of energy from renewables by 2030, underpinned by the Renewable Energy Support Scheme. Energy security is a key priority.

7.2.14. **National Biodiversity Action Plan 2023 – 2030 (NBAP)**

Ireland's 4th NBAP sets the biodiversity agenda for the period 2023 – 2030. The NBAP has a list of Objectives which promotes biodiversity as follows; **Objective 1** Adopt a whole of government, whole of society approach to biodiversity; **Objective 2** Meet urgent conservation and restoration needs; **Objective 3** Secure nature's contribution to people; **Objective 4** Enhance the evidence base for action on biodiversity; **Objective 5** Strengthen Ireland's contribution to international biodiversity initiatives. The Wildlife (Amendment) Act 2023 provides that every public body, as listed in the Act, is obliged to have regard to the objectives and targets in the National Biodiversity Action Plan.

7.2.15. **National Landscape Strategy for Ireland 2015-2025 (NLS)**

Ireland signed and ratified the Council of Europe's European Landscape Convention (ELC) in 2002 which came into effect on 1 March 2004. It obliges Ireland to implement policy changes and objectives concerning the management, protection and planning of the landscape. The National Landscape Strategy is intended to ensure compliance with the ELC and to establish principles for protecting and enhancing it while positively managing its change. It is a high-level policy framework to achieve balance between the protection, management and planning of the landscape by way of supporting actions. The objectives of this Strategy are;

'to establish and implement through a series of actions, policies aimed at understanding, protecting, managing and planning our landscape. It sets out specific measures to integrate and embed landscape considerations in all sectors which influence the landscape and improve and enhance the quality of decision-making by those who have an impact on it.'

7.2.16. **Regional Spatial Economic Strategy for the Southern Region 2020-32 (RSES))**

Chapter 5 of the RSES deals with the Environment including responding to Climate Change. It states that environmental protection and enhancement is a core component of the RSES. The relevant Regional Strategic Outcome is a Low Carbon, Climate Resilient and Sustainable Society. It acknowledges climate change as the most important long term challenge facing Ireland and states that the Regional Assembly is committed to implementing regional policy consistent with the Climate Action Plan. It further states that the RSES recognises and supports the many opportunities for wind as a major source of renewable energy. Opportunities for both commercial and community wind energy projects should be harnessed, having regard to the requirements of DoHPLG Guidelines on Wind Energy. Wind Energy technology has an important role in delivering value and clean electricity for Ireland.

The RSES sets out a number of Regional Policy Objectives (RPO), which supports the Southern Region as a Carbon Neutral Energy Region. The following are considered relevant policies; **RPO 87** Low Carbon Energy Future, **RPO 95** Sustainable Renewable Energy Generation, **RPO 98** Regional Renewable Energy Strategy, **RPO 99** Renewable Wind Energy, **RPO 219** New Energy Infrastructure, **RPO 221** Renewable Energy Generation and Transmission Network.

7.2.17. **The National Peatlands Strategy 2015 – 2025 (DAHG, 2015)**

The Strategy sets out principles to guide Government policy and to provide a long-term framework for the responsible management of all peatlands to optimise their social, environmental and economic contribution to the State. It proposes that the potential contribution of peatlands rehabilitation, restoration and enhancement to climate change mitigation and adaptation be fully explored, in addition to their potential to contribute to a low carbon economy through use of sites for renewable energy.

The Strategy provides a framework for determining and ensuring the most appropriate future use of cutover and cutaway bogs. It recognises that such bogs have a number of advantages over other categories of land in terms of potential windfarm development of scale.

‘The appropriate development of such bogs may assist energy projects which will contribute to meeting our renewable energy targets and developing an

export market for renewable electricity. Windfarms on cutaway bogs could be developed in conjunction with recreational and natural amenity’ (Page 29).

It sets out a number of principles that will be used to guide sectoral policies, plans and decisions regarding the future use of peatlands:

- Ireland’s peatlands will continue to be used for many purposes including agriculture, development, peat extraction, forestry, conservation and amenity (P1).
- The potential economic, environmental and social benefits and costs of peatland uses will be considered and applied to policy and land use decisions (P2).
- Semi State companies...and public authorities ... discharge their functions in such a way to support the objectives of this Strategy (P5).
- Future management of these State-owned peatlands will be in keeping with the objectives of the Strategy (P12).
- Generally, Bord na Móna cutaway bogs that flood naturally will be permitted to flood unless there is a clear environmental and/or economic case to maintain pumped drainage (P16).
- In deciding on the most appropriate after-use of cutaway peatlands, consideration shall be given to encouraging, where possible, the return to a natural functioning peatland ecosystem. This will require re-wetting of the cutaway peatlands which may lead in time to the restoration of the peatland ecosystem (P17).
- Environmentally, socially and economically viable options should be analysed to plan the future of industrial cutaway peatlands, in conjunction with limiting factors as outlined in Bord na Móna’s ‘Strategic Framework for the Future Use of Peatlands’ (P18).
- Consideration will be given to how best cutaway bogs can contribute to a low carbon economy through their use as sites for renewable energy (P21).

- Policies and decisions relating to the use of peatlands shall take full consideration of potential impacts on water quality and the attainment by the State of mandatory water quality standards (P25).

7.3. Ministerial Guidelines Relating to Wind Energy

7.3.1. The Wind Energy Development Guidelines, Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government (June 2006) (WEDG, 2006)

The Guidelines advise that a reasonable balance must be achieved between meeting Government Policy on renewable energy and the proper planning and sustainable development of an area, and it provides advice in relation to the information that should be submitted with planning applications. The impacts on residential amenity, the environment, nature conservation, birds and the landscape should be addressed. It states that particular landscapes of very high sensitivity may not be appropriate for wind energy development.

7.3.2. Draft Wind Energy Development Guidelines 2019

In December 2013, the Minister for Housing and Planning announced a public consultation process with respect to a focused review of the 2006 Guidelines and a 'preferred draft approach' to the review was announced in June 2017.

Consultation on the draft Guidelines ended in February 2020. The draft guidelines identify Specific Planning Policy Requirements (SPPR), and subject to formal adoption of the Guidelines, it is intended that these SPPRs would be applied by planning authorities and An Bord Pleanála in the performance of their functions, as well as having regard to additional matters for consideration in assessing wind energy developments. Notable changes in the draft guidelines when compared with the 2006 wind energy guidelines are summarised as follows:

7.3.2.1. 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.

7.3.2.2. **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.

7.3.2.3. **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. Community dividend – measures to ensure enduring economic benefit to the community.

7.3.2.4. **Visual Impact**

- **Section 6.4** - Siting of wind energy projects.

7.3.2.5. **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.
- **Grid connections** – underground to be the standard approach.

7.3.3. Other Relevant Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA 2022)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Housing, Planning, Community and Local Government (2018)
- Guidelines for Landscape and Visual Impact Assessment (3rd Edition) Landscape Institute and Institute of Environmental Management & Assessment 2013 (IEMA)
- Guidelines for Ecological Impact Assessment 2018 Chartered Institute of Ecology and Environmental Management (ICEEM)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009)
- Scottish Natural Heritage (SNH) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation 2019

7.4. Local Policy - Tipperary County Development Plan 2022 – 2028

7.4.1. Introduction

The relevant development plan to this assessment is the Tipperary County Development Plan 2022 – 2028, which was adopted on 11th July 2022 and came into effect on 22nd August 2022.

7.4.2. Renewable Energy Strategy (Vol, 3 Appendix 2, TCDP2022)

The Development Plan's Renewable Energy Strategy is outlined in Volume Three, Appendix 2, while the Tipperary Wind Energy Strategy 2016 is attached as an Appendix (Appendix 1) to same and sets out a planning framework for development

of wind energy in the County including the identification of areas as being ‘Open for Consideration’ and ‘Unsuitable’ for windfarm developments.

The proposed development site is located in an area zoned ‘unsuitable for new wind energy development’. These areas are defined as;

‘new wind energy development in these areas is not permitted. These areas have a special or unique landscape character where the main objective is conservation. Where there are existing wind energy developments in these areas, their repowering may be considered appropriate. Any impact on the environment must be low and subject to proper planning and sustainable development, and the guidelines set out in this strategy.’

Wind energy policies for Tipperary are set out in Section 7.0 including:

TWIND 1: General Policy Statement on Wind Energy Development

‘It is the policy of the Council to support, in principle and in appropriate locations, the development of wind energy resources in county Tipperary. The Council recognises that there is a need to promote the development of ‘green electricity’ resources and to reduce fossil fuel dependency and greenhouse gas emissions in order to address the global issue of climate change, and to comply with European and International policies with regards to renewable and sustainable energy resources.’

Areas Unsuitable for New Development

TWIND 4.13: New wind energy projects will not normally be considered in these areas.

TWIND 4.14: Proposals for windfarm development may be considered on a case-by-case basis in the following limited circumstances:

- a) Where there are existing windfarms in these areas, proposals for ‘repowering’ may be considered appropriate, on a case-by-case basis. Repowering is the process of replacing older turbines with newer ones that either have a greater capacity or more efficiency which results in a net increase of power generated. Repowering may also seek to extend the overall lifespan of the development. Proposals for repowering, shall not result in a net increase in turbines, and it shall be demonstrated that there is no adverse impact on the receiving environment.

or

b) In areas located outside of Natura 2000 sites, proposals for an extension to an existing windfarm (of up to 20% in terms of permitted numbers of turbines or in cases where 5 or less turbines are permitted in a windfarm, one additional turbine) will be considered. The proposal will be required to demonstrate that the additional turbines may be served by the infrastructure serving the existing development.

or

c) In areas located outside of Natura 2000 sites, where an existing windfarm has been permitted and this permission expires over the lifetime of this Wind Energy Strategy, a revised proposal will be considered within the planning unit of the previously permitted development, and where it is demonstrated that there is no net increase in turbines.

All proposals will be required to comply with the policies and development management standards set out in the Wind Energy Strategy.

Policy RE2: Landscape Capacity and Renewable Energy Development: *It is the policy of the Council to facilitate new development which integrates with and respects the character, sensitivity and value of the landscape in accordance with the guidelines set out in the Tipperary Landscape Character Assessment 2016 and the policies as set out in the County Development Plan (as varied) and the Development Management standards set out in Chapter 10.*

7.4.3. Landscape Character

The archetype group to which the proposed development site belongs is The Plains and it lies within a character type described as Peatland and Wet Mixed Farmland. The Landscape Character Area is the Borrisokane Lowlands, described as a large, generally low-lying area which “contains good quality pasture though there are also quite extensive pockets of tillage, largely in the southern part of this LCA. Towards the north, the landcover starts to share characteristics with the Shannon Callows LCA as well as a number of raised bogs”.

The Borrisokane Lowlands have been designated a Sensitivity Rating of 2, i.e. Moderate Sensitivity to Change, and the land-use compatibility for windfarm development is described as low.

Policy 11-16 states:

Facilitate new development which integrates and respects the character, sensitivity and value of the landscape in accordance with the designations of the Landscape Character Assessment, and the schedule of Views and Scenic Routes (or any review thereof). Developments which would have a significant adverse material impact on visual amenities will not be supported.

7.4.4. Other Key Policies

Other policies of relevance are contained in the Development Plan relating to Habitats Directive (Policy 11 - 1), NHA (11-3) biodiversity (11 - 4), peatlands (11-15), water quality (11 - 7), flooding (11 - 9), and invasive species (11 - 13). Overview of Renewable Energy Policy

I consider that European, National and Regional policy clearly supports the provision of a windfarm. The CAP24 specifically provides a target for the delivery of at least 9 GW of onshore wind energy by 2030 and the RSES policy supports the Southern Region as a Carbon Neutral Energy Region.

7.5. Natural Heritage Designations

7.5.1. European Designated Sites

The closest European protected sites are as follows;

- The Ballyduff/Clonfinane Bog SAC [000641] is located 110m to the north of the site and is designated for peatland habitats.
- Arragh More (Derrybreen) Bog SAC [002207] is located 450m to the west of the site and is designated for peatland habitats.
- Kilcarren-Firville Bog SAC [000647] which is designated for peatland habitat is located 1.5km to the west of the site.
- Ridge Road, SW of Rapemills SAC [000919] is located 1.7km to the northeast of the site is designed for peatland habitats.
- Sharavogue Bog SAC [000585] is located 2.5km to the southeast and is designated for peatland habitats.
- Liskeenan Fen SAC [001683] is located 2.6km from the site.

- All Saints Bog and Esker SAC [000566] is located 3.6km from the site.
- River Shannon Callows SAC [000216] is located at a hydrological distance of c. 28km
- Dovegrove Callows SPA [004137] is located 160m from EIAR site boundary.
- Middle Shannon Callows SPA [004096] is located 7.6km for EIAR site boundary.
- Lough Derg (Shannon) SPA [004058] is located 7.9km for EIAR site boundary.

7.5.2. Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHA)

Significant NHAs in proximity to the site are as follows;

- Arragh More Bog NHA [000640] borders the western boundary of the site. (also designated an SAC)
- Killeen Bog NHA [000648] is located 786m to the northeast of the site.
- River Little Brosna Callows NHA [000564] is located 3km from the site.

Significant pNHAs in proximity to the site are as follows;

- Ballyduff/Clonfinane Bog [000641] located 110m to the north of the site (also designated an SAC)
- Dovegrove Callows [000010] located c. 452m from the grid connection (also designated as an SPA)
- Birr (Domestic Dwelling No. 1, Occupied) [000569] located 864m from the site which is designated for a roost of Leisler's Bat (*Nyctalus leisleri*).
- Birr (Domestic Dwelling No. 2, Occupied) [000568] located 1.1km from the site which is designated for a roost of Leisler's Bat (*Nyctalus leisleri*).
- Kilcarren-Firville Bog [000647] is located 1.5km to the west of the site. (also designated as an SAC)
- Bracken's Dwelling, Near Whiteford [002058] located 2.5km from the site which is designated for a nursery roost of Leisler's Bat.
- River Shannon Callows [000216] located 7.6km from the site (also designated as an SAC)
- Lough Derg [000011] located 7.6km and a hydrological distance of c. 43km from the site (also designated as an SAC)
- Banagher (Domestic Dwelling, Occupied) [000567] located 8.3km from the site which is designated for a roost of Brown long eared bat.
- Cloghanbeg [002059] is located 8.4km from the site which is designated for a nursery roost of Leisler's Bat (*Nyctalus leisleri*).
- Miltown, Shinrone [002065] located 11.5km from the site which is designated for a Natterer's Bat roost (*Myotis nattereri*) of National Importance.
- Kinnitty (Domestic Dwelling, Occupied) [000579] is located 12.1km from the site which is designated for a summer roost of Leisler's Bat (*Nyctalus leisleri*).
- St. Joseph's, Mountheaton [002063] located 12.9km from the site is designated for a roost of Brown Long-eared Bat.

- Drumakeenan National School [002064] located 12.9km from the site is designated for a roost of Brown Long-eared Bat.

7.5.3. EIA Screening

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 Environmental Impact Assessment is required. The following classes are noted:

- Part 2 (3) Energy Industry (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.

The Application is accompanied by an Environmental Impact Assessment Report (EIAR) which is examined and assessed in this report.

8.0 The Appeal

8.1. Grounds of Appeal

A First-Party Appeal was submitted to the Board on 13th December 2024 opposing the Local Authority's decision. The grounds of appeal can be summarised as follows;

8.1.1. General Matters

- The proposed windfarm development is strongly supported by National planning, related policy, guidance and legislation including The Climate Act, The Climate Action Plan and Wind Guidelines etc.
- The proposed windfarm is strongly supported by Regional Policy and Tipperary County Development Plan 2022 – 2028 as they relate to achieving national climate and renewable energy targets.
- Tipperary County Councils assessment of both the EIAR and NIS considers the site acceptable for wind energy.

- The concerns raised in relation to ornithology and traffic have been addressed in the appeal documentation.
- The RES is out of date and doesn't reflect the ambition of national policy.
- Ultimately, it is considered the proposed development is in accordance with proper planning and sustainable development and should be granted planning permission in respect of the site suitability and the need for renewable energy development.
- It is government policy to rapidly accelerate the roll-out of renewable energy technology. However, if suitable sites are ruled out due to wind energy policy drafted almost a decade ago, it is unlikely that any acceleration will be seen.
- To combat the effects of climate change, Ireland must decarbonise its economy by 2050. There is no 'silver bullet' to do so. It will take hundreds, if not thousands of individual renewable energy projects to decarbonise the Irish economy. The scale of the challenge we face to decarbonise the Irish economy is enormous, but the climate change implications of not doing so are even greater. There is no other way to decarbonise a modern society except through renewable energy projects such as the proposed development.

8.1.2. Refusal Reason No. 1

- **Material Contravention** - Under S37(2)(a) of the Planning Act, it is within the remit of the Board to grant permission notwithstanding the contravention of the Tipperary County Development Plan. A material contravention can be granted on the following basis;
 - The proposed development being of strategic and national importance based on it being an indigenous, secure, renewable energy source, it contributes to the national climate and energy targets and it represents a significant investment in the rural economy.
 - There are conflicting objectives in the development plan as it relates to climate change, renewable energy ambition and specifically windfarm developments such as the development proposed.

- The proposed windfarm supports the achievement of the policies and objectives set out in national and regional policy and guidelines issued under Section 28 of the Planning Act.

In determining this case, the points above should be considered alongside the Boards legal obligation under the Climate Act to carry out its functions in accordance with the provisions of national climate policy.

This Reason for Refusal is assessed in Section 9.0 of this report in the Planning Assessment.

8.1.3. Refusal Reason No. 2

- The information contained within the appeal documentation demonstrates that the proposed development will not significantly impact avian populations of importance in the area.
- The issues raised by Tipperary County Council with regard to impact on SPAs, collision risks and nocturnal flights, and the displacement of breeding merlin have been comprehensively addressed and clarification has been provided where necessary.
- It is evident that no deficiencies in information remain and that no significant impacts will occur.

This Reason for Refusal is assessed in Section 14.8 of this report under Ornithology.

8.1.4. Refusal Reason No. 3

- The additional information and clarification provided in the appeal documentation demonstrates that a significant detrimental impact on the road will not arise during the construction phase. Upon completion of the construction phase, maintenance and operational traffic will not impact the road network.
- An independent Stage 1 Road Safety Audit was conducted and demonstrates that the N52 / L5040 junction and the proposed traffic management measures on the L5040 will operate safely during the construction phase.

This Reason for Refusal is assessed in Section 22.9.2 of this report under Material Assets.

8.2. Planning Authority Response

No planning authority response on file.

8.3. Observations to Appeal

Six observations of the first party Appeal have been received from the following;

1. Shiela Hctor
2. Michael Mahon & Regina Hctor
3. Derek and Patrick Deane
4. Patrick & Alma Carney
5. Tom & Norma Shanahan
6. John Dooley

The pertinent matters raised in these observations can be summarised as follows;

Table 8.1 Summary of Observations	
Area zoned 'unsuitable for new wind energy development' / Contravention of TCDP 2022-2028 / Planning Policy	
	<ul style="list-style-type: none">• Material Contravention of the TCDP 2022 – 2028, specifically, Vol 3, Appendix 2, Tipperary Renewable Energy Strategy, Wind Energy Strategy, Policy TWIND 4.• TCC Planners Report (File Ref 2360763) highlights the site is located in an area zoned 'unsuitable for new wind energy development'. These areas have a special or unique landscape character where the main objective is conservation. Submissions from DAU support the view that the site is unsuitable for windfarms.• Concerns raised about zoning of the site being unsuitable for windfarms. Appellant has sought to use National Wind Energy targets to defend constructing a development on a site that is within an area defined as being unsuitable for wind energy development under the TCDP 2022. The site is unsuitable for such development on environmental grounds. This area is designated unsuitable for windfarm development in the CDP as it would interfere with its primary focus of conservation. State own land adjoining and NPWS are active in the area, with Arragh

More Bog recently given SAC status. The area should continue to prioritise conservation.

- Development on unsuitable sites should not be justified to meet National Policy. The developers rationale would prioritise development over conservation policy and regulation and result in the degradation of a very significant ornithological habitat and a significant peat body.
- Site is part of an ecological corridor connecting a range of ecologically valuable sites including protected European sites and site located adjacent to a significant area of peatland at Sharragh (owned by the Dept/NPWS) where peatland restoration is being carried out.
- Applicant has not sufficiently addressed the biodiversity crisis. Balance needs to be struck between conservation of fragile ecosystems and the development of renewable energy. The planning rational put forward challenges best practice environmental protection and environmental law, and if authorised would seriously compromise the integrity of the planning process.
- Applicants refer to 4 windfarm applications where ABP granted material contravention including ABP Planning File Refs. 315365, 221656, 240394, 301852. Observer considers that these applications do not directly relate to the proposed development due to various site differences. Observer has listed decisions made by the Board where planning permission was refused based on the zoning of the site, peatland, ornithology etc. including ABP Planning File Refs 309937, 311044, 314600, 314662, 312599, 313007, 310789,310788.
- Working Paper No. 16 from the climate Change Advisory Council: 'Reviewing Local Authority Renewable Energy Strategies' (May 2023) outlines how Tipperary (and Offaly) have already delivered and planned more wind energy than any other inland County, with only some Coastal Counties exceeding both these Counties.
- The analysis put forward in the appeal doesn't address National Capacity for on shore wind energy before seeking to justify the contravention of the TCDP 2022 – 2028 for a relatively small gain of wind energy. This rationale requires a national assessment of lands and areas suitable for wind energy. It is concerning that conservation objectives would be compromised in this regard.
- County requires a uniform framework of guidelines rather than contraventions of individual County Development Plans.

- The planning rationale poses a serious challenge to the integrity and validity of the Local Planning Process.

Impact on Natura 2000 network and Ornithology

General Comments

- The site is unsuitable for wind energy development on several grounds as it would severely impact ornithological habitats and peat body integrity and arguably other habitat types.
- The development would adversely affect bird species, or their habitats specified in Article 4 of the Birds Directive and is ultimately a poor choice of location for such a development. It is evident that the potential impact of the proposed development cannot be adequately mitigated and would result in significant impacts on the environment, biodiversity and ornithology.
- If the conservation efforts in this site are successful, expected increase in wildlife and hence expected number of Annex 1 birds killed would be greater than 203, which if the figure from the original planning documents.
- The turbines are planned much closer together than the distances recommended in the 2006 guidelines and will make it more likely for bird strikes to occur.
- 54 of the 110 species in the target species list (EIAR 7-1 – Species List) have been observed and recorded in the area.
- The appeal by the applicant does not include any new material to suggest than anything other than the precautionary principle should apply and permission be refused for this development. These relate to Annex 1 species including the whooper swan and curlew. These concerns are shared by the DAU.
- The applicant does not offer sufficient evidence to contradict or mitigate against the likelihood of Environmental risks, and particularly in relation to protected ornithological species.

Whooper Swans

- Concern that First Party Appeal documentation does not adequately address impact on ornithology.
- The habitats restoration measures carried out by Dept/NPWS at Sharragh has attracted wildfowl including whooper swan, which are Annex 1 species and occur in very large numbers in the waterbodies at Sharragh. Screenshots of videos of

whooper swan have been included in a submission indicating the swans flying from the north/northwest (and also heading back up north) moving to and from waterbodies in the NPWS owned lands in Sharragh.

- DAU contend that *'There are very few suitable roosting areas between Sharragh and the Little Brosna SPA and foraging grounds to the south of the proposed site. Therefore, the Dept. considers it entirely possible that there may be movement between the sites, constituting ex-situ usage of the development zone of influence by qualifying interest species from the SPA'*. (Pg. 3 of DAU letter dated 27th Oct. 2023)
- Article 4.4 of the Birds Directive states, *'Outside these protection areas, Member states shall also strive to avoid pollution or deterioration of habitats'*.
- Community Consultation Report refers to potentially viable roosting area to the north for whooper swans. Not clear why other areas were not included in the 600m buffer zone because whooper swan are active in the wider area including over the proposed turbine locations. Should this buffer area not be from the closest waterbody within NPWS ownership to protect a variety of birds including whooper swans.
- Pg. 52 of First Party Appeal acknowledge that movement of whooper swans between the SPA and Sharragh can't be ruled out. *'While the balance of evidence is that they do not, if these local swans very occasionally visit the nearest SPAs (Little Brosna SPA or the Middle Shannon Callows SPA) then the impacts are predicted to be no greater than negligible for the larger SPA populations'*.
- 2023 Breeding Bird Data Survey submitted with First Party Appeal was conducted during April – September 2023. Whooper swans are Winter visitors to Ireland from October – April and hence, whooper swans are not recorded in large numbers.

Curlew

- Oran Ecology report refers to curlew likely roosting on the waterbodies in Sharragh (Dept./NPWS). This is not indicated within the MKO EIAR Chapter 7 Ornithology and 7.4 Survey Data on Curlew. The 2023 survey also failed to establish this. Pg 11 of Breeding Bird Survey 2023 submitted with the first party appeal document, there are multiple records of ecologically significant species (including Red Listed & Annex 1) continuing to move through and within close proximity to the proposed site as well as potential breeding on the proposed site.

Merlin

- Oran Ecology Report (Appendix 1, Pg. 54) commissioned by observer also identified other birds of conservational concern including a probable pair of breeding Merlin, Kestrel, buzzards, snipe and wood cock. Merlin described as 'a rare breeding bird in Ireland'.
- It is possible that nesting could occur in the proposed windfarm given the presence of suitable nesting habitat.

European Sites

- MKO appeal response does not adequately address the impact on ornithology and has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network.
- In fact, the applicants do not dispute the fact that they expect to kill hundreds of Annex 1 specimens during the operational lifetime of the windfarm.
- Proposed development would damage this site, which is part of an interconnected network between surrounding SACs/SPAs and the success of these SACs is reliant on maintaining and improving these interconnected areas.

Compliance with Wind Energy Guidelines 2019

- The Draft Wind Energy Guidelines 2019 states that the minimum setback distance to a residential dwelling with a blade tip height of between 179.5m and 185 m should be between 718m and 740m depending on final configuration (4 times the Turbine blade tip height).
- Measurements were taken to centre of the household and not to the nearest point of the curtilage of any residential property.
- Observer has used coordinates based on the nearest point of curtilage of the wind turbines and purport 2 houses (No. 37 and No. 51) being below the minimum setback requirement for the blade tip height of 718m and that 4 houses (No. 4,14,36,52) are below the minimum setback for the tallest tip height of 185m.
- Applicant has incorrectly calculated the horizontal distance required to meet the required setback distance, these being 718m and 740m respectively. Observer has referenced the Canadian Wind Energy Association definition as 'the nearest part of the wind turbine structure' where the measurement should be taken from. Observer notes that separation distance required should actually be between 785m and 815m

<p>depending on configuration. Based on the turbine structure being the turbine blade, it can be calculated that 11 households (No. 4, 5, 8, 14, 36, 37, 42, 44, 51, 52, 18) fall below the minimum separation distance to achieve the setback requirement of 718m and 740m and house no. 35 falls below the minimum separation distance to achieve the setback requirement of 740m.</p> <ul style="list-style-type: none"> • Applicant doesn't comply with Draft Wind Energy Guidelines 2019. • Numerous errors in calculating the required separation distance to meet the minimum setback distance requirements of the 2019 Guidelines. • Applicants failed to take into account the curtilage of each household and failed to apply their own calculation used for calculating buffers for other sensitive receptors (Bat Habitats) resulting in miscalculating the distances in their report. • T01, T02, T04 and T05 don't meet the required setback distances. Applicant have not produced any waivers from households which fall inside the required minimum distances or evidence to mitigate this.
Turbary Rights (Right to access the bog to cut and carry away turf)
<ul style="list-style-type: none"> • Impact of Turbine 3 and its underground cables on turbary rights. This is the location of where the observers prepare and store their turf. They depend on this turf to heat their homes. People with turbary rights were not consulted by the applicants.
Road Capacity / Traffic Issues
<ul style="list-style-type: none"> • The poor site suitability is further demonstrated by the proposal to place Turbine T04 in a very small viable area which would require the turbine foundation to encroach on the public road, with that turbine and one other overhanging the public road. Not clear if effectively doubling the width of the existing public road network has been properly assessed by the applicant or the Council. Ignores the issue of T04. All existing tracks and roads are doubled in width a consequential destruction of habitat, hedgerows and peat removal. • 2 turbines significantly encroach the local road and will be intimidating to road users with no alternative route available. • Disproportionate scale of road upgrading required within the site boundary. • Road not suitable for construction traffic.
Other Issues

- Area used by locals for mindfulness and improving mental health and recreational activities that improve physical health.
- Hydrology report failed to identify 2 natural springs (one is a national monument) close to one of the turbines and failed to apply the appropriate buffer zones or explain how they can ensure that the hydrology related to these springs will not be affected when the drive piles into the bedrock.

Legal Matters

- The observation of Mr John Dooley relates to a decision from the European Court of Justice (C-24/19). It is Mr Dooley's contention that The Wind Energy Guidelines are plans and programmes set out in EU Directive 2000/42/EU and should be subject to Strategic Environmental Assessment (SEA). The Irish Wind Energy Guidelines don't have a legally required SEA. ECJ judgement C-24/19 referenced by observer. Windfarm could be forced to close down as ECJ have stated that all consents granted using Wind Energy Guidelines not having an SEA should cease operating.

9.0 Planning Assessment

9.1. Introduction

I have examined the application details and all other documentation on file, including the appeal, observers to the appeal, third parties and prescribed body observations. I have inspected the site and public roads. I have had regard to relevant local/regional/national and European policies and ministerial and other guidance where relevant. I am satisfied the substantive issues for assessment relate generally to the principle of the development, Environmental Impact considerations, Appropriate Assessment and matters arising from the grounds of both appeal and observations received. I propose addressing these matters as follows-

- Refusal Reason no. 1: Principle of Development & Material Contravention of the Development Plan (See Section 9.2)
- Legal Matters
- Turbary Rights
- Cumulative Impacts

- Design Flexibility
- Comments on Conditions

Section 10.0 to Section 25.0 of this Inspectors report assesses Environmental Impact Assessment.

Section 26.0 including Appendix 1 and 2 of this report assesses Appropriate Assessment (The likely significant effects on a European Site)

Section 14.8 of this Inspector's report addresses Refusal Reason No. 2 – Impact on Local Sites within the Natura 2000 Network.

Section 22.9.2 of this Inspector's report addresses Refusal Reason No. 3 - Impact on Road Capacity.

9.2. Refusal Reason no. 1: Principle of Development & Material Contravention of the Development Plan

9.2.1. TCC Reason for Refusal

Tipperary County Council refused permission for the proposed development in refusal reason No. 1 arguing that the proposed development would contravene materially the policies and objectives of the Tipperary County Development Plan 2022 - 2028, specifically Volume 3, Appendix 2, Tipperary Renewable Energy Strategy, Wind Energy Strategy, Policy TWIND 4 and therefore would be contrary to the proper planning and sustainable development of the area.

The reason for refusal stated that '*notwithstanding the general Planning Policy support for wind energy generation at national, regional and local policy level, including: Policy 3-1 which seeks to 'promote and facilitate renewable energy development, in accordance with the policies and objectives of the Tipperary Renewable Energy Strategy 2016 (and any review thereof), and the Tipperary Climate Adaptation Strategy 2019', the proposed development is located on lands identified as an area unsuitable for new wind energy development within the Tipperary Renewable Energy Strategy. Furthermore, it is considered that the proposed development would not, come within the limited circumstances provided for in policy TWIND 4.14. of the Wind Energy Strategy in the Renewable Energy Strategy.*'

This approach is also advocated by observers to the appeal.

9.2.2. Policy Background

In terms of tackling climate change, reducing dependency on fossil fuels in energy production and achieving reduced greenhouse gas emissions, there is clear policy support at international, national and local level for renewable energy development. The proposed windfarm is compatible with European and National climate change and renewable energy policy and legislation (including the Climate Action and Low Carbon Development Act, 2015 (as amended)) as summarised in Section 7.0 above. It would contribute to the achievement of European and National renewable energy targets and in particular with the objectives of the Climate Action Plan 2024 (“CAP24”) which has sets targets for wind energy of:

- I. achieving **9 GW of onshore wind**, 8 GW of solar power, and at least 5 GW from offshore wind projects by 2030; and
- II. achieving an 80% share of renewable electricity by 2030.

The plan also identifies a range of measures to deliver targets for a reduction in greenhouse gas emissions including the better management of peatlands. Compliance with issues related to environmental management are addressed in the relevant sections of the EIA chapter of this report.

The proposed windfarm would be compatible with national planning policy as set out in the National Planning Framework Plan, 2018-2040 which recognises the need to move towards a low carbon and climate resilient society with a sustainable renewable energy supply.

The 2006 Wind Energy Development Guidelines (and 2019 Draft amendments) advise that a reasonable balance must be achieved between meeting national policy on renewable energy and the proper planning and sustainable development of an area. The Guidelines also state that projects should not adversely affect any European sites, have an adverse impact on birds, give rise to peat instability or adversely affect drainage patterns, cultural heritage, sensitive landscapes, the local road network or residential amenity.

The proposed windfarm is compatible with regional planning policy as set out in the current Regional Spatial Economic Strategy for the Southern Region 2020-32 (RSES),

which acknowledges climate change as the most important long term challenge facing Ireland and states that the Regional Assembly is committed to implementing regional policy consistent with the Climate Action Plan. It further states that the RSES recognises and supports the many opportunities for wind as a major source of renewable energy. RPO99 supports the sustainable development of renewable wind energy (on shore and offshore) at appropriate locations and related grid infrastructure in the region in compliance with national wind energy guidelines.

In terms of Local Planning Policy, the proposed windfarm would be compatible with the general climate change and renewable energy aspirations contained in the Tipperary County Development Plan 2022 (TCDP 2022). Policy objective 3 - 1 of the Development Plan seeks to promote and facilitate renewable energy development in accordance with the policies and objectives of the Tipperary Renewable Energy Strategy (RES) and the Tipperary Renewable Energy Strategy 2016 (and any review thereof), and the Tipperary Climate Adaptation Strategy 2019. Wind energy developments are also supported in Policy Objective 10 - 1 and 10 – 2.

Policy Objective 11 – 1 highlights the requirement to balance the need for development with the protection and enhancement of the natural environment and human health and Planning Objective 11 -2 which aims to protect European Sites and Protected European species, requiring applications to be accompanied by an NIS as necessary. Policy Objective 11 – 3 and 11 – 4 also seek to protect Natural heritage areas and local biodiversity.

The applicants have responded in their appeal noting that TCDP 2022 has a target of 600MW of total installed wind energy to be constructed and operational in the County by 2028, with the county currently having 475MW of wind energy installed and thus the County has a target of 125MW of additional wind energy by 2028. The applicants consider a target of 125MW miniscule for one of the largest counties in Ireland in the context of the climate crisis.

The applicants consider there is inconsistency in the Development Plan, which on one hand supports renewable energy development and climate action but has a target of only 125MW of additional wind energy by 2028. The applicants consider the TCDP 2022 and the RES has not kept pace with National energy and climate policy and hence the RES is misaligned with International and National policy. The applicant

considers the Wind Energy Strategy (WES) does not take into account many of the project level constraints that need to be considered as part of a Wind Farm project and that some lands considered 'Open for Consideration' are in fact not viable for wind energy. The applicant considers the RES 2016 and the TCDP 2022 does not provide sufficient quantum of land as 'Open to Consideration' for wind energy developments to achieve Tipperary's energy targets. For this reason, the applicant considers that all viable areas capable of accommodating wind energy are considered.

The applicant has described why the Wind Farm is needed, describing Ireland's renewable electricity targets and the need for dramatic and systemic change to combat the effects of climate change and decarbonise the global and Irish economies through the use of renewable energy, concluding that every wind farm project will count towards combatting the global climate emergency. In this regard, the applicant notes that Ireland needs to scale up onshore wind energy development at an unprecedented rate to achieve Ireland's 9GW target and 80% RES-E (Electricity from renewable energy sources) target, noting the reality of achieving these targets is the installation of over 600MWs per year until 2030. The proposed Wind Farm will provide 43.3MWs of renewable, clean energy before 2030.

9.2.3. Policies and Objectives for Renewable Energy (Vol, 3 Appendix 2, TCDP 2022)

I have reviewed the policies and objectives of the TCDP in relation to why the proposed wind farm site was classified as an 'Area Unsuitable for New Wind Energy Development' under the TCDP 2022.

Section 4.5 (Pg. 26) in relation to Wind Energy, states that;

'the county has significant wind resources due to its upland areas as identified by ESB Ireland (ESBi) Wind Energy Resource Mapping. The Wind Energy Development Guidelines (DEHLG 2006) are the main statement of government policy on on-shore wind. The Council has prepared a Wind Energy Strategy in accordance with the national guidelines; this provides a framework for the development of Wind Energy. The Tipperary Wind Energy Strategy 2016 is set out in Appendix 1.'

Section 6.0 of the TWES 2016 as contained in Vol, 3 Appendix 2, TCDP2022 outlines the policies and objectives for renewable energy in the County.

The following policies relate to Renewable Energy and Protection of the Environment;

- **Policy RE1 – Protection of the Environment** – Developments shall be assessed for compliance with the environmental standards and policies as set out in the TCDP and Development Management standards set out in Chapter 10.
- **Policy RE2 – Landscape Capacity and Renewable Energy Development** – It is Council policy to facilitate development which integrates with and respects the character, sensitivity and value of the landscape in accordance with the guidelines set out in the Tipperary Landscape Character Assessment 2016 and the policies as set out in the TCDP and Development Management standards set out in Chapter 10
- **Policy RE3 – Community Investment in Local Renewable Energy** – Council will support proposals that bring about a direct socio-economic benefit to the local community.

Section 6.5 discusses the Tipperary County Wind Energy Strategy which is contained in Appendix 1. It sets out a planning framework for development of wind energy in the County. The strategy was informed by a Landscape Character Assessment (LCA) and Strategic Environmental Assessment (SEA) / Habitats Directive Assessment (HDA) which identifies areas where wind energy development is open for consideration and where wind energy developments are considered unsuitable. The Strategy also sets out the appropriate planning policy and development management standards to support and manage sustainable wind energy development.

9.2.4. **Appendix 1 Tipperary Wind Energy Strategy 2016**

9.2.4.1. **Background to the Tipperary Wind Energy Strategy**

- **South Tipperary Dev Plan Area 2009 (STDP 2009) (as varied)** – Wind energy policy has been guided since 2006 by the Landscape Character Assessment covering the upland areas.
- **North Tipperary Dev Plan Area 2010 (TNDP 2010) (as varied)** – Based on the North Tipperary Wind Capacity Strategy and Outline Landscape Strategy (2009). These identified areas with adequate wind resources and then

differentiated between those deemed suitable for wind energy development and those deemed unsuitable due to scenic, ecological, historic or tourism considerations. This approach did not specifically identify preferred areas for wind energy development.

Section 5.2 addresses Landscape Sensitivity, noting that the DoELG 2006 Wind Energy Guidelines states that landscape sensitivity is the key consideration in the evaluation of areas suitable for wind energy development. A Consolidated Landscape Character Assessment of Tipperary County was produced which classified areas based on a qualitative assessment of their landscape value, into 6 classes of sensitivity to development. The assessment identified areas least compatible based on landscape sensitivity with various land-uses including wind farms. The 'vulnerable', 'transitional vulnerable' and 'least compatible' areas are automatically considered unsuitable for new wind energy development.

9.2.4.2. Wind Energy Landscape Sensitivity Map

The Map was produced to guide the delineation of wind energy policy areas from a landscape perspective. In this map the qualitative 'Vulnerable' landscape character areas are combined with areas that are deemed unsuitable for new Wind Energy Development, based on a quantitative assessment of the physical characteristics of the landscape. The following criteria were used to develop this map;

- Areas with a slope greater than or equal to 15° and with an elevation higher than 200m;
- Areas with land cover in the following categories (based on CORINE 2012 data): Continuous urban fabric, Discontinuous urban fabric, Broad-leaved forest, Mixed forest, Natural grassland, Moors and heaths, **Transitional woodland scrub**, Inland marshes, **Peat Bogs**, Water bodies;
- Areas with soils having the following classification: Acid Shallow Well Drained mineral, Blanket Bog, **Cutover Peat**, Lacustrine, Scree,
- Primary Amenity Areas Designation
- Landscape Character Areas considered 'Vulnerable', 'Transitional Vulnerable' and 'Least Compatible' with wind farms.

The resulting Wind Energy Landscape Sensitivity Map has informed the Wind Energy Policy Areas Map.

The following maps contained in Appendix 2 Tipperary Wind Energy Strategy 2016 Maps are relevant to the designation of the proposed wind farm site as being classified as 'Areas Unsuitable for New Wind Energy Development', which is indicated on Map 11. Wind Energy Policy Areas.

- **Map 7. Landslide Incidence and Peat Soils** – Indicates the site as 'Peat-based Quaternary Sediments', which is coloured dark purple on the map. Based on the criteria outlined above, peat-based sediments lands have been classified on Map 4 (see below).
- **Map 4. Quantitative Landscape Sensitivity Analysis** – Indicates the site as being selected land cover classes based on CORINE 2012 i.e. Peat Bogs.
- **Map 8. Ecological Designations and Wind Farm Energy Planning Applications** - The site is not contained within any designated ecological site.

9.2.5. **Conclusion on Policies and Objectives for Renewable Energy (Vol, 3 Appendix 2, TCDP 2022)**

Based on the above, it is clear that the entirety of the proposed wind farm site was classified on Map 11 as 'Areas Unsuitable for New Wind Energy Development' based on the fact that the site is peatlands under CORINE 2012 classification and hence was automatically included as a sensitive landscape on the Quantitative Landscape Sensitivity Analysis (Map 4). I note to the Bord that the site was not highlighted as an ecological designation and was not highlighted as important for birds, habitats or flora and fauna on Map 8.

Given that national policy is moving away from the exploitation of peatlands for fuel production, I consider peatlands, especially cutover bogs to offer a potential solution to generate other forms of energy, specifically wind energy. Appendix 4 of the Draft Wind Energy Development Guidelines (2019) addresses Best Practice for Wind Energy Development in Peatlands.

The guidelines state that;

*‘Development of most peatland sites (including upland and lowland bog types, fens and heaths) will generally lead to impacts on natural heritage. **Notable exceptions to this would be areas of exploited peatland** such as within the extensive milled peat bogs, mainly in Ireland’s midlands, and those that have been converted to farmland.’*

The 2019 Guidelines provide advice on construction guidelines on peatlands which may serve to reduce impacts, including minimising habitat disturbance and loss, hydrological disruption and the risk of erosion.

Cutover bogs are disturbed and degraded ecosystems whose common habitats are generally of low conservation value. The proposed wind farm development is located on primarily cutover bog (exploited peatland as per the 2019 Guidelines), conifer forestry and improved agricultural grassland habitat.

The classification of the site in the Development Plan as ‘Areas not suitable for New Wind Energy Development’, is based solely on the fact that the site is peatland. It does not take into consideration the degraded nature of the bog. I consider that the redevelopment of the site which comprises in the main cutover bog for the purposes of wind energy to be a good use of exploited peatland and I consider the use of the site for the purposes of wind energy generation to be an acceptable and sustainable re-use of the land.

9.2.6. **Climate Action and Low Carbon Development Act 2015 (as amended)**

The applicant states that the Board has legal obligations in respect of the processing of certain planning applications and appeals for renewable energy developments particularly certain obligations under the Climate Action and Low Carbon Development Act 2015 (as amended) and the Planning and Development Act 2000 (as amended) for renewable wind energy developments and the specific circumstances in which the Board has a discretion to grant permission for a wind farm which materially contravenes a development plan, which discretion must be exercised subject to the mandatory obligations set out in the Climate Act.

The applicant has noted the obligation of the Bord under the Climate Act and Planning Act and has stated that the requirements are a mandatory obligation, as follows;

Section 15 (1) of the Climate Act provides that:

'A relevant body shall, in so far as practicable, perform its functions in a manner consistent with –

- (a) The most recent approved climate action plan,
- (b) The most recent approved national long term climate action strategy,
- (c) The most recent approved national adaptation framework and approved sectoral adaptation plans,
- (d) The furtherance of the national climate objective, and
- (e) The objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State. (the 'National Climate Policies and Objectives').

The applicant considers in light of the above that there is a mandatory obligation on the Board to exercise its decision-making functions 'in a manner consistent with' the National Climate Policies and Objectives. The applicant argues that National Climate Policies and Objectives takes precedence over the policies and objectives of planning authorities set out in development plans. In summary, the applicant argues that where the Board is determining whether or not to grant consent for a wind farm, it is obliged to make its decision in a way which is consistent with National Climate Policies and Objectives where a wind farm development complies with these policies but materially contravenes a development plan. The applicant notes recent precedent for the Board granting permission for wind energy in material contravention of the development plan under Section 37 (2) (a) and (b) of the Act under ABP File Ref. 221656, ABP Ref. 240394, ABP Ref. 301852 and ABP Ref. 315365.

9.2.7. Material Contravention of the Development Plan

The proposed wind farm is a material contravention of the TCDP 2022, being proposed in a location which is considered not suitable for new wind energy, as discussed above. The Board will be aware that under Section 37(2)(a) of the Planning and Development Act 2000, as amended, it may, in determining an appeal under that section, decide to grant a permission even if the proposed development contravenes materially the Development Plan.

The specific circumstances where permission may be granted notwithstanding a material contravention are set out in Section 37(2)(b) which provides that;

‘Where a planning authority has decided to refuse permission on the grounds that a proposed development materially contravenes the development plan, the Board may only grant permission in accordance with paragraph (a) where it considers that –

- (i) the proposed development is of strategic or national importance,*
- (ii) there are conflicting objectives in the development plan or the objectives are not clearly stated, insofar as the proposed development is concerned, or*
- (iii) permission for the proposed development should be granted having regard to regional spatial and economic strategy for the area, guidelines under section 28, policy directives under section 29, the statutory obligations of any local authority in the area, and any relevant policy of the Government, the Minister or any Minister of the Government, or*
- (iv) permission for the proposed development should be granted having regard to the pattern of development, and permissions granted, in the area since the making of the development plan.’*

I have completed an EIAR and an NIS of the proposed development and am satisfied that there are no likely significant effects on the environment, and I am also satisfied that there would be no significant adverse effects upon any local European Designated Site. I am satisfied that the development albeit in a location designated unsuitable for new wind energy is compliant with the wider policies and objectives of TCDP 2022 for wind energy development and environmental protection and is acceptable.

Notwithstanding the subject site being located within lands identified in the Development Plan as unsuitable for new wind energy in the Tipperary Renewable Energy Strategy, I consider the proposed development is of national importance in reaching Ireland's Renewable Energy Targets.

I consider that it can be reasonably argued under Section 37(2)(b)(i) and (iii) of the Planning and Development Act 2000 (as amended) that;

- (i) the proposed Wind Farm development is of strategic and national importance, based on the Climate Plans, National and Regional Objectives and on achieving

Europe and Irelands legally binding renewable energy targets including the 9 GW onshore wind target and achieving 80% of electricity demand from renewable sources by 2030. Furthermore, Ireland is legally bound to achieve carbon neutrality by 2050, with fiscal costs incurred if Ireland fails to meet climate targets. In order to achieve these targets, Wind Farms are of strategic and National importance due to their overall contribution of achieving carbon neutrality.

(iii) Wind Farm developments comply in principle with National Climate Policies and Objectives. I have discussed the different policy in support of renewable energy in Section 7.0 of this report and will not repeat it here.

The Board therefore in my view could rely on the criteria set out under Section 37(2)(b)(i) and (iii) of the Planning and Development Act 2000 (as amended).

9.3. Legal Matters

The observation of Mr John Dooley relates to a decision from the European Court of Justice (c24/19). It is Mr Dooleys contention that The Wind Energy Guidelines are plans and programmes set out in EU Directive 2000/142/EU and should be subject to Strategic Environmental Assessment (SEA).

I note that government published guidelines are not subject to SEA. Should the ECJ alter this position, this is a matter for Government to address and is clearly beyond the scope of the Board in the context of the current application.

9.4. Turbary Rights

Mr Derek and Patrick Deane have raised the issue of Turbary Rights. The issue raised is that Turbine 3 and its underground cables will be taking over their turbary rights where they prepare and store their turf. A map was not submitted with the observation as to the exact location or extent of the lands referred to.

I note the Community Engagement Report in Appendix 2.2 of the applicants EIAR which states in relation to Impact on turf cutting;

'Rights holders were assured that access to the turf banks would not be affected during the construction phase, barring in certain specific locations where sites will need to be temporarily closed off on health and safety grounds. In these

instances, if access to the turf banks is temporarily restricted, the rights holders will be able to claim compensation from the developer for the value of the turf they are unable to harvest. Alternatively, it may be possible for the rights holder to be assigned an unused turf bank from which to cut while his or her own is inaccessible. These turbary owners would be consulted with during the construction process.'

Section 5.13 of the *Development Management Guidelines*, 2007, states that

'The planning system is not designed as a mechanism for resolving disputes about title to land or premises or rights over land; these are ultimately matters for resolution in the Courts. In this regard, it should be noted that, as section 34(13) of the Planning Act states, a person is not be (sic) entitled solely by reason of a permission to carry out any development'.

I consider that based on Section 34 (13) of the Planning and Development Act, it is a matter for the applicant to ensure that they have the right to develop the indicated lands. The applicant's have stated that they have the consent of the landowners within the development footprint of the windfarm and have provided letters of consent with an accompanying map entitled 'Landowners involved in the Project' indicating land ownerships. Landowner consent is the test for planning applications, in my opinion.

9.5. Cumulative Assessment

I note the third-party concern that the cumulative assessment considers the existing nearby wind farms but fails to consider a proposed new wind farm approximately 2km away between Carrig and Shinrone and a peat extraction site at Sharragh. The cumulative projects list is contained in Appendix 2-3 of the applicants EIAR. Cumulative Impacts considered relevant Plans, Forestry and Agricultural Practices, other developments and the following Wind Farms located within 25km were assessed including Carrig, Skehanagh, Monaincha, Ballinlough-Ikerrin, Meewuan, Derrinlough, Cloghan and Leabeg. The third party has not provided a planning reference for the new wind farm or any detail other than its location 2km away between Carrig and Shinrone. Both Carrig Wind Farm and Skehanagh Wind Farms which are existing wind farms are located to the southwest of the site within 5km of the site boundary. I have reviewed the cumulative project list and have also reviewed the planning

registers for both Offaly and Tipperary maps and am unable to locate details of the new wind farm referred to by the third party. I am satisfied that the applicant has carried out an extensive search and review of relevant projects for the purposes of cumulative assessment in relation to the proposed development.

9.6. Design Flexibility

The planning application was lodged with Tipperary County Council in September 2023. This was in advance of the design flexibility provisions which were commenced in December 2023. Accordingly, I consider the design flexibility sought by the applicant in relation to the Turbine design to be acceptable based on legislation that was in place at the time of lodgement.

9.7. Comments on Conditions

Although Tipperary County Council refused permission for the proposed windfarm, the Local Authority Roads/Transport Section submitted conditions to be considered in the event of a grant of planning permission. In addition, I have also reviewed the conditions requested by prescribed bodies.

In Table 9.1 below, recommended conditions are tabulated, and I have indicated whether these are included, or excluded from the recommended schedule of conditions. I have included some additional suggested conditions below.

Table 9.1: Recommended Conditions - In/Exclusion in Schedule of Conditions

	Tipperary County Council Roads/Transport	Included/ excluded in Schedule of Conditions
1	Grid Connection Route: Condition requested in relation to preferred option of laying cable outside the paved areas of the public road network and to carry out a Level 1 Falling Weight Deflectometer survey and Level 2 Analysis design.	Included in schedule of conditions.
2	Reinstatement Details: Condition requested in relation to reinstatement of National, Regional and Local Roads.	Included in schedule of conditions.
3	Duct Crossings at Bridges and Culverts: Condition requested in relation to cable ducting being laid either around or under all bridges and culverts along the proposed route and a Principle Inspection Report for each bridge being submitted to the Planning Authority.	Included in schedule of conditions.
4	Joint Boxes: Condition requested in relation a standard detail and construction methodology for the installation of joint boxes to be agreed with the Planning Authority.	Included in schedule of conditions.

5	Traffic Management Arrangements: The developer should submit a Traffic & Transport Assessment (TTA) carried out in accordance with TII document PE-PDV-02045 with regard to the traffic regime at the junction of the N52 / L-5040, the scope to be approved with the District Engineer in Nenagh Municipal District. The TTA should be submitted to and agreed with the Planning Authority prior to the commencement of the development.	Included in schedule of conditions.
6	Special Contribution for works on the L-5040 Local Road: Condition requested for a special contribution of €409,000 to allow for works on the L-5040 arising from the windfarm development. (Calculations for Special Contribution outlined in Appendix 1 of Road Section Planning Report)	Included a condition to agree works and programme, prior to commencement
7	L-5041 Local Secondary Road – Special Contribution/Refundable Bond: Condition requested for a survey of the entire L-5041 and resurveyed on a 6 month cycle during the construction phase to be submitted in writing to the Planning Authority and a special contribution of €190,000 to allow for works on the L-5040 arising from the windfarm development. (See Appendix 2 - Road Section Planning Report)	Included in schedule of conditions.
IAA Consultation		
8	No objection, subject to condition. Recommended a condition required the applicant to contact IAA to agree warning lights, provide as constructed coordinates and notify IAA of commencement of crane operations.	Included in schedule of conditions.

10.0 Environmental Impact Assessment

10.1. Statutory Provisions

This section of the report deals with the potential environmental impacts of the proposed development during the construction, operation and decommissioning phases.

The development consists of a wind farm comprising 7 wind turbines, a 38kV substation and associated infrastructure. An EIA is required for 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. Therefore, the development is subject to mandatory EIA.

10.2. EIA Structure

This section of the report comprises the environmental impact assessment of the proposed development in accordance with the Planning and Development Act 2000

(as amended) and the associated Regulations, which incorporate the European Directives on environmental impact assessment (Directive 2011/92/EU as amended by 2014/52/EU). Section 171 of the Planning and Development Act, 2000 (as amended) defines EIA as:

- a. Consisting of the preparation of an EIAR by the applicant, the carrying out of consultations, the examination of the EIAR and relevant supplementary information by the Board, the reasoned conclusions of the Board and the integration of the reasoned conclusion into the decision of the Board, and
- b. Includes an examination, analysis and evaluation, by the Board, that identifies, describes and assesses the likely direct and indirect significant effects of the proposed development on defined environmental parameters and the interaction of these factors, and which includes significant effects arising from the vulnerability of the project to risks of major accidents and/or disasters.

Article 94 of the Planning and Development Regulations, 2001 and associated Schedule 6 set out requirements on the contents of an EIAR.

This EIA section of the report is therefore divided into two sections. The first section assesses compliance with the requirements of Article 94 and Schedule 6 of the Regulations. The second section provides an examination, analysis and evaluation of the development and an assessment of the likely direct and indirect significant effects of it on the following defined environmental parameters, having regard to the EIAR and relevant supplementary information:

- Population and human health,
- Biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive,
- Land, soil, water, air and climate,
- Material assets, cultural heritage and the landscape,
- The interaction between the above factors, and
- The vulnerability of the proposed development to risks of major accidents and/or disasters.

It also provides a reasoned conclusion and allows for integration of the reasoned conclusions into the Boards decision, should they agree with the recommendation made.

10.3. Issues Raised in Respect of EIA

Issues raised in respect of EIA by Prescribed Bodies and Third-Party Observers are discussed in detail in Section 5.0 and Section 8.0 of this report and include the following:

- Landscape and Visual Amenity
- Traffic and Roads Impacts
- Impact on Biodiversity / Birds and Local Natura 2000 Sites
- Hydrology and Hydrogeology
- Population and Human Health

The issues raised will be assessed under the relevant sections in this report.

10.4. Compliance with the Requirements of Article 94 and Schedule 6 of the Regulations 2001

The applicants EIAR comprises of the EIAR (Main Text) including Chapters 1 – 18 and EIAR References, a stand-alone Non-Technical Summary (NTS), Photomontages (Viewpoints 01 – 18), Appendices 2 - 1 to 15 - 3.

I assess below compliance with the requirements of Article 94 and Schedule 6 of the Planning and Development Regulations 2001(as amended);

Table 10.1. Article 94 (a) Information to be contained in an EIAR (Schedule 6, paragraph 1)

A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development (including the additional information referred to under section 94(b))

A description of the proposed development site location and setting (including maps) is contained in Chapter 1.1.2. The chapter includes details on the proposed development site location and setting, the surrounding area.
Chapter 4 provides a detailed description of the development components, access and transportation details, community gain proposals, site drainage, construction phasing and timing

and construction details and methodologies. Details in relation to the operation and decommissioning of the windfarm are also provided.

The description is adequate to enable decision making.

A description of the likely significant effects on the environment of the proposed development (including the additional information referred to under section 94(b)).

Chapter 5 to Chapter 18 of the EIAR describes the significant effects on the environment as follows;

Table 10.1.1 – Summary Table of Adequacy of Information on Likely Significant Impacts

Technical Chapter	Description of Likely Significant Impacts	Adequacy of Info (Y/N)
Chapter 5 Population and Human Health	Predicted Impacts and Mitigation Measures – Section 5.9 Residual Impacts and Significance of Impact - Section 5.9 Cumulative Impacts – 5.9.9	Y
Chapter 6 Biodiversity	Predicted Impacts, Mitigation Measures, Residual Impacts – Section 6.7 (Ecological Impact Assessment) Cumulative Impacts – Section 6.8	Y
Chapter 7 Ornithology	Potential Impacts – Section 7.5 Mitigation Measures and Best Practice – Section 7.6 Residual Impacts - Section 7.8 Cumulative Impacts – 7.9	Y
Chapter 8 Lands, Soils and Geology	Predicted Impacts, Mitigation Measures and Residual Effects – Section 8.5 Cumulative Impacts – 8.5.7	Y
Chapter 9 Hydrology and Hydrogeology	Predicted Impacts, Mitigation Measures and Residual Effects – Section 9.5 Cumulative Impacts – 9.5.7	Y
Chapter 10 Air Quality	Predicted Impacts, Mitigation Measures and Residual Effects – Section 10.2.4 Cumulative Impacts – 10.2.5	Y
Chapter 11 Climate	Predicted Impacts, Mitigation Measures and Residual Effects – Section 11.6 Cumulative Impacts – Section 11.7	Y
Chapter 12 Noise and Vibration	Predicted Impacts – Section 12.6 Mitigation Measures – Section 12.7 Residual Effects – Section 12.8 Cumulative Impacts – Section 12.8.3	Y
Chapter 13 Cultural Heritage	Predicted Impacts, Mitigation Measures and Residual Effects – Section 13.4 Cumulative Impacts – 13.5	Y
Chapter 14 Landscape and Visual	Predicted Impacts, Mitigation Measures and Residual Effects – Section 14.7 Cumulative Impacts – 14.6	Y
Chapter 15 Material Assets	Predicted Impacts, Mitigation Measures, Residual Effects and Cumulative Effects – Section 15.1.12 (Traffic and Transport), 15.2.5 (Telecommunications and Aviation), 15.3.3 (Other Material Assets)	Y

Chapter 16 Vulnerability of the Project to Major Accidents and Natural Disasters	Predicted Impacts – Section 16.4.1 Mitigation Measures - Section 16.4.2 Residual Effects – Section 16.4.3 Cumulative Impacts – 16.4.5	Y	
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Interactions are considered in EIAR Chapter 17, and a Schedule of Mitigation and Monitoring Proposals is presented in EIAR Chapter 18. An assessment of the likely significant effects of the development is carried out for each of the technical chapters of the EIAR. I am satisfied that the assessment of significant effects is comprehensive and robust and enables decision making.

A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development (including the additional information referred to under section 94(b)).

The EIAR includes designed in mitigation measures and monitoring to address potential adverse effects identified in technical studies. (See Table 10.1.1 above indicating location of Mitigation Measures in each EIAR Chapter).

Chapter 18, Table 18-1 Schedule of Mitigation of the EIAR provides a summary of Significant Effects on the Environment and the proposed mitigation, with each measure referenced from each Chapter. These measures are from pre-commencement phase to decommissioning phase.

Chapter 18, Table 18-2 Monitoring Schedule provides a Schedule of all of the monitoring measures contained within the EIAR. The table indicates frequency of monitoring, reporting period and responsibility.

Mitigation measures comprise standard good practices and site-specific measures and are largely capable of offsetting significant adverse effects identified in the EIAR, for the reasons stated in the assessment below.

A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment (including the additional information referred to under section 94(b)).

The consideration of Reasonable Alternatives was analysed in Chapter 3 of the EIAR. The EIAR describes those reasonable alternatives that have been studied. The Alternatives considered related to The Do-Nothing Alternative, Alternative Site Locations, Strategic Site Location, Suitability of the candidate site and Alternative renewable energy technologies.

It concluded that the Do-Nothing Alternative was considered but discounted on the basis that the opportunity to capture the available renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. Table 3-1 provides a comparison between the do nothing and the chosen option.

Strategic Site Selection included a consideration of proximity to the National Grid and a Screening Process (Phase 1 and 2). It was concluded that the alternative would be to bring forward a site that did not pass the site selection screening process, with the corresponding potential for adverse impacts on the Environment. Following this process, each of the candidate sites were examined to confirm their suitability for wind energy development, testing for wind speeds, existing grid infrastructure, designated sites etc. From the review carried out, the proposed wind farm was identified as a suitable location for the development.

Alternative Renewable Energy Technologies were examined, specifically a comparison of the environmental effects of a Solar PV Array (with up to 55.8 MW Output). This is presented in Table

3-2 of the EIAR. The windfarm was considered to be more efficient at producing electricity with lesser environmental effects.

Alternative Turbine Numbers and Model were examined in Section 3.2.5. The comparison of environmental effects between a larger number of smaller turbines and the chosen 7 no. turbine layout was examined in Table 3-3. The alternative option of a smaller number of turbines was indicated as having a greater environmental impact.

I consider that the EIAR contains a description of reasonable alternatives, which is thorough, and which includes decisions being made on a strategic and specific site selection process. I consider that the legislative requirement to provide information relating to the reasonable alternatives which were considered, has been met.

Article 94(b) Additional information, relevant to the specific characteristics of the development and to the environmental features likely to be affected (Schedule 6, Paragraph 2).

A description of the baseline environment and likely evolution in the absence of the development.

A description of the location is contained within Chapter 1.

A description of the baseline environment is contained in each technical chapter of the EIAR as follows; Sections 5.3 (Population and Human Health), 6.6 (Biodiversity), 7.3 (Ornithology), 8.3 (Land, Soils and Geology), 9.3 (Hydrology and Hydrogeology), 10.2.3 (Air Quality), 11.4 (Climate), 12.5 (Noise and Vibration), 13.3 (Cultural Heritage), 14.4 (Landscape and Visual), 15.1.2, 15.2.4, 15.3.1 (Material Assets), 16.3 (Major Accidents and Natural Disasters)

A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved.

The methodology employed in carrying out the EIA, including the forecasting methods is set out in each of the individual chapters assessing the environmental effects. The applicant has indicated in the different chapters of where difficulties have been encountered (technical or otherwise) in compiling the information to carry out EIA. I comment on these, where necessary in the Summary Table below and for the reasons stated, I am satisfied that forecasting methods are adequate as outlined below.

Table 10.1.2 – Summary Table of Adequacy of Forecasting Methods Used

Chapter 5 (Population and Human Health)

Description of Forecasting Method Used

The assessment relies on the assessments and draws on the findings of the following chapters to assess the impacts on human health: Chapters 8 Land, Soils & Geology, Chapter 9 Hydrology & Hydrogeology, Chapter 10 Air & Climate, Chapter 11 Noise & Vibration and Chapter 14: Material Assets (Roads and Traffic)

Adequacy/Omissions/Difficulties

Omissions/Difficulties

None noted.

Assumptions and Limitations in relation to shadow flicker are described in Section 5.7.3

Adequacy of Forecasting

<p>I have reviewed the adequacy of forecasting of individual chapters which feed into the Population and Human Health Chapter as outlined above.</p> <p>I am satisfied that the forecasting carried out is adequate.</p>	
Chapter 6 (Biodiversity)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
No forecasting carried out for this chapter	N/A
Chapter 7 (Ornithology)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
<p>The Collision Risk Assessment was calculated using a mathematical model to predict the number of individual birds of a particular species that may be killed by collision with moving wind turbine rotor blades. The modelling method used in the collision risk calculation follows the Band Model (Band et al., 2007), as recommended by NatureScot guidance. This method been used in a number of studies on bird collision with wind turbines (e.g. Chamberlain et al., 2006; Drewitt and Langston, 2006; Fernley et al., 2006; Madders and Whitfield, 2006).</p> <p>Based on vantage point surveys undertaken from September 2020 to March 2023 (30-month survey period). See Appendix 7-5 of EIAR for full details on the collision risk modelling method.</p>	<p>The EIAR Appendix 7-5, page 1, notes in relation to the Collision Risk Assessment that these are theoretical predictions, therefore results must be interpreted with a degree of caution.</p> <p>The report further notes that '<i>Because the model assumes that no action is taken by a bird to avoid collision, it is recognised that the collision risk figures derived are purely theoretical and represent worst case estimates.</i>'</p> <p>Assumptions and Limitations:</p> <ul style="list-style-type: none"> • Bird activity is not spatially explicit, i.e. activity is equal throughout the viewshed area and this is equal to activity in the windfarm area. • Habitat and bird activity will remain the same over time and be unchanged during the operational stage of the windfarm. • All flight activity used in the model occurred within the viewshed area calculated at the lowest swept rotor height. <p>Adequacy of Forecasting I am satisfied that the Collision Risk Assessment is adequate based on the methodology used by the applicant.</p>
Chapter 8 (Lands, Soils and Geology)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
<p>The Peat Stability Assessment was carried out in accordance with Peat Landslide Hazard and Risk Assessment: Best Practice Guide for Proposed Electricity Generation Development (PLHRAG, Scottish Government, 2017) See Appendix 8-1 of EIAR.</p> <p>The hydrological factors were assessed using desk study data, aerial photography (historical and contemporary), topographic lidar data flow path drainage analysis, site walkovers, field drainage</p>	<p>Chapter 8 Section 8.2.5 of the EIAR notes that no limitations or difficulties were encountered during the preparation of the overall Chapter.</p> <p>Peat Stability Assessment Adequacy of Forecasting I am satisfied that the Peat Stability Assessment is adequate based on the PLHRAG methodology used by the applicant.</p> <p>Omissions/Difficulties</p>

mapping and gouge coring. A constraints study was initially undertaken to determine the developable area on the site.	None noted.
Chapter 9 (Hydrology and Hydrogeology)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
<p>A qualitative assessment has been carried out on the Water Environment and no specific forecasting has been used.</p> <p>A Flood Risk Assessment (FRA) (Appendix 9-1) was prepared for the site using methodology from '<i>The Planning System and Flood Risk Management – Guidelines for Planning Authorities (DOEHLG 2009)</i>'.</p>	<p>Section 9.2.5 notes that no limitations or difficulties were encountered during the preparation of the Chapter of the EIAR.</p> <p>Adequacy of Forecasting I am satisfied that the Flood Risk Assessment in Appendix 9-1 is adequate based on the methodology used by the applicant. It assesses and describes the likely significant effects in relation to potential flood risk on the site.</p>
Chapter 10 (Air Quality)	
Description of Forecasting Method Used	
<p>No forecasting carried out for this chapter. Section 10.1 notes that the production of energy from wind turbines has no direct emissions. The main impacts are expected from the construction phase as described in Section 10.2.4.</p>	
Adequacy/Omissions/Difficulties	
None noted.	
Chapter 11 (Climate)	
Description of Forecasting Method Used	
<p>The document, '<i>Calculating Carbon Savings from Wind Farms on Scottish Peat Lands</i>', was developed to calculate the impact of wind farm developments on the soil carbon stocks held in peat. The web-based version of the carbon calculator, which supersedes the excel based versions of the tool, was released in 2016 and is currently available as Version 1.7.0 which was last updated in 2022. The tool provides a transparent and easy to follow method for estimating the impacts of wind farms on the carbon dynamics of peatlands. The outputs of the Macauley Institute web-based carbon calculator are included in Appendix 11-1 of the EIAR, 'Carbon Calculations'.</p> <p>The emissions associated with the embodied carbon, along with the construction phase transport movements, of the remaining features of the site are considered using the Transport Infrastructure Ireland (TII) Carbon Tool (TII 2022).</p> <p>Section 15.1.4 in Chapter 15 of this EIAR outlines traffic generation numbers relative to quantum of materials required for the construction of the Proposed Development, the details of which have been utilised to determine the emissions associated with these activities and are included in Appendix 11-1.</p>	
Adequacy/Omissions/Difficulties	
None noted.	
Adequacy of Forecasting	

I am satisfied that the forecasting carried out is adequate.	
Chapter 12 (Noise and Vibration)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
<p>Operational Phase - Noise The guidance in the WEDG 2006 has been used to assess operational noise from the Proposed Development and this has been supplemented by the guidance in ETSU-R-97 and the IOA GPG where appropriate.</p> <p>Construction Phase – Noise The construction noise assessment has been undertaken using the BS 5228 guidance. The prediction of construction noise levels was undertaken using the calculation methodology presented in ISO 9613:1996, together with published noise data for appropriate construction plant. The selection of plant and equipment to be used will be determined by the main contractor when they are commissioned, therefore the assessment has been based upon a typical selection of plant for a wind farm development of this size and an indicative construction timetable which is provided in Chapter 4 of this EIAR.</p> <p>Operational Phase – Noise The Site-Specific Noise Limits have been derived to take account of the proportion of the noise limit that has been allocated to, or could theoretically be used by, other wind farm developments in proximity to the Proposed Development. The Site-Specific Noise Limits were compared to the predictions of the Proposed Development operating on its own with both a 105 m and 110.5 m hub, and the results based on the 110.5 m hub (which is marginally worst case, within 0.1 dB). For the operational noise assessment, a background noise survey was undertaken at five noise monitoring locations. The data was analysed in conjunction with on-site measured wind speed data and operational noise limits have been derived in accordance with the WEDG 2006. <i>‘EirGrid Evidence Based Environmental Studies Study 8: Noise’</i> guidance was used to measure predicted noise levels for the proposed substation with a 110 kV substation was deemed most similar.</p> <p>Construction Phase - Vibration</p>	<p>Omissions/Difficulties It is noted that the WEDG 2006 are currently under review and a set of ‘draft WEDG 2019’ updated guidelines were issued for consultation in December 2019. The draft WEDG 2019 included reference to, and reliance upon, some elements of ETSU-R-97 and the IOA GPG, however, significant concerns were raised during the consultation process regarding the noise section of the draft WEDG 2019 and at the time of writing this report, no further updates have been issued. Given the limitations of the draft and the likelihood that significant changes would need to be made to them before they could be adopted, an assessment using those WEDG 2019 draft guidelines has not been undertaken.</p> <p>For vibration, the EIAR notes that the measurement of vibration levels indoors is invasive and can be problematic. The limits in Table 12-3 are generally considered guideline levels that should not be exceeded regularly or for long periods of time.</p> <p>Limitations and Assumptions are outlined in Section 12.4.4.3 of the EIAR. It has been assumed that the noise data collected during the background noise survey are representative of the typical baseline noise levels at the nearest noise sensitive receptors; the guidance in the WEDG supplemented by ETSU-R-97 and the IOA GPG has been followed by suitably experienced Acoustic Consultants to ensure that the data collected is as representative as possible. A candidate wind turbine model has been used for predictions of operational noise from the Proposed Development, whilst the final model of wind turbine to be used may differ from that presented in the assessment, operational noise levels would have to comply with the noise limits imposed by An Bord Pleanála, informed by this noise assessment. No other assumptions or data gaps have been identified.</p>

<p>Threshold values to determine the potential for damage to buildings are detailed in BS 7385-2:1993 (which is also referred to in BS 5228). (Detailed in Section 12.4.12 and 12.4.2.2 of the EIAR)</p> <p>Operational Phase – Vibration Operational Vibration is discussion in Section 3.2 of Appendix 12–2, Operational Noise Report. The Section notes that there is no robust evidence that ground-borne vibration from wind farms, has an adverse effect on wind farm neighbours and has been scoped out for further assessment.</p>	<p>Adequacy of Forecasting Methodology and Assumptions are described in Section 12.4 of the EIAR and each of the construction scenarios and modelling assumptions can be found within Appendix 12-1 of the EIAR.</p> <p>I am satisfied that the forecasting methodology used are adequate in respect of the likely significant effects in relation to construction and operational phase noise and construction phase vibration.</p> <p>I am satisfied that operational phase vibration can be scoped out of further assessment.</p>
Chapter 13 (Cultural Heritage)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
No forecasting carried out for this chapter.	N/A
Chapter 14 (Landscape and Visual)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
No forecasting carried out for this chapter.	N/A
Chapter 15 (Major Accidents and Natural Disasters)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
No forecasting carried out for this chapter.	N/A
Chapter 15 (Material Assets)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
<p>Traffic and Transport The report adopts the guidance for set out by Transport Infrastructure Ireland, or TII, in the document number PE-PDV-02045 'Traffic and Transport Assessment Guidelines, May 2014'</p> <p>Construction Phase TII Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, 2021, was used. Traffic forecasts for an assumed construction year of 2028. TII Standards document DN-GEO-03031 Road Link Design was used to establish link capacity. For the purpose of the traffic impact assessment, projections based on trip generation data collected from other wind farm construction projects regarding the numbers of trips per quantum of material, the number of turbine component parts based on 7 no. turbines, the length of the construction phase and work periods etc. were made to inform the assessment.</p> <p>Adequacy of Forecasting I am satisfied that Traffic Forecasting is adequate based on the TII methodology used by the applicant.</p> <p>Omissions/Difficulties</p>	

None noted.	
Chapter 16 (Major Accidents and Natural Disasters)	
Description of Forecasting Method Used	Adequacy/Omissions/Difficulties
An assessment of the vulnerability of the proposed development to potential accidents and disasters and the potential to cause major accidents or disasters which pose a risk to human health, cultural heritage and/or the environment was carried out based on the application of standard hazard identification and risk assessment methodology which is typically applied at Windfarm developments.	<p>Omissions/Difficulties None noted.</p> <p>Adequacy of Forecasting I am satisfied that the forecasting carried out, which comprises an assessment of potential scenarios is adequate to identify likelihood of risks relating to the proposed development.</p>
A description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it.	
<p>This issue is specifically dealt with in the in Chapter 16 (Major Accidents and Disasters) of the EIAR. Specific risks have been identified in Section 16.3.1 for County Tipperary including Flooding/Urban Flooding, Aircraft Collision/Loss, Water Contamination, Credible scenario incidents at Marck Sharp & Dohme, Fire / Major Crowd Safety and Civil Disorder, Major Road Traffic Accident / Severe Weather and Loss of Critical Transport Infrastructure, Natural Gas Explosion along the main Cork-Dublin Line, Loss of Critical IT Infrastructure, Rail Incidents. Risks in County Offaly are outlined in Section 16.3.2 including Flooding, Major Road Traffic Accident, Chemical Incident at any industrial premises, Major Fire, Civil disorder at large events, Adverse weather conditions.</p> <p>Specific risks have been identified in Table 16-4 relating to Construction, Table 16-5 relating to Operation and Table 16-6 relating to Decommissioning. Table 16.7 provides a Risk Assessment, with Table 16-8 providing a Risk Score for each potential risk at each stage of the development. Table 16-9 provides a Risk Matrix of the likelihood of potential risks. These risks are reasonable and are assessed in my report.</p>	
Article 94 (c) A summary of the information in non-technical language.	
This information has been submitted as a separate standalone document entitled Non-Technical Summary (NTS). I have read this document, and I am satisfied that the document is concise and comprehensive and is written in a language that is easily understood by a lay member of the public.	
Article 94 (d) Sources used for the description and the assessments used in the report	
The sources used to inform the description, and the assessment of the potential environmental impact are set out both within the specific chapter and they have been grouped in a separate chapter called References. I consider the sources relied upon are generally appropriate and sufficient.	
Article 94 (e) A list of the experts who contributed to the preparation of the report	
Details of the assessment team as well as their respective inputs to the EIAR is presented in Chapter 1, Section 1.7 Project Team. Table 1-3 provides details of companies and staff responsible for EIAR compilation. Section 1.7.2 details a short biography of each of the project team members. I am satisfied that the EIAR has been prepared by competent experts within the various chapters of the EIAR.	

10.5. Consultations

The application has been submitted in accordance with the requirements of the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended) in respect of public notices.

Consultations are described in Chapter 1.6 and 1.7 of the EIAR. The applicant consulted with Prescribed Bodies, Tipperary and Offaly County Council and the Community. Appendix 2-2 presents a Community Engagement Report outlining the community consultation process. I am satisfied, therefore, that appropriate consultations have been carried out and that third parties have had the opportunity to comment on the proposals in advance of decision making.

10.6. Conclusion on compliance with the requirements of Article 94 and Schedule 6 of the Planning and Development Regulations 2001(as amended)

Having regard to the foregoing, I am satisfied that the information contained in the EIAR, and supplementary information provided by the developer is sufficient to comply with Article 94 of the Planning and Development Regulations, 2001(as amended).

11.0 Assessment of Likely Significant Effects

This section of the report sets out an assessment of the likely environmental effects of the proposed development under the following headings, as set out Section 171A of the Planning and Development Act 2000, as amended:

- Population and human health.
- Biodiversity, with particular attention to the species and habitats protected under the Habitats and Birds Directives (Directive 92/43/EEC and Directive 2009/147/EC respectively).
- Land, soil, water, air and climate.
- Material assets, cultural heritage and the landscape.
- The interaction between these factors.

In accordance with section 171A of the Act, which defines EIA, this assessment includes an examination, analysis and evaluation of the application documents, including the EIAR and submissions received and identifies, describes and assesses

the likely direct and indirect significant effects (including cumulative effects) of the development on these environmental parameters and the interaction of these. Each topic section is therefore structured around the following headings:

- Issues raised in the appeal/application.
- Examination, analysis and evaluation of the EIAR.
- The Assessment: Direct and indirect effects.
- Conclusion: Direct and indirect effects.

12.0 Population and Human Health

12.1. Issues Raised

Impact of the wind farm development on property values will be addressed in this section of the report. Other issues raised which relate to specific topics such as noise and shadow flick have been considered under those specific chapters and will not be repeated here. I note the third-party concerns in relation inadequate consultation or engagement with local community and lack of detail in relation to the Community Benefit Fund and how it would benefit such areas.

12.2. Context

EIAR Chapter 5 describes the potential effects of the proposed development on population and human health. The EIAR describes methodology used, receiving environment, likely significant impacts and associated mitigation measures.

The chapter provides an assessment of impacts on population including employment and economic activity, land use, tourism, public perception of wind energy, property values, shadow flicker and residential amenity.

12.3. Baseline

The study area for the population and human health assessment used for the baseline analysis and assessment comprises the District Electoral Divisions (DEDs) within which the proposed wind farm turbines and supporting infrastructure were located, as well as DEDs within close proximity of the proposed wind farm site. The wind farm

development site lies solely within the Lorrha East, Clohaskin, Carrig, Graigue DEDs (See Figure 5-1 of Applicants EIAR). The Study Area has a total population of 1,471 as of 2016 and comprises a total land area of approximately 91km².

12.4. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 12.1 below;

Table 12.1: Summary of Potential Effects (Population and Human Health)	
Do Nothing	
<ul style="list-style-type: none"> The 'do nothing' scenario would not result in any significant changes to the baseline. The existing use of the site as commercial forestry would continue with or without the proposed development. If the proposed development were not to process, the opportunity to capture part of County Tipperary's renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would also be lost. 	
Construction	
<ul style="list-style-type: none"> Health and Safety - The construction phase will have a short-term potential significant negative impact in terms of health and safety issues relation to construction work in general. Employment and Investment - The design, construction and operation will create up to 70 jobs during all phases of the development. This will have a short-term significant positive impact. Rates payments for the wind farm will contribute significant funds to Tipperary County Council, which will be redirected to the provision of public services within the county. Community Benefit Fund - A community Benefit Fund would provide c. 265,000/year per year assuming it becomes a Renewable Energy Support Scheme project for the local community over the lifetime of the project. (Appendix 2.2 and Chapter 4 of EIAR) Land Use - A small section of commercial forestry will be felled as part of the wind farm. Tourism and Amenity - There is currently no tourism attractions relating to the site and hence no impacts expected in this regard. Noise - There will be an increase in levels of noise during the construction phase due to construction work and heavy machinery. These effects are expected to be short-term and a slight negative impact. Dust – Potential dust emissions from construction phase are expected to be short-term and not significant. Traffic – The port of entry for the large turbine components will be Shannon Foynes in County Limerick. The findings of a Traffic and Transportation Assessment (TTA) are presented in Chapter 15 of the EIAR. The development will require the transport of abnormal size loads. This will have a short-term slight negative impact on local road users. For the construction of the grid connection, there is potential for short-term nuisance to local road users along the short section of cabling route located along the public road network, giving rise to a short-term slight negative impact. 	

Operational Impacts

- **Health and Safety** – No anticipated danger to the public or livestock. Rigorous safety checks are undertaken to ensure the risks to humans are imperceptible.
- **Employment and Investment** – Skilled workers including mechanical-electrical contractors will be required for the maintenance and operation of the wind farm, creating 3-4 jobs during the operational phase, having a long-term slight positive impact.
- **Population** – No impact on population.
- **Land-use** – Any commercial forestry on the site will continue to co-exist with the wind farm.
- **Property Values** – International literature indicates that property values are not impacted by the positioning of wind farms near houses, hence there would be a long-term imperceptible impact from the proposed development.
- **Noise** – Details of noise assessment are presented in Chapter 11 of the EIAR. The predicted noise effect at the closest noise sensitive receptor to the site is of a moderate, negative, long-term nature, based on the worst-case scenario. For the majority of locations assessed, operation of the proposed turbines will have a slight negative, long-term effect. The noise assessment demonstrates that the relevant national guidance in relation to noise associated with the proposed wind turbines can be satisfied, and therefore the predicted impact associated with the operation of turbines is long term and not significant.
- **Traffic** – Two to three service technicians may have to attend the site on a weekly basis of the operational phase. The TTA found that there will be a long-term imperceptible impact on traffic created during the operation phase of the proposed wind farm.
- **Renewable Energy Production and Reduction in Greenhouse Gas Emissions** – The wind farm will offer significant benefits in terms of renewable energy production and reductions in greenhouse gas emissions. It will have a long-term significant positive effect. The carbon loss and savings due to the proposed development are discussed in Chapter 10 of the EIAR.
- **Tourism and Amenity** - Given that there are currently no tourism attractions or amenity walkways located within the site there are no impacts associated with the operational phase of the development
- **Shadow Flicker** – Only occurs during the operational phase. Assuming worst-case conditions, pre-mitigation measures, a total of 16 properties as a result of the wind farm may experience daily shadow flicker in excess of the current DoEHLG guideline threshold of 30 minutes per day. The DoEHLG total annual guideline limit of 30 hours is predicted to be exceeded at 4 No. properties when the regional sunshine average of 26.46% is taken into account.

Overall, the details presented in Table 5-10 of the EIAR demonstrate that by using the turbine control system, it will be possible to reduce the level of shadow flicker at any affected property to below the daily guideline limit of 30 minutes, by programming the relevant turbines to switch off at the required dates and times when shadow flicker might occur. (See Table 5-10 of the applicants EIAR). Without mitigation, Shadow flicker could potentially have a long-term, slight, negative impact. Based on the assessment contained in the EIAR, post mitigation, there will be no significant effects related to shadow flicker.
- **Residential Amenity** – Potential impacts on residential amenity include noise, shadow flicker, changes to visual amenity or interference with telecommunications. As noted above no significant impact is expected in relation to shadow flicker or noise. Given the separation distances between the proposed development and residential properties and the level of existing screening in the areas, no significant impact is expected on visual amenity at dwellings. The proposed wind farm will have no impact on telecommunications.

Decommissioning
<ul style="list-style-type: none"> • Works required for decommissioning are described in Section 4.9 of the EIAR. Impacts at decommissioning stage are expected to be similar to those at construction phase. No significant impacts expected.
Cumulative Impacts
<ul style="list-style-type: none"> • Employment and Economic Activity – Due to employment created, a long-term significant positive impact is predicted. • Tourism and Amenity - There are no existing wind farms in the surrounding area, the closest proposed wind farm development is 2.4km southeast from the Wind Farm Site. There is a generally positive disposition among tourists towards wind development in Ireland. It is on this basis that it can be concluded that there would be a long-term imperceptible cumulative effect from the Proposed Development and other projects in the area. • Air (Dust) – Once operational, wind farms will have a cumulative long-term, significant positive effect on air quality. • Health and Safety - There would be a long-term imperceptible cumulative effect from the Proposed Development and other developments in the area. • Property Values - The conclusions from available international literature indicate that property values are not impacted by the positioning of wind farms near houses. It is on this basis that it can be concluded that there would be a long-term imperceptible cumulative effect from the Proposed Development and other potential wind farm developments in the area. • Services - The rate payments from the Proposed Development and other existing, permitted and proposed projects and plans (wind energy or otherwise), in the area will contribute significant funds to Tipperary County Council, which will be redirected to the provision of public services within the County. In addition, the injection of money into local services through the establishment of community benefit funds is also expected to be a long-term positive cumulative effect. • Noise – No cumulative Impacts expected. • Shadow Flicker - No cumulative shadow flicker impacts predicted as no other proposed, permitted or operational wind turbines sufficiently proximate to the proposed development. • Residential Amenity - In the extremely unlikely event that all permitted and proposed projects listed in Appendix 2-3 of the Applicants EIAR, other than that of wind energy developments, are constructed at the same time, there is the potential for a resulting short term, significant, cumulative, negative effect to occur on residential amenity, in relation to noise and vibration, dust, traffic, telecommunications and visual amenity.

12.5. Mitigation

The proposed development will be constructed, operated and decommissioned in accordance with all relevant Health and Safety legislation. The appointed Contractor will ensure that there are no impacts on any vector that will pose a risk to human health by performing their duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations.

During the construction phase, best practice measures for noise control will be adhered to. Chapter 5.9.3.10 describes how Mitigation Measures have been

incorporated into the project design which will minimise shadow flicker. These include screening measures and wind turbine control measures. Table 5-10 of the EIAR illustrates the relevant turbines that may need to be controlled, based on the 'worst-case impact' of shadow flicker impacts modelled.

12.6. Residual Effects

The residual impact of the construction phase will be a short-term and range from potential slight negative to imperceptible negative relating to health and safety, dust and traffic. Based on mitigation proposed, there are no expected significant impacts relating to shadow flicker or noise.

It is also assessed that the construction phase will likely result in local socio-economic benefits through local employment and multipliers from expenditure in the local economy, local funding from the Community Benefit Fund and rates payments will provide funding to Tipperary County Council.

For the operational phase following mitigation, there are no expected significant direct or indirect effects related to health and safety, population, land-use, property values, noise, traffic, shadow flicker and residential amenity.

The positive effects of the wind farm include employment, the benefits of renewable energy production and reductions in greenhouse gas emissions. The addition of dedicated recreational and amenity routes for locals and tourists will also have a positive effect on amenity in the local area.

12.7. The Assessment: Direct and Indirect Effects

I have examined, analysed and evaluated Chapter 5 of the EIAR, and all of the associated documentation and submissions on file in relation to Population and Human Health.

I note third party concerns regarding the level of community engagement undertaken. The applicant carried out community engagement as outlined in the Community Engagement Report (Appendix 2-2) of EIAR. This involved door to door engagement, wider community engagement, a project website and a public information event which was held on 27/04/2023 which c. 80 people attended. Issues raised related to impacts

on local residents including distance to turbines, noise, visual impact, shadow flicker, property prices, tur-cutting, roads impacts and impacts on amenity walkways. I consider that extensive and adequate community consultation was carried out to inform the applicants of issues raised by the local community in relation to the concerns regarding the proposed development.

Construction phase impacts would include general construction health and safety issues (e.g. slip/trip, moving vehicles etc), noise, traffic and dust. There is potential for significant health and safety impacts during the construction and decommissioning phases. I am satisfied the mitigation measures outlined in the chapter will ensure that there are no impacts on any vector that will pose a risk to human health. I consider that this can be dealt with by way of condition.

The EIAR has assessed the vulnerability of the project to natural disaster in Section 5.5.7 and Chapter 15 of the EIAR and have been limited to potential flooding, fire and landslide events. I agree with the EIAR assessment that the vulnerability of the proposed development to major accidents is not significant.

I note the third party concern in relation to the Community Benefit Fund. In the operational phase of the development, the applicant notes that there will be a significant positive socio-economic impact because of the Community Benefit Fund and as a result of the payment of rates and development contributions to Tipperary County Council. I agree with this assessment. I consider the construction of the proposed wind farm would result in substantial investment in the area with employment creation and secondary benefits for local services and providers.

No significant cumulative or residual impacts have been identified in the EIAR and I am satisfied with this assertion.

12.7.1. Impact on Property Values

A number of observers have raised concerns that the proposed development will have a negative impact on property values. This issue is addressed in Section 5.6 and Appendix 5-2 of the EIAR, where the applicant notes the finding of a US Study, '*The Impact of Wind Power Projects on Residential Property Values in the United States: A multi-site Hedonic Analysis*' (Hoen et al, Dec. 2009, updated in 2013) and a Scottish

study (Heblich et al, Oct. 2016) which both found that there is no evidence of a consistent negative effect on house prices due to the presence of wind turbines.

The updated 2013 US study analysed more than 50,000 home sales near 67 wind farms in 27 counties across nine US states. It was unable to uncover any impacts to nearby home property values from wind farm development. The report is based on a very large sample. The Scottish study from Oct. 2016 was based on an analysis of over 500,000 property sales in Scotland between 1990 and 2014.

The EIAR notes that there have been no empirical studies carried out in Ireland on the impacts of wind farms on property prices. Based on the international literature presented in the EIAR by the applicant and that there is a minimum separation distance of 740 metres from the nearest dwelling, I consider it reasonable to conclude that the proposed development is not likely to result in a significant impact on property values in the area.

12.8. Conclusion: Direct and Indirect Effects (Population and Human Health)

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 consider the proposed wind farm development will have a significant positive impact on the local socio-economic environment due to community funding and investment.

I am also satisfied that the potential for significant adverse impacts on population and human health can be avoided, managed and mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on population or human health.

13.0 Biodiversity (Excluding Birds)

13.1. Issues Raised

The Development Applications Unit DAU of the Department of Housing, Local Government and Heritage have stated that they own a significant area of adjoining undesignated peatland at Sharragh and have already carried out restoration measures there and intends carrying out further habitat restoration in the future. They are concerned that the proposed wind farm would reduce the extent of natural habitat in the area and limit potential to restore wetland habitats there in the future. They also raised concerns about the impact hydrologically on nearby wetland habitats and designated sites. The Department recommends that in addition to standard assessments the ecological assessment should also considers whether if the development were to proceed it would limit future potential to rewet the area of peatland and what measures could be taken to prevent this.

Concern was raised about the impact the development would have on the site integrity of the local sites within the Natura 2000 network, that the success of the SACs is reliant on maintaining and improving these interconnected areas. Observers including the DAU have also highlighted their concerns regarding the impact of the proposed development on ornithological habitats and the impact on Annex 1 bird species. This will be assessed in Chapter 14.0 of this report.

13.2. Context

Biodiversity (excluding birds) is addressed in Chapter 6 and Appendices 6-1 – 6-5 of the EIAR. Ornithology is addressed separately in Chapter 7 of the EIAR. Chapter 6 sets out the Regulatory and Policy Framework, Statement of Authority, Methodology, Baseline Ecological Conditions, Description of the Existing Environment, Ecological Impact Assessment and Cumulative Impacts. A Natura Impact Statement was submitted with the application, and I have addressed the issues relating to Appropriate Assessment in Section 26.0 and Appendix 1 and 2 of this report.

A desk top survey was carried out, then a scoping and consultation exercise was undertaken during the preparation of the EIAR, the responses to which are summarised in Table 6-1 of the applicants EIAR. Responses were received from Bat

Conservation Ireland, Birdwatch Ireland, NPWS and Inland Fisheries Ireland (IFI). Surveys of the biodiversity of the site were undertaken during 2022 and 2023 including Walkover Surveys (as per the NRA Guidelines 2009), Dedicated Habitat and Vegetation Composition Surveys, Fauna Surveys, Badger, Otter, Bat and Marsh Fritillary Survey, Aquatic Surveys and Invasive Species Survey. The EIAR notes that the habitats and species on the site were readily identifiable, and comprehensive assessments were made during the field visit. No significant limitations in the scope, scale or context of the assessment have been identified.

The EIAR described the methodology utilised to identify target receptors and key ecological receptors (KERs). The method employed for assessment of impacts and effects on ecological features followed that recommended by the Chartered Institute of Ecology and Environmental Management (CIEEM) in the *Guidelines for Ecological Impact Assessment in the UK and Ireland*.

The EIAR concludes that subject to the proposed development being constructed and operated in accordance with the design, best practice and implementation of mitigation described in the EIAR, significant residual impacts on biodiversity, flora and fauna at the County scale will not occur.

13.3. **Baseline**

The study area comprises large areas of dry, degraded cutover raised bog habitats which comprise areas of bare peat and pioneering vegetation and large areas of conifer plantation. Bog woodland is also present which is not considered Annex I habitat type following assessment. Fields of improved agricultural grassland are also found around the periphery of the bog. A number of watercourses were identified within the site and correspond to eroding/upland rivers. The Faddan Beg, a small stream flows through the north of the site, and Holy Well Clohaskin flows through the south of the site. Hedgerows and treelines delineate agricultural field boundaries.

The majority of the lands on either side of the road along the length of the Grid Connection underground electrical cabling route (which is restricted to the existing road) is made up of improved agricultural grassland and wet grassland with associated hedgerows and treelines, with depositing lowland rivers and drainage ditches crossing

the underground electrical cabling route. Areas within the site are subject to turbary activity.

The proposed development will result in the loss of c. 9.9ha of degraded cutover bog, c. 5.8ha of bog woodland, 1ha of bog woodland/scrub mosaic and 1.9ha of broadleaf woodland (ash plantation), c. 383m of hedgerow and treeline.

No otters were recorded along the waterways. Bats, common frog and smooth newt were present on site as was a badger sett.

The following Nationally designated sites have been identified as being within the Likely Zone of Impact and have been assessed in the EIAR: Arragh More Bog NHA [000640], Killeen Bog NHA [000648], River Little Brosna Callows NHA [000564], Ballyduff/Clonfinane Bog [000641], Kilcarren-Firville Bog [000647], Dovegrove Callows [000010], Birr (Domestic Dwelling No.1, Occupied) [000569], Birr (Domestic Dwelling No. 2, Occupied) [000568], Bracken's Dwelling, Near Whiteford [002058], River Shannon Callows [000216], Lough Derg [000011], Banagher (Domestic Dwelling, Occupied) [000567], Cloghanbeg [002059], Miltown, Shinrone [002065], Kinnitty (Domestic Dwelling, Occupied) [000579], St. Joseph's, Mountheaton [002063] and Drumakeenan National School [002064].

Nine of these sites are also European Designated Sites as follows: Ballyduff/Clonfinane Bog SAC [000641], Arragh More (Derrybreen) Bog SAC [002207], Kilcarren-Firville Bog SAC [000647], Lough Derg, North-east Shore SAC [002241], River Shannon Callows SAC [000216], Dovegrove Callows SPA [004137], River Little Brosna Callows SPA [004086], Middle Shannon Callows SPA [004096], Lough Derg (Shannon) SPA [004058].

The EIAR states in Section 6.7.5 that none of the elements of the proposed development are located within the boundaries of any Nationally or European designated sites and that there will be no direct effects on any designated site as a result of the construction, operation and decommissioning of the wind farm project including the turbine delivery route, substation and grid connection. The NIS submitted by the applicant concludes that the Proposed Development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.

13.4. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 13.1 below.

Table 13.1: Summary of Potential Effects (Biodiversity)
Do Nothing
<ul style="list-style-type: none"> The general biodiversity on the site would likely remain similar to its current state as activity levels and land use would not change significantly.
Construction, Operation and Decommissioning Phase Impacts
<p>The following broad categories of impact could arise during all phases of the proposed development and are considered, where potentially relevant, in relation to each of the ecological features scoped in to detailed assessment:</p> <ul style="list-style-type: none"> Habitats - The wind farm development will result in the loss of areas of habitat that are of Local Importance (Lower Value) and are not identified as KERs. This mainly involves the loss of coniferous plantation forestry and improved agricultural grassland. Rivers and Streams and Sensitive Aquatic Faunal Species - There is potential for the construction activity to result in the run-off of silt, nutrients and other pollutants such as hydrocarbons and cementitious material into these watercourses. This represents a potential indirect effect on the identified aquatic receptors in the form of habitat degradation through water pollution. In the absence of mitigation, the indirect effect of water pollution on aquatic receptors during construction has the potential be an indirect, negative, significant, temporary, likely effect on surface water quality in downstream surface water receptors on watercourses which act as a conduit to downstream habitats. Significant effects on water quality are not anticipated at any geographic scale during the operation of the wind farm. Cutover Bog - The bog habitats within the site are subject to ongoing turbary activity and are actively drained and dry underfoot. The loss of 9.9ha of cutover bog habitats comprises approx. 5% of the area of the wider, local bog complex. The loss of Cutover Bog habitats has therefore been assessed as a permanent moderate negative effect on a receptor of Local Importance (higher value) in the absence of mitigation. The potential for groundwater and hydrochemistry impacts on adjacent cutover bog habitats thus potentially impacting the potential for future restoration works is assessed as a permanent significant effect on a receptor of Local Importance (higher value). Impacts as a result of dust production and wind blowing during construction and excavation activities as well as transport of materials and exhaust emissions associated with vehicles and plant. The impact has the potential to be temporary, short-term, irreversible moderate effect on a receptor of Local Importance (higher value). The transport of turbine components, construction materials, waste and workers to and from the site will also give rise to exhaust emissions associated with the transport vehicles. Bog Woodland and Broadleaved Woodland - The proposed wind farm will result in the direct loss of approximately 5.8ha of bog woodland as a result of the proposed Turbine no.2 and associated bat buffer as per NatureScot guidelines, and 1ha of bog woodland/scrub mosaic within the footprint of Turbine 3. The construction of the proposed substation and the use of spoil repository area C, and bat buffer for Turbine 4 will result in the loss of approx. 1.9ha of broadleaved woodland. The loss of the woodland habitats has been assessed as a permanent moderate negative effect on a receptor of Local importance (higher value), in the absence of mitigation. No areas of Annex I bog woodland were identified within the site.

- **Hedgerows and Treelines** - The new access road from the south of the site and bat buffers around turbines will result in the loss of 383m of linear habitat. This impact is not considered significant.
- **Effects on Protected Fauna During Construction** - The proposed development has the potential to result in habitat loss and disturbance impacts on faunal species that were recorded on the site including the Otter, Badger, Bat and Amphibians. Section 6.7.2.2 of the EIAR describes the potential effects. The EIAR notes that the potential for significant effects on aquatic species is restricted to indirect effects on their habitat from water pollution.
 - **Otter** - Table 6-22 describes the potential impacts on otter. No otter holts are present within the EIAR study boundary or in the vicinity of water crossings. There is potential for the construction activity to result in the run-off of silt, nutrients and other pollutants such as hydrocarbons and cementitious material into land drains and minor watercourses. This represents a potential indirect effect on Otter in the form of habitat degradation through water pollution.
 - **Badger** – Table 6-23 describes the potential impacts on badgers. During surveying one badger sett was found in close proximity to the proposed wind farm. Taking a precautionary approach a potential for significant effect to badger was identified. The potential for loss of sett habitat as a result of construction work is assessed as a permanent, irreversible, significant effect on the local badger population.
 - **Bats** – Table 6-24 describes the potential impacts on bats. Effects to bats have been assessed in relation to loss or damage to commuting and foraging habitat, loss of, or damage to, roosts and displacement of individuals or populations. The EIAR states that there is no potential for the construction phase to result in Significant effects on the local bat population at any geographic scale as no roosts were recorded close to the infrastructure. Habitat loss and temporary disturbance as a result of works along the turbine delivery route likely to result in slight effects on the local population. The bat survey report, which is included in Appendix 6.2 provides further detail and analysis with regard to the effects on bat species. During operation, the potential effects have been described in Table 6-27. The operational phase poses a potential risk to bats in the form of collision mortality, barotrauma and other injuries caused by bats coming into contact or close proximity to operational turbines. Any increase in artificial lighting at night would have the potential to result in displacement effects on bats.
 - **Amphibians** - In the absence of mitigation, there is potential for direct mortality to Common Frog and Smooth Newt in the vicinity of Turbine 2.
- **Future Restoration potential of cutover bog habitats** - As described in Section 6.7.2.1.2, and in Chapter 9, the potential for impacts on groundwater flows and hydrochemistry outside of 50m of the development footprint, with implementation of the prescribed mitigation, is highly unlikely. Therefore, there will be no potential for impact on rewetting opportunities for adjacent cutover bog habitats in the future.

Decommissioning

- For decommissioning, which is scheduled to take place after the proposed 35-year lifespan of the project, the impacts on biodiversity will also be similar in nature to those experienced during construction but on a far lesser scale and magnitude. There will be no additional or ancillary impacts associated with the decommissioning phase. The existing site roads will be used during decommissioning. The redundant underground cables will be pulled from their trenches without the requirement for significant excavation. A Decommissioning Plan has been prepared in Appendix 4-5. Following the implementation of preventative mitigation, there is no potential for

the decommissioning of the Proposed Development to result in significant effects on biodiversity.
Cumulative Impacts
<ul style="list-style-type: none"> • Following bespoke mitigation there will be no significant residual impacts on ecological receptors associated with the wind farm and therefore no potential for individual or cumulative negative effects on biodiversity are likely to occur. • No significant residual effects in relation to disturbance, displacement or mortality of faunal species has been identified. Therefore, there is no potential for the wind farm to contribute to any cumulative effect in this regard. However, it has been concluded that there is a potential for a residual moderate negative impact as a result of the loss of cutover bog and woodland habitats. As such, there is a potential for cumulative impact at the local scale when considered in-combination with adjacent land uses. Significant effects not anticipated at the County scale.

13.5. Mitigation

Section 6.7 of the EIAR describes the proposed mitigation measures to ensure the protection of biodiversity.

Rivers and Streams and Sensitive Aquatic Faunal Species - A Surface Water Management Plan (SWMP) is provided as Appendix 4.4 of the applicants EIAR. This plan provides details of how surface water quality will be protected during the construction phase. In addition to this, specific mitigation is provided in relation to water quality in Chapter 9 of the EIAR. This provides specific mitigation for the proposed works including mitigation by avoidance, mitigation by design, mitigation against release of suspended solids, hydrocarbons, cementitious materials, dewatering works controls, prevention of contamination from wastewater disposal, and clear-felling mitigations. In addition, Section 9.5.2.9 of the EIAR also describes the proposed mitigation in relation to morphological changes to surface watercourses & drainage patterns. IFI will be consulted in relation to new watercourse crossings.

Whilst no significant effects on water quality are anticipated, potential for effects on water quality associated with the operational phase drainage of the site has been fully mitigated through appropriate design and mitigation as fully described in Section 4.7 'Site drainage', and Section 9.5.3 of the EIAR.

Cutover Bog - Where direct impacts on peatland habitat will occur (Turbine no.1, Turbine no.5, sections of the new site access track between T3 and T2, peat and spoil repository areas and the construction compound adjacent to T3), mitigation measures as described in the EIAR will be implemented to minimise the works area within the

construction corridor to avoid peatland loss outside the development footprint. Floating roads will be used where possible to minimise impact on peat hydrology. Mitigation measures to prevent alteration to groundwater flows and hydrochemistry are described in Section 6.7.2.1.2 of the EIAR. Mitigation measures to prevent adverse effects on nearby SACS as a result of airborne nitrogen deposition are presented in Section 6.7.2.1.2. The Community Benefit fund will contribute to peatland restoration works within 10km of the site. There is also a commitment to offering compensation to turbary rights holders for the remaining peat who cease extraction on their plots.

Bog Woodland and Broadleaved Woodland - In order to offset the loss of woodland, it is proposed to carry out an Arboricultural Assessment of trees within the ash plantation adjacent to the proposed substation. Any trees in poor condition will be replaced with a variety of suitable native species in order to increase the longevity of this woodland. This is described in the accompanying Biodiversity Management and Enhancement Plan (BMEP).

Hedgerows and Treelines – As described in the BMEP, in order to compensate for the loss of linear vegetation, approximately 674 linear metres of new replacement hedgerow planting will be carried out along sections of proposed new and upgraded roads. This will result in a net gain in this habitat within the site.

Protected Fauna – A suite of mitigation measures for the protection of fauna during construction have been described in the EIAR Section 6.7.2.2. This includes measures to protect the otter, badger, bats and amphibians.

Designated Sites - None of the elements of the wind farm are located within the boundaries of any Nationally or European designated sites. There will be no direct effects on any designated site as a result of the construction, operation and decommissioning of the wind farm project including the turbine delivery route, substation and grid connection.

Hydrological (surface water) Impacts - Potential hydrological connectivity has been identified from the site to River Little Brosna Callows NHA, Dovegrove Callows pNHA, River Shannon Callows pNHA and Lough Derg pNHA.

13.6. Residual Effects

The EIAR has assessed the residual impacts on Habitats/Species following implementation of proposed mitigation measures. I summarise the construction and operational phase residual impacts in Table 13.2 below;

Table 13.2 Summary Table of Residual Impact on Habitats/Species Post Mitigation (Construction and Operational Phase)	
Habitats/Species	Residual Effect Following Mitigation (Construction and Operation)
Impacts on Rivers, Streams and Sensitive Aquatic Fauna Species	No significant residual effect on aquatic habitats or species. Proposed development will not cause any waterbodies to deteriorate, irrespective of their current condition, and will not in any way prevent any waterbodies from meeting the biological and chemical characteristics for good ecological status. For operation phase, proven and effective measures to attenuate runoff and mitigate the risk of flooding will be employed. The residual effect will be a neutral, indirect, long term, likely effect on down gradient streams/rivers.
Impact on Cutover Bog	No potential for residual significant impact on peatland habitats adjacent to the development footprint as a result of drainage or air quality impacts. However, it is considered that there is potential for residual moderate impact through loss of peatland habitat at the local scale. Significant effects are not anticipated at the County level.
Impacts on Bog Woodland and Broadleaved Woodland	The loss of 5.8ha of bog woodland, 1ha of bog woodland/scrub mosaic and 1.9ha of broadleaved woodland is considered to result in a Moderate negative impact on a receptor of local importance (higher value). Significant effects are not anticipated at the County level.
Impacts on Hedgerows and Treelines	No potential for significant effect exists at any geographic scale. The planting of additional hedgerow will serve to enhance the hedgerow habitat within the site due to increased species diversity compared to that to be lost, will benefit wildlife and due to the increase of 291 linear metres over that to be lost, will result in a net gain in this habitat within the site
Impacts on Otter	There will be no significant residual effect on otter as a result of the Proposed Development at any geographic scale.
Impacts on Badger	There will be no significant residual effect on badger as a result of the Proposed Development at any geographic scale.
Impacts on Bats	There is no potential for the construction phase to result in Significant effects on the local bat population at any geographic scale. There will be no significant effect on the conservation status of any bat species as defined in 'The Status of Protected Habitats and Species in Ireland' (NPWS, 2019). Taking into consideration the sensitive design of the project and the proposed best practice and adaptive mitigation measures, there is no potential for significant effects on bat populations as a result of the wind farm during the operational phase.
Impacts on Amphibians	There will be no significant residual effect on amphibians as a result of the Wind Farm at any geographic scale.

Impacts on future restoration potential of cutover bog habitats	There will be no potential for impact on rewetting opportunities for adjacent cutover bog habitats in the future. The experience across a range of windfarm sites demonstrates that peatland rehabilitation and wind farm development can co-exist successfully.
Effects on Designated Sites	<p>Hydrological (Surface water) Impacts - No potential for residual adverse impacts on water quality have been identified following implementation of mitigation measures in relation to potential effects on rivers/streams and sensitive aquatic faunal species, as described in Section 6.7.2 and therefore no significant effects on these NHAs/pNHAs are anticipated. No hydrological connectivity has been identified to any other NHAs/pNHAs; given the distance from the site and relatively low impact of the works, and therefore, no impacts are anticipated.</p> <p>Collision Risk and Habitat Loss - The mitigations prescribed for local bat populations, as listed in Section 6.7.2.3.3 and Section 6.7.3.2.1 of the EIAR, which will mitigate potential risks via habitat loss and collision, are such that there is no potential for residual impact on any pNHA roosts. The potential for collision risk or habitat loss to bird populations associated with designated sites has been fully considered and mitigated in Chapter 7 'Ornithology'.</p> <p>Air Quality Impacts - There is no expected residual impacts to designated sites via air quality impacts if mitigation measures discussed in Section 6.7.5.1.3 are implemented.</p> <p>Groundwater Level Impacts - No significant effects on regional groundwater and the Banagher and Birr groundwater bodies expected, and no significant effects on peat water hydrochemistry expected from proposed piling works.</p>

13.7. The Assessment: Direct and Indirect Effects

I have examined, analysed and evaluated Chapter 6 of the EIAR, and all of the associated documentation and submissions on file in relation to Biodiversity. The EIAR has raised no significant concerns in relation to Biodiversity. As outlined above in Table 13.2, following the implementation of mitigation measures, no significant likely effects on habitats/species have been identified as part of the EIAR assessment during the construction, operation and decommissioning phases of the proposed development. This view was not shared by the Local Authority or the DAU in relation to habitat loss and wetland restoration. Please note that I intend addressing issues relating to ornithology separately under Chapter 14.0 of this report and in the Appropriate Assessment in Chapter 26.0 of this report.

I note that a badger sett was found in close proximity to the proposed wind farm, which could if left unmitigated result in direct mortality of badgers due to construction activities which would have a significant effect for local badger populations. I am

satisfied the proposed mitigation measures as outlined in Section 6.7.2.2.2 and Appendix 6.4 of the EIAR will protect local badger populations.

13.7.1. Wetland Restoration and Loss of Peatland Habitat

I note the concern of the Development Applications Unit DAU who own a significant area of adjoining undesignated peatland at Sharragh and have carried out restoration measures there and intends carrying out further habitat restoration in the future. They are concerned that the proposed wind farm would reduce the extent of natural habitat in the area and limit potential to restore wetland habitats there in the future.

Section 6.7.2.1.2 of the EIAR states in relation to the potential effects of Cutover bog that the effects on drainage or alteration of hydrochemistry of adjacent cutover bog habitats are likely to be localised due to the relatively shallow excavation depths and the local hydrogeological regime with low to moderate permeability peat and glacial tills overlying the limestone bedrock. The EIAR notes that effects on groundwater levels will only be for a temporary basis during the construction work. Water level impacts will be temporary and are unlikely to be significant beyond 50m from any excavation.

A full suite of mitigation measures described in Section 9.5.2.8, Chapter 9 of the EIAR will prevent groundwater and hydrochemistry impacts on bog habitats adjacent to infrastructure within the site. They include mitigation relative to piling works to prevent alteration to groundwater flows and hydrochemistry, measures for the protection of groundwater quality such as sediment control and control of hydrocarbons, control of air quality, dust and exhaust emissions. In addition, as described in Chapter 4 of the EIAR, I note the applicant's commitment to providing a portion of the community benefit fund to biodiversity enhancement/nature positive projects within 10km of the site and a commitment to offering compensation to turbary rights holders for the remaining peat who cease peat extraction on their plots to help prevent further degradation of the peatlands.

The wind farm development will result in the direct loss of approximately 9.9 hectares of Cutover bog. The EIAR has stated the cutover bog habitats within the site do not correspond to Annex I habitat and fit into the bare peat and low Sphagnum groups. The bog habitats within the site are subject to ongoing turbary activity and are actively

drained and dry underfoot and hence, these cutover bog communities are assessed as being of Local Importance (Higher value). While 9.9ha of cutover bog habitat constitutes 20% of the area of cutover bog habitat within the EIAR study boundary, this area comprises approx. 5% of the entire local bog complex.

In relation to the DAUs concern regarding rewetting, I am satisfied that the applicant has carried out a robust assessment in the EIAR of the likely impacts. I am satisfied that the potential for impacts on groundwater flows and hydrochemistry outside of 50m of the development footprint, with implementation of the prescribed mitigation, is highly unlikely, and hence, there will be no potential for impact on rewetting opportunities for adjacent cutover bog habitats in the future. I consider that there is potential for residual moderate impact through loss of peatland habitat at the local scale, but I consider the mitigation proposed in relation to funding of biodiversity and commitment to offering compensation to turbary rights holders to be a positive impact for the promotion and natural regeneration of the peatlands.

13.8. Conclusion: Direct and Indirect Effects (Biodiversity)

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 proposed development would not have an adverse impact on biodiversity (including habitats and species), subject to compliance with relevant legislation and guidance, implementation of the EIAR and final CEMP mitigation measures and compliance with recommended conditions. I consider that there will be no potential for impact on rewetting opportunities for adjacent cutover bog habitats in the future. The experience across a range of windfarm sites demonstrates that peatland rehabilitation and wind farm development can co-exist successfully.

14.0 Ornithology

14.1. Issues Raised

The observers note that rare, threatened and endangered species of birds including whooper swan, curlew and merlin have been identified in the area.

DAU submission view that the site is unsuitable for wind farm development and that insufficient information was submitted with the application to fully assess the impact on Natura 2000 sites and biodiversity in general. In summary issues raised relate to Natura Impact Assessment, Bird Collision Risk and Displacement and Drainage and Hydrology. The Dept. is not able to conclude that the proposed development individually or in combination with other plans or projects will not adversely affect the integrity of any European Site and in addition the Dept. cannot conclude that the proposed development will not adversely affect a number of sensitive bird species listed on Annex I of the Birds Directive and/or the red list of Birds of Conservation Concern. (See Section 5.1.2 of this Report for full details of submission).

14.1.1. Oran Ecology Report

Third parties and observers to the appeal have raised their concerns regarding impact on ornithology. An independent report was commissioned entitled the Oran Ecology Report (2023), which is included in Appendix 1, pg. 54 of the submission made by Sheila Hctor. The report was prepared by James Owens (B.Sc., M.Sc.) who has 7 years' experience as an ecologist.

The report notes that the survey undertaken aimed to verify local reports of curlew and identify if breeding curlew were present in the area. Surveys were also aimed to record other birds of conservation concern in the area. The methodology for the report is described in Section 2 of the report and included three vantage point (VP) surveys in Sharragh and the Clonfinane Bog which are part of the Ballyduff/ Clonfinane SAC. I note that Figure 4.1 of the Oran Reports illustrates a map of the location of the study site. The study area is located directly north of the site boundary for the proposed wind farm development site. The study does not comprise the lands associated with the wind farm development.

The surveys were carried out in early morning or late evening between April and the end of July and were undertaken for a minimum of three hours following methodology set out in the Irish Breeding Curlew Surveys (O Donoghue et al 20-19; Colhour et al 2022). Walkover surveys were also conducted. Section 3 of the report describes the Desk Study undertaken in relation to breeding and wintering curlew records within the hectad M90, where the study site is located. Section 3.6 of the Oran report notes that the merlin bird ID app of recordings from February 2023 to September 2023 was analysed by Oran Ecology and verified that curlew were consistently present in the study area during that timeframe.

The habitat suitability assessment in Section 4 of the Oran report carries out a suitability assessment for breeding curlew within the study area. This area consists of raised bogs either side of a dairy farm in Sharragh townland in Co. Tipperary and part of the bog within the study area were also in the townlands of Walshpark and Clonfinane.

In terms of bird surveys, Section 4.2.1 of the report notes that the curlew were recorded in the first survey in April and again in the second April survey. Although a pair of curlews were recorded flying off the study site at Clonfinane Bog, the report notes that the birds behaviour did not strongly indicate that a nest was present on the bog. The report notes that no curlew were recorded during the May or July surveys.

Other species of interest which were recorded in the study area include Snipe and Merlin. The report notes that the consistent records of merlin indicate a probable breeding at the site. Roding woodcock was recorded in the May survey and raptor buzzard and kestrel were also recorded in the surrounding area.

In summary, the report states;

‘A pair of curlew was recorded from Clonfinane bog which forms part of the Ballyduff/Clonfinane Bog SAC during targeted surveys with the bog providing excellent potential nesting habitat for the species. However, two follow-up surveys in May and July failed to record curlew in the area. It is likely the pair attempted to breed but the breeding success cannot be confirmed. Although Clonfinane bog provides suitable nesting habitat, should curlew get as far as chick stage, the surrounding landscape characteristics makes it a difficult environment for chicks to survive. Curlew eventually need to bring chicks from

the bog into fields which are more invertebrate-rich. However, the bog here is separated by most of the fields in the surrounding area by a band of birch woodland or gorse scrub which form a physical barrier and also increase the risk of predation. No curlew were recorded in the cutover bog at Sharragh during the surveys. However, audio recordings by locals have consistently recorded curlew in the general vicinity of this bog particularly at very early dawn and late dusk. This bog offers at best sub-optimal and at worst unsuitable nesting habitat for curlew due to the encroachment of trees across the bog. Nest predation risk is high here as a result of the cover and habitat which is provided for predators, especially avian predators. However, the open water bodies in the cutover bog provide suitable night roosting habitat for adult curlew which are known to roost adjacent to lakes and within reed beds and this may account for some of the strong curlew recordings in this area.

A number of birds of conservation concern were recorded from the area during surveys such as snipe, merlin and woodcock, all indicating probably breeding status.

Curlew records were reported to the NPWS Agri-Ecology Unit which administers the Curlew Conservation Project and regional NPWS staff. The merlin records were reported to John Lusby of Birdwatch Ireland.'

14.2. Context

Ornithology is addressed in Chapter 7 and Appendices 7-1 – 7-7 of the EIAR as follows;

- Appendix 7-1 Species List
- Appendix 7-2 Survey Effort
- Appendix 7-3 Summary Tables
- Appendix 7-4 Survey Data
- Appendix 7-5 Collision Risk Assessment
- Appendix 7-6 Bird Monitoring Programme
- Appendix 7-7 Confidential Survey Data

Chapter 7 sets out the Regulatory and Policy Framework, Statement of Authority, Assessment Approach and Methodology, Baseline Ornithological Conditions, Receptor Evaluation, Potential Impacts, Mitigation and Best Practice, Monitoring, Residual Impacts and Cumulative Effects.

A desk top survey was carried out, then a scoping and consultation exercise was undertaken during the preparation of the EIAR, the responses to which are summarised in Table 7-1 of the EIAR. Responses were received from An Taisce, Dept of Agriculture Food and the Marine, NPWS, Inland Fisheries Ireland and Waterways Ireland. An identification of Target Species and Key Ornithological Receptors (KORs) was compiled, based on protected species and species sensitive to wind farm development.

Field surveys were carried between September 2020 and March 2023, consisting of 2 breeding seasons (April – September) and 3 non-breeding seasons (October – March) in compliance with NatureScot guidance (NatureScot, 2017). The survey areas are shown in Figures 7-2 – 7-7 of the EIAR. Further surveys were undertaken following the lodgement of the planning application and survey results are included in Appendix 3 of the applicants appeal document. Field surveys were undertaken as follows;

Table 14.1 Summary of Surveys Undertaken	
Survey Undertaken	Summary of Detail (Full details in Section 7.2.4 of EIAR and Appeal document)
Vantage Point (VP) Surveys	Monitoring flight activity within Wind Farm Site and to a 500m radius of the proposed turbine positions. Surveys were conducted from 4 VPs from September 2020 to March 2023 with 36 hours per VP (Table 7-2, Table 1 of EIAR for details) Further surveys undertaken from April 2023 – September 2023 (See Appendix 3 of Appeal Document)
Breeding Walkover Surveys	Used to determine presence of bird species of high conservation concern. Carried out in daylight during core breeding season months April to July (2021 and 2022), surveyed 2-3 days per month on each occasion (Appendix 7-2 and Figure 7-3 of EIAR for full details) Further surveys undertaken from April 2023 – September 2023 (See Appendix 3 of Appeal Document)
Breeding Raptor Surveys	Raptors include harrier, falcon, buzzard, eagle, hawk, owl, kite and osprey species. Surveys undertaken within the Wind Farm Site and to a 2km radius to identify occupied territories and monitor breeding success. Each breeding raptor was surveyed once per month between April and July (2021 and 2022) with surveys undertaken over 3 days to survey the entirety of the area. (Appendix 7-2 and Figure 7-4 of EIAR for full details) Further surveys undertaken from April 2023 – September 2023 (See Appendix 3 of Appeal Document)
Breeding Woodcock Surveys	Surveyed suitable habitat to a 500m radius beyond the Wind Farm Site in May and June 2021 and 2022. Also surveyed for owls. (Appendix 7-2 and Figure 7-5 of EIAR for full details) Further surveys undertaken from April 2023 – September 2023 (See Appendix 3 of Appeal Document)
Breeding Barn Owl Survey	Dedicated breeding barn owl surveys were undertaken in April, May and June 2023 to confirm occupancy at an agricultural shed. (Appendix 7-2, Table 5 and Confidential Appendix 7-7 and Figure 7-7-4-2 of EIAR for details) Further surveys undertaken from April 2023 – September 2023 (See Appendix 3 of Appeal Document)

Winter Walkover Surveys	Undertaken to record bird species within the Wind Farm Site and up to 500m radius beyond the Wind Farm. 4 visits between October and March in daylight hours (four visits in winter 2020/2021, four visits in winter 2021/2022 and four visits in winter 2022/2023). (Appendix 7-2 and Figure 7-3 of EIAR for details)
Waterbird Distribution Surveys	Significant wetlands and water bodies within a minimum of 8km of the Wind Farm Site were surveyed for waterbirds during the 2020/2021, 2021/2022 and 2022/2023 winter and passage seasons (August to May inclusive) to provide information on their distribution in relation to the Wind Farm Site. Surveys undertaken during daylight. (Appendix 7-2 and Figure 7-6 of EIAR for details) Further surveys undertaken from April 2023 – September 2023 (See Appendix 3 of Appeal Document)
Hen Harrier Roost Surveys	Hen harrier roost surveys undertaken within and 2km radius beyond Wind Farm Site, with the aim of identifying active winter hen harrier roosts near or within the site. Roost watches of 2-3 hours were conducted at 5 hen harrier VP locations from dusk until last visible daylight. Each VP was surveyed once per month between October and March in winter 2020/2021, 2021/2022, 2022/2023. (Appendix 7-2 and Figure 7-2 of EIAR for details)
Multidisciplinary Walkover Surveys	The grid connection route was surveyed in June and July 2023 through a multidisciplinary walkover survey. (Details in Biodiversity Chapter of EIAR, Chapter 6.4.3)

The EIAR describes the potential risks to birds from wind farms which includes direct habitat loss, disturbance/displacement and collision. The EIAR sets the Geographical Frameworks utilising the 'Guidelines for Assessment of Ecological Impact of National Road Schemes' (NRA, 2009). The description of impacts is quantified according to two assessment criteria, namely Percival (2003) (Table 7-3 - 7-5 of EIAR) and the Environmental Protection Agency (EPA, 2022). The Collision Risk Assessment was calculated using a mathematical model to predict the number of individual birds of a particular species that may be killed in collision with moving wind turbine rotor blades.

The EIAR concludes that the proposed development will not result in any significant effects on any of the identified KORs. No significant effects on receptors of International, National or County Importance were identified. Provided that the proposed development is constructed, operated and decommissioned in accordance with the design and best practice mitigation measures that are described within the application, significant individual or cumulative effects on the identified KORs are not anticipated.

14.3. Baseline Ornithological Conditions

14.3.1. Designated Sites within the Likely ZOI of the Development

Six designated Special Protection Area (SPA) sites are located within the likely Zone of Influence (ZOI) of the development as follows;

Table 14.2 Designated SPAs within ZOI of the Wind Farm			
No.	SPA	Location	Special Conservation Interest (SCI)
1	The River Little Brosna Callows SPA	6.1km from the Wind Farm Site and 3km from the EIAR site boundary including the grid connection route.	Whooper Swan, Wigeon, Teal, Pintail, Shoveler, Golden Plover, Lapwing, Black-tailed Godwit, Black-headed Gull, Greenland 3 White-fronted Goose, Wetland and Waterbirds
2	Dovegrove Callows SPA	located 6.7km from the Wind Farm Site and 160m from the EIAR site boundary including grid connection route.	Greenland White-fronted Goose
3	All Saints Bog SPA	located 8km from the Wind Farm Site and 3.6km from the EIAR site boundary including grid connection route.	Greenland White-fronted Goose
4	Lough Derg (Shannon) SPA	located 7.9km from the Wind Farm Site and EIAR site boundary including the grid connection route.	Cormorant, Tufted Duck, Goldeneye, Common Tern and Wetlands and Waterbirds
5	Middle Shannon Callows SPA	located 9.8km from the Wind Farm Site and 7.6km from the EIAR site boundary including grid connection route.	Whopper Swan, Wigeon, Corncrake, Golden Plover, Lapwing, Black-tailed Godwit, Black-headed Gull and Wetland and Waterbirds
6	Slieve Bloom Mountains SPA	located 17.8km from the Wind Farm Site and 12.7km from the EIAR site boundary including grid connection route.	Hen Harrier

14.3.2. Datasets Utilised

The EIAR has reviewed the Breeding and Wintering Bird Atlas Data in relation to the proposed development site in Section 7.3.2. Figure 7-7 and 7-8 of the EIAR indicates which bird species are located within Hectads M90 and N00 relating to the Wind Farm Site.

The EIAR notes in Section 7.3.3 that the site is not located within an area identified as sensitive to birds (developed by BirdWatch Ireland), the closest being the Little Brosna Callows at a distance of 6.3km from the site.

Irish Wetland Bird Survey (IWeBS) Records monitor wintering waterbird populations at their wetland sites across Ireland. The Wind Farm Site is not covered by a IWeBS site, the nearest being the Little Brosna Callows located 5.9km from the site. Datasets were used to estimate the County Tipperary populations of wintering waterbirds identified as KORs.

Rare and Protected Species Datasets were obtained from the NPWS, which were dated 9th May 2023. Curlews were found partially within hectad M90, which is located within the site boundary.

14.3.3. Field Survey Results

Based on field survey results, target species are recorded in Table 7-9 of the EIAR along with a summary of breeding and roosting status. Hen harrier, Red Kite and Long-eared Owl was recorded during the winter season, Kingfisher and Little Egret was recorded during the breeding season. Merlin, Kestrel, Snipe, Woodcock, Buzzard and Sparrowhawk was recorded during the breeding and winter seasons. Peregrine and White-tailed Eagle was recorded during the winter season and in the early/late breeding season. Whooper Swan, Lapwing, Shoveler, Black-headed Gull, Cormorant, Pintail, Teal, Barn Owl, Curlew was recorded during the winter and passage seasons. Raw survey data and maps are provided in Appendix 7-4. Sensitive data and mapping relating to recorded roosting locations are contained in Confidential Appendix 7-7 of the EIAR.

The Red-Listed Passerines species grey wagtail, meadow pipit, redwing, swift and yellowhammer were recorded during the surveys between Sept 2020 and March 2023.

14.3.4. Determination of Population Importance and Identification of Key Ornithological Receptors (KORs)

A determination of population importance for birds within the ZOI is detailed in Section 7.4 of the EIAR following NRA (2009) guidance. These range from National Importance to County and Local Importance. The EIAR in Table 7-10 then provides a rationale for including or excluding KORs. Section 7.4.3 of the EIAR determines the sensitivity of different bird species ranging from Very High Sensitivity KORS to Low Sensitivity.

I provide a summary in Table 14.3 below of the results of the assessments;

Summary Table 14.3 - Importance of Wind Farm Site to Bird Species and Sensitivity of Species						
No.	Bird Species	Sensitivity	Population Importance	KOR	Importance for Breeding	KOR
1	Black-headed Gull	Very High Wintering and Low Breeding	County Importance (Wintering)	Yes	Local Importance (Higher Value)	Yes
2	Cormorant	Very High Breeding And Low Wintering	Local Importance (Higher Value) (Wintering)	Yes	Local Importance (Higher Value)	Yes
3	Golden Plover	Very High Wintering	County Importance (Wintering)	Yes	No Ecological Importance	No
4	Lapwing	Very High Wintering	County Importance (Wintering)	Yes	No Ecological Importance	No
5	Teal	Very High Wintering	County Importance (Wintering)	Yes	No Ecological Importance	No
6	Hen Harrier	High	County Importance (Wintering)	Yes	No Ecological Importance	No
7	Whooper Swan	Medium	County Importance (Wintering)	Yes	No Ecological Importance	No
8	Merlin	Medium	County Importance (All seasons)	Yes		
9	Peregrine Falcon	Medium	County Importance (All seasons)	Yes		
10	Barn Owl	Medium	County Importance	Yes	County Importance	Yes
11	Curlew	Medium	No Ecological Importance (Wintering)	No	National Importance	Yes
12	Kestrel	Medium	County Importance (All seasons)	Yes		
13	Snipe	Medium	County Importance	Yes		
14	Woodcock	Medium	County Importance	Yes		
15	Buzzard	Low	Local Importance (Higher Value)	Yes		
16	Sparrowhawk	Low	No Ecological Importance	Yes		
17	Passerines (Red Listed)	-	Local Importance (Lower Value)	No		
18	Shoveler	-	No observations (All seasons)	No	No Ecological Importance	No
19	Pintail	-	No observations	No	No Ecological Importance	No
20	Long-eared Owl		No Ecological Importance	No		
21	Kingfisher	-	No observations (All seasons)	No	No Ecological Importance	No
22	Little Egret	-	No observations (All seasons)	No	No Ecological Importance	No

23	Red Kite	-	No observations	No	No Ecological Importance	No
24	White-tailed Eagle	-	No observations	No	No Ecological Importance	No

14.4. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 14.4 below.

Table 14.4: Summary of Potential Effects (Ornithology)	
Do Nothing	
<ul style="list-style-type: none"> It is assumed that the character of the bird community, including the KORs identified, will remain much as it is described in the baseline ornithological conditions. 	
Construction and Operational Phase Impacts	
<ul style="list-style-type: none"> Effects on Key Ornithological Receptors during Construction and Operation are described in Section 7.5.2 of the EIAR. Effects on each bird species identified as a KOR are assessed in terms of Direct Habitat Loss, Disturbance, Displacement and Barrier Effect and Collision Risk. These effects are defined according to Percival (2003) and EPA (2022). No Significant Effects are predicted on Golden Plover (Wintering), Hen Harrier (Wintering), Merlin (All Seasons), Peregrine (All Seasons), Whooper Swan (Wintering), Lapwing (Wintering), Black-headed Gull (Wintering and Breeding), Cormorant (Wintering and Breeding), Teal (Wintering), Barn Owl (all Seasons), Curlew (Breeding), Kestrel (All Seasons), Snipe (All Seasons), Woodcock (Breeding), Buzzard (All Seasons), Sparrowhawk (All Seasons) 	
Effect on Designated Areas	
<ul style="list-style-type: none"> Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within the Natura Impact Statement and its appendices. The measures ensure that the construction and operation of the proposed wind farm does not adversely affect the integrity of European sites. Therefore, it can be objectively concluded that the proposed development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site. 	
Effects Associated with the Grid Connection and Turbine Delivery Route	
<ul style="list-style-type: none"> The proposed grid connection cable route will commence from the proposed onsite substation and will run along existing roads to the existing 110kV Dallow substation near Birr, Co. Offaly. Required works are minor and are all located within the existing road corridor (full details in Chapter 4 of the Applicants EIAR) The turbine delivery route will require temporary accommodation works at 3 no. locations to facilitate the delivery of abnormal loads, which will revert to their existing condition. (Chapter 4 of Applicants EIAR) Majority of habitats along both the grid connection and turbine delivery route are of low ecological value and don't have the potential to support species of conservation interest in the area. Hence, significant displacement works are not predicted and the effects on KOR is assessed as Negligible during construction and operational phases. 	
Decommissioning Impacts	
<ul style="list-style-type: none"> No significant effects are predicted during the decommissioning phase. (Section 7.5.3 of EIAR) 	

Cumulative Impacts
<ul style="list-style-type: none">• Cumulative Impacts considered relevant Plans, Forestry and Agricultural Practices, other developments and the following Wind Farms located within 25km were assessed; Carrig, Skehanagh, Monaincha, Ballinlough-Ikerrin, Meewuan, Derrinlough, Cloghan and Leabeg.• There were 16 KORs identified at the proposed development site.• No significant cumulative effects are predicted (Section 7.9 of EIAR and Table 7-12)

14.5. Mitigation

Section 7.6.2 of the EIAR explains that effects on birds have been addressed through the design of the proposed development and the management of the development phases.

Mitigation by Design - Sensitive areas recorded during surveys were taken into account in the design of the proposed wind farm. In this regard no infrastructure has been placed within 750m of any recorded hen harrier roost location, within 1km of the identified merlin nest site, within 600m of the identified whooper swam roost site and within 800m of the identified probable curlew breeding territory. Hard standing areas have been designed to the minimum size necessary to accommodate the turbine model selected. The proposed grid connection route has been selected to utilise built infrastructure for the majority of its length (i.e. cables to be laid within public roads). Cables will be laid underground to avoid effects on roadside hedgerows and disturbance to nesting birds.

Mitigation during Construction, Operation and Decommissioning Phases – The development will be managed in accordance with a Construction and Environmental Management Plan (CEMP), (See Appendix 4-3 of EIAR). Mitigation for birds as described in Section 7.6.3.1 of the applicants EIAR are proposed as industry best practices and are not intended to mitigate any identified significant effect. These measures including carrying out construction outside the bird nesting season, hedgerow removal undertaken in line with the Wildlife Act 1976- 2022, limiting noise, silt fences for water protection and the appointment of an Environmental Clerk of Works and Project Ecologist whose duty it will be to oversee management of ornithological issues during the construction period. During decommissioning phase, disturbance limitation measures will be as per the construction phase. No significant operational phase impacts requiring mitigation were identified.

14.6. Monitoring

Section 7.7 of the EIAR provides details of industry best practice monitoring measures for pre and post construction and the decommissioning phases. Pre-construction surveys will be undertaken prior to commencement of works to monitor roosting or breeding activity. If birds of high conservation are found, no works shall be undertaken within a disturbance buffer in line with industry best practice. Post-construction, a Bird Monitoring Programme will be carried out for the operational phase to monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project. It is also proposed to undertake decommissioning monitoring surveys to safeguard winter roosting or breeding activity of birds of high conservation concern.

14.7. Residual Effects

The bird species identified as KORs and subject to a detailed impact assessment include Golden Plover (wintering), Hen Harrier (wintering), Merlin (all seasons), Peregrine (all seasons), Whooper Swan (wintering), Lapwing (all seasons), Black-headed Gull (all seasons), Cormorant (all seasons), Teal (wintering), Barn Owl (all seasons), Curlew (breeding), Kestrel (all seasons), Snipe (all seasons), Woodcock (breeding), Buzzard (all seasons), Sparrowhawk (all seasons). Following the proposed best practice and mitigation, no significant residual effects on KORs with regard to direct habitat loss, disturbance/displacement or collision mortality are predicted.

14.8. The Assessment: Direct and Indirect Effects

I have examined, analysed and evaluated Chapter 7 of the EIAR, and all of the associated documentation and submissions on file in relation to Ornithology. I am satisfied that the assessment was based on sufficient evidence resulting from extensive bird surveys, as described in Table 14.1 above. I am satisfied the proposed development will not result in any significant effects on any of the identified KORs or on receptors of International, National or County Importance. I am satisfied that if the proposed wind farm is constructed, operated and decommissioned in accordance with the design and best practice mitigation measures that are described within the

application documentation, that no likely significant individual or cumulative impacts on the identified KORs are predicted.

Please refer to Appendix 1 and 2 of this report which addresses Impacts on European Designated Sites. I address the Planning Authorities 2nd reason for refusal which was based on the impact on local sites within the Natura 2000 Network in the following section.

14.8.1. The Planning Authority's 2nd reason for refusal – Impact on Local Sites within the Natura 2000 Network

I note Tipperary County Councils second reason for refusal which states the applicant has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network. This position is supported by the submission of the DAU and observers to the appeal, which has raised serious concerns in relation to habitat loss and impact on Annex 1 Bird Species.

Tipperary County Council refused permission in refusal reason No. 2 on the grounds that the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species, and in this context, the proposed development would, therefore, be contrary to the proper planning and sustainable development of the area, development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive, which forms the basis of the classification of that site.

Reason for refusal no. 2 refers to Policy 11-16. I consider the reference to Policy 11 – 16 to be a typographical error and that the policy the Council is actually referring to is Policy 11-1 under Section 11.9 of the Development Plan which states;

'In assessing proposals for new development to balance the need for new development with the protection and enhancement of the natural environment and human health. In line with the provisions of Article 6(3) and Article 6 (4) of the Habitats Directive, no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be

permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects).'

The policy objective contains a footnote as follows;

'Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be: a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed; and c) adequate compensatory measures in place.'

The reasoning for the refusal by the Council is as follows;

Having regard to the proximity to a number of European Sites with conservation objectives to maintain or restore the favourable conservation conditions of a number of bird species. Having regard to the EIAR and NIS submitted with the application and submissions made on the applications, and notwithstanding mitigation measures proposed, the Planning Authority is not satisfied that the likelihood of significant effects on the environment can be excluded. The applicant has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network. The Planning Authority considers that the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species, and in this context, the proposed development would, therefore, be contrary to the proper planning and sustainable development of the area, development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive, which forms the basis of the classification of that site.

The Development Application Unit (DAU) consider the site is unsuitable for wind farm development and that insufficient information was submitted with the application to fully assess the impact on Natura 2000 sites, raising concerns in relation to Natura Impact Assessment, Bird Collision Risk and Displacement and Drainage and Hydrology. The Dept. is not able to conclude that the proposed development individually or in combination with other plans or projects will not adversely affect the integrity of any European Site and in addition the Dept. cannot conclude that the proposed development will not adversely affect a number of sensitive bird species listed on Annex I of the Birds Directive and/or the red list of Birds of Conservation Concern. (See Section 5.1.2 of this Report for full details of submission).

Third parties and observers to the appeal have raised their concerns in relation to the impact of the proposed development on the Natura 2000 network and bird species. (See Section 8.3 of this report for full details of submissions). Please refer to my summary of the Oran Ecology Report in Section 14.1.1 of this report, submitted by Shiela Hctor.

The applicant has responded to refusal reason No. 2 in Section 4.3.1 of the appeal document. The applicants submit that *'It has been comprehensively demonstrated in Section 4.3 of this report that the proposed development will not significantly impact avian populations of importance in the area and does not therefore run contrary to the proper planning and development of the area.'*

The applicants contend that the additional information provided within the appeal documentation adequately addresses any perceived deficiencies that been identified in the Tipperary County Council (TCC) Assessment and the DAU submission. This additional information includes the following;

- **Additional Bird Survey Data** – Surveys undertaken from April to September 2023 (Appendix 3 of Appeal Document). The bird surveys have found that the findings of previous bird surveys have remained largely unchanged with no significant change in the distribution and abundance of key ornithological receptors (KORs). Hence, the applicants contend that the impact assessment of the KORs as outlined in the submitted EIAR is an accurate description of the impact on the avian community at Carrig Wind Farm.
- **Updated Bird Collision Risk Model** – An updated Collision Risk Model was conducted which includes all survey data (Sept 2020 – Sept 2023), (Appendix 4 of Appeal Document). Concern was raised in observations that predicted collision risk was underestimated as no nocturnal surveys were undertaken.

The applicant notes that the response to the appeal was prepared by qualified professional ornithologists with extensive experience in bird surveys.

The applicant notes that extensive bird survey were carried out at the Wind Farm Site between September 2020 and March 2023. These surveys were supplemented in the appeal documentation by an additional breeding season of surveying from April to September 2023. The applicant states that this data is provided to corroborate the evidence of previous surveys and the results of the impact assessment in Chapter 7

of the EIAR. Appendix 3 of the appeal document provides data from the summer 2023 survey season. The applicants states that the findings of the bird surveys remained largely unchanged during the surveys between April – September 2023 and hence the impact assessment of the Wind Farm Site on birds which was carried out in the original EIAR remains accurate. An updated collision risk assessment was also carried out for the appeal.

The applicant notes the concerns of Tipperary County Council and the DAU in relation to the impact on special conservation interests in the nearby Special Protection Areas (SPAs). The two key points highlighted were firstly that some bird species recorded at the wind farm site are potentially connected with local SPAs and secondly that the predicted collision risk indicted in the applicants EIAR was an under-estimate as no nocturnal surveys were undertaken.

14.8.2. Connectivity to Special Protection Areas (SPAs)

The applicant notes that it is the DAUs view notwithstanding the distance from the wind farm site to local SPAs, Little Brosna (6.1km), Middle Shannon Callows (9.8km) and Lough Derg (7.9km) that wildfowl using the area in the zone of influence of the proposed wind farm site originate from or alternately use these European Sites. The applicant submits there is little evidence for connectivity with these European Sites.

The applicant highlights the findings of the NIS which states the distance between the SPA and the wind farm site is greater than the core foraging ranges of whooper swan, pintail and shoveler and that no regular or patterned flight activity of these species was recorded during surveys that would suggest connectivity.

The applicant has highlighted that a regularly used roost site for whooper swan was identified a minimum of 600m from the nearest turbine and that flock sizes recorded in the vicinity of the wind farm site were broadly in line with numbers observed at the roost site. The applicant concludes that the whooper swans recorded in the vicinity of the wind farm site are considered to be associated with this roost site, and not the SPA. Therefore, based on core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the wind farm site for whooper swan, pintail or shoveler. Hence, the applicant argues that there is no

potential for adverse effects via ex-situ collision risk, disturbance or displacement on the SCI populations associated with the SPA.

The applicant notes that in relation to the duck species mentioned (teal, shoveler or pintail) no significant effects were predicted or adverse effects on the SPA population, principally due to the separation distance versus core foraging range and very low rate of occurrence (shoveler and pintail) and lack of dependence on habitats of the wind farm (teal).

The applicant points out in relation to wintering whooper swan, which travel from Iceland, that when on their wintering grounds their movement is much more localised. The applicant notes that literature states their core foraging range is <5km between feeding and roosting locations as per NatureScot Guidance (2016). This literature is disputed by the DAU. The applicant reasons that the literature is backed up by three winter surveys, the fact that the swans from the nearby roost would use the nearest available foraging habitat located 2-3.5km to the west/southwest of the roost and in the opposite direction of the SPA and the consideration of the distribution of whooper swan in Ireland which finds that the majority of swans occur outside SPAs. Of the 11,852 birds in Ireland, 4,052 are associated with the SPA network.

The applicant concludes that there is no potential for adverse effects of habitat loss, disturbance, displacement, or collision risk on the SCI populations of whooper swan associated with any SPA (Section 7.5.2.3 of applicants EIAR) and to avoid disturbance displacement, no infrastructure is sited by design within 600m of an identified whooper swan roost. The applicant notes that based on the 600m buffer, impacts for habitat loss, disturbance, displacement and collision risk were characterised as no greater than a Low effect significant as per Percival (2003) criteria or Slight as per EPA (2022) criteria are predicted for the whooper swan locally.

14.8.3. Assessment in Relation to Connectivity with Local SPAs

Whilst I take on board the concerns of the DAU and observers to the appeal in relation to the potential impact on wildfowl using the area in the zone of influence of the proposed wind farm, based on surveys carried out by the applicants I do not consider there is sufficient evidence to substantiate the concern regarding connectivity between the wind farm site and the local SPAs.

I consider the applicant has carried out a robust and extensive examination of the likely impacts on ornithological species. Bird surveys comprising three winter and three breeding seasons have been conducted by qualified ornithologists on behalf of the applicant.

In relation to whooper swans, I consider the applicants have provided sufficient evidence through extended bird surveys to conclusively show that the whooper swans located 600m from Turbine 6 are a local roost and are not connected to the whooper swans which are connected to the local SPA. In relation to the DAUs dispute of the NatureScot Guidance (2016), on the core foraging range of <5km for wintering whooper swan, I consider the applicant has also backed up their findings with bird surveys and have based their findings on an examination of the typical foraging habitat.

The local SPAs are located at a minimum of c. 6km from the wind farm site. I consider there is a sufficient separation distance from the wind farm site to the Little Brosna (6.1km), Middle Shannon Callows (9.8km) and Lough Derg (7.9km) to ensure that there is no potential for adverse effects of habitat loss, disturbance, displacement or collision risk on the SCI populations of whooper swan associated with any SPA.

In relation to the impact on local whooper swans, the wind farm infrastructure has been designed to create a 600m buffer from the nearest turbine (T6) to the location of the local whooper swan roost. I consider the wind farm has been appropriately designed to protect whooper swans which originate from the local roost and am satisfied that based on the 600m buffer, impacts for habitat loss, disturbance, displacement and collision risk are low or slight as indicated in the applicants EIAR.

Based on the surveys undertaken which show a very low rate of occurrence for shoveler and pintail at the wind farm site, the separation distances to the local SPAs, the core foraging range of the species involved and the lack of dependence on habitats of the wind farm (teal), I accept the applicants findings in relation to the duck species mentioned (teal, shoveler or pintail) that no significant effects are likely or adverse effects on the SPA population.

Overall, I am satisfied that a thorough and robust assessment has been carried out using survey work and specialised knowledge of core foraging distances and types of habitats used for the various species of birds mentioned. I accept that the separation

distance between the SPA and the wind farm site is greater than the core foraging ranges of whooper swan, pintail and shoveler and that no regular or patterned flight activity of these species was recorded during surveys that would suggest connectivity.

To conclude, in relation to connectivity to the local SPAs, I am satisfied that there is no evidence based on extensive surveying of a connection between the proposed wind farm site and bird species associated with the local SPA's.

14.8.4. Nocturnal Flights and Collision Risk

Both the DAU and Tipperary County Council raised concern regarding underestimation of collision risk due to the lack of nocturnal surveys. The applicant acknowledges that nocturnal surveys were not undertaken, however, they argue that the collision risk analysis takes account of nocturnal flight activity and vantage point surveys were scheduled to overlap with the dawn/dusk period when water birds have the potential to undertake low light and/or nocturnal flights between feeding and foraging sites. The DAU have highlighted the potential impact on whooper swan in this regard. The applicant highlights that the survey scope undertaken included the low light periods before sunrise or after sunset during the migratory/wintering season surveys. In addition, winter vantage point surveys finished/started the hour after/before sunset/sunrise during the migratory/wintering period in line with NatureScot (2017) guidance. NatureScot (2017) also outlines that nocturnal activity can be estimated by applying a percentage increase on the diurnal flight activity recorded during vantage point surveys in the ranges of 25 – 28% depending on the species. The applicant notes that this was the approach taken for nocturnal flight activity in the analysis and that no significant collision risk was predicted for whooper swan (See Section 7.5.2.5 of applicants EIAR for further detail)

The DAU also raised concern about inclement weather limiting visibility and impact predicted collision risk if not accounted for. The applicant notes that surveys were undertaken in a range of weather conditions such that a representative sample was collected of local conditions.

The applicant notes that while no significant effects were identified, a comprehensive programme of operational phase surveys is proposed in the EIAR to monitor for interactions between the proposed development and the local avian community to

monitor parameters associated with collision risk, displacement/barrier effects and habituation during the lifetime of the project.

14.8.5. Assessment in Relation to Nocturnal Flights and Collision Risk

I acknowledge the DAU and Tipperary concern regarding underestimation of collision risk at night. Although nocturnal surveys were not undertaken by the applicant, it is clear that surveys were undertaken at periods of low light before and after sunrise and sunset during the migratory/wintering season and that winter vantage point surveys started and finished the hour after/before sunset/sunrise during the migratory/wintering season in line with NatureScot (2017) guidance (Refer to Appendix 7-2 Survey Effort, which indicates timetable for VP surveys). In addition, in line with NatureScot (2017) guidance nocturnal flights were estimated applying a percentage increase of between 25 – 28% depending on the species.

I consider the estimates for nighttime flights in accordance with NatureScot (2017) guidance to be an appropriate method of calculating nocturnal flights for different species in line with best practice. I am satisfied that the findings are robust and that nocturnal flights for the different species have been accounted for in the Collision Risk Analysis.

In relation to concerns regarding inclement weather limiting visibility and the impact in relation to predicted collision risk, I am satisfied that the applicant has accounted for inclement weather with the surveys having been undertaken in a range of weather conditions. I am therefore satisfied that the sample is representative, and the impact of predicted collision risk has been accounted for in the Collision Risk Assessment.

14.8.6. Other Survey Approaches

The applicant notes that the use of automated sensing techniques such as radar and acoustic surveys as suggested by the DAU for surveying nocturnal flight activity, is more typically used for offshore rather than onshore wind farms. The applicant argues that radar systems can't discriminate between species of similar size and weight. In the case of whooper swan, the radar would not be able to differentiate this species from the other species of migratory/wintering swans that occur in Ireland. The applicant notes that acoustic surveys are limited and only provide information on presence or absence and can't be used to establish abundance which is required to

assess collision risk. As noted above the applicant has used NatureScot (2017) guidance to estimate nocturnal flights.

14.8.7. Assessment in Relation to Other Survey Approaches

The DAU have suggested other methods by which nocturnal flights may be recorded. The applicant has analysed these methods and has given sound reasoning as to why both radar and acoustic surveys would not be suitable for surveying nocturnal flight activity on the wind farm site. I am satisfied that the use of NatureScot (2017) guidance to estimate nocturnal flights to be an appropriate method of establishing nighttime flights for different species.

14.8.8. Curlews

The DAU raised concern on the impact on the highly endangered Irish population of breeding curlew, highlighting that even the loss of a single pair of curlew could have an impact of national importance, given how few breeding birds remain in the country.

The applicant acknowledges the significance of such an impact but stresses that no significant impacts (including displacement and collision risk) are predicted for curlew. This is based on the infrequency of observations and the observed locus of activity for this species being c. 900m from the nearest proposed infrastructure. The applicant notes that the intervening land between the probable territory location and the Wind Farm Site comprises areas of mature forestry, treelines and scrubland which screen the wind farm site from the area. Curlew were not recorded flying at potential collision height (within 500m of the wind farm site) during the extensive vantage point survey work undertaken at the wind farm site. The applicant concludes that collision related mortality is not likely to significantly impact this species.

The Oran Ecology Report submitted by an observer to the appeal recorded a pair of curlew in an April Survey of 2023 in the Ballydull/Clonfinane Bog SAC, which is located to the north of the wind farm site, however the follow-up surveys in May and July failed to record any curlew in the area. The Oran report supports the view that the surrounding landscape characteristics makes it a difficult environment for chicks to survive.

14.8.9. **Assessment in Relation to Curlews**

The breeding curlew is a highly endangered species, and I acknowledge the serious implications of the loss of even a single pair of curlew due to their national importance. I note that the curlew was observed infrequently c. 900m from the nearest proposed infrastructure and that the curlew was not recorded flying at potential collision height within 500m of the wind farm site. These findings are based on three years of bird surveys. The curlew's territory and the wind farm site are separated by mature forestry, treelines and scrubland. I consider that this screening and the separation distance of at least c. 500m provides a sufficient buffer from the curlew territory and that the likelihood of collision risk to this species is low.

14.8.10. **Collision Risk for Other Bird Species**

The applicant notes that an updated collision risk assessment was conducted which includes the most up-to-date survey data (from April to September 2023) and is presented in Appendix 4 of the appeal document. This represents a 36-month survey period, consisting of three winter and breeding seasons. The applicant further notes that the updated collision risk assessment found that there were no significant changes to the collision risk impact for any species assessed and hence, the impact assessment for collision risk on key ornithological receptors (KORs) as outlined in the EIAR lodged, continues to provide an accurate description of the collision risk impact of the proposed development on the bird community at the wind farm site.

14.8.11. **Assessment in Relation to Collision Risk for Other Bird Species**

I have reviewed the updated Collision Risk Assessment in Appendix 4 of the appeal document. I am satisfied that based on a 36-month survey period, the findings are robust and the collision risk is accurate and that the collision risk remains as described in the lodged EIAR and that the proposed wind farm will not result in any significant effects on any of the identified KORs.

14.8.12. **Lighting**

The DAU has raised concerns about the impact of lighting associated with the proposed wind farm, recommending that the turbines should not be strongly illuminated to prevent the risk of collision, as some bird species are attracted to artificial

lighting. The applicant notes that some bird species, including passerines are more attracted to lights than others. The applicant notes that of all the KORs identified at the wind farm site were non-passerines and therefore, no potential for significant effects.

14.8.13. Assessment in Relation to Lighting

The bird surveys undertaken have identified the different species of birds which have been observed on the wind farm site. The applicant notes that passerine birds which are more attracted to light than other bird species were not identified at the wind farm site. Hence, I am satisfied that there is no potential for significant effects for bird collision due to lighting associated with the windfarm development.

14.8.14. Merlin Displacement

The DAU has raised concerns about potential displacement of breeding merlin, including from the increased use of the site by humans. The applicant has responded by stating that evidence from surveys found that merlin very rarely utilise the wind farm site for foraging. The site is composed of forestry and degraded bog which is not favoured by foraging merlin. The applicant notes that based on evidence from surveys, merlin are predicted to continue to forage in more favourable habitat to the north of the site beyond the zone of influence (>500m). The applicant concludes that no significant effects are predicted including from increased use of the wind farm site by humans. (See 7.5.2.3 of applicants EIAR for more detail). The Oran Ecology report submitted by the observer to the appeal supports the view that Merlin have been recorded to the north of the wind farm site.

With regard to merlin nesting, the applicants state that evidence of surveys suggest that this is very unlikely on the wind farm site because merlin's like to nest in the same location/tree each year, the nearest being c. 1.7km from the wind farm site. The applicants conclude that due to the separation distance between the wind farm site and the nest, no significant effects are predicted. The applicant notes that pre-construction bird surveys will be undertaken and in the event of a merlin nest being found, no works will be undertaken within a disturbance buffer. The applicant concludes that no significant effects are predicted for merlin.

14.8.15. **Assessment in Relation to Merlin Displacement**

The surveys undertaken by the applicant have found that merlins rarely use the wind farm site for foraging and that suitable habitat for foraging is located to the north of the site beyond the zone of influence. Furthermore, the surveys observed merlins nesting c. 1.7km from the wind farm site in the same location/tree for three years surveys.

From the surveys undertaken, I am satisfied that the wind farm site is unsuitable habitat for foraging for merlins and significant impacts are therefore unlikely. I am also satisfied that due to the nest fidelity exhibited by merlins and the separation distance to the wind farm site and the existing nesting site, significant effects on breeding merlins in relation to potential displacement are considered unlikely.

14.8.16. **Habitat Loss**

I note the DAUs and observers to the appeals concern in relation to habitat loss. The land lost to the development footprint is small (i.e. 6.02ha/2.5% of Wind Farm Site) relative to the total area within the wind farm site. I consider that substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the wind farm site and the wider surroundings post construction. There are no substantial lakes or rivers within the site and therefore no suitable habitat for many birds such as cormorant. A significant proportion of the proposed site comprises formerly milled cutover bog and conifer forestry, which are sub-optimal habitats for many bird species. I am satisfied that suitable habitat is abundant (agricultural grassland, intact bog, scrubland) in the wider surroundings of the site. Please refer to Section 13.7.1 of this report, where I have assessed Wetland Restoration and Loss of Peatland Habitat.

14.8.17. **Conclusion on Impact on Natura 2000 Network and Local Bird Populations**

I disagree with the opinion of the Planning Authority and the DAU and consider that the applicant has carried out sufficient and robust bird surveys over a three-year period to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network.

In relation to the Whopper Swan roost site which was identified c. 600m from the nearest turbine (T6), I am satisfied that flock sizes recorded in the vicinity of the wind

farm site are broadly in line with numbers observed at the roost site, hence the birds are considered to be associated with the roost site and not the SPA and therefore there is no evidence to suggest connectivity between the SPA and the wind farm site for the whooper swan, pintail or shoveler and hence I am satisfied there is no potential for adverse effects via ex-situ collision risk, disturbance or displacement on the Special Conservation Interests (SCI) population associated with the SPA.

Having considered the connectivity of the proposed wind farm site to the species of birds associated with the local SPAs including the Dovegrove Callows SPA (c. 6.7km) Little Brosna (c. 6.1km), Middle Shannon Callows (c.9.8km) and Lough Derg (c. 7.9km), I am satisfied that due to the separation distance between the site and the nearby SPAs and the foraging distances of the species associated with the SPAs, that the likelihood of significant effects on the environment can be excluded. I do not consider the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species and I do not consider the proposed development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive.

14.8.18. Technical Note: Ecology

14.8.18.1. Natura Impact Assessment

I refer the Board to the Technical Note prepared by Dr. Maeve Flynn, Inspectorate Ecologist dated 12/03/2025. The note concludes in relation to the impact on the Natura 2000 network as follows;

‘Overall, I am satisfied that based on the evidence provided in the First Party appeal that adverse effects on site integrity of SPA sites, part of the Natura 2000 network of sites can be excluded for the proposed development (alone and in combination with other plans and projects) based on the best available scientific information available in view of the conservation objectives of those sites and that no reasonable scientific doubt remains as to the absence of such effects.’

14.8.18.2. Impact on Peatland Habitat

The Inspectorate Ecologist's note raises the following concerns regarding character of the landscape that could potentially be restored in the future;

'I consider that the context of the site in the local environment in view of the DHLGH concerns of interrupting ecological connections with adjacent peatland sites has not been fully addressed and impacts on local bird population underestimated. The lack of identified significant effects doesn't mean that the proposed development is benign in terms of impacts. Development of the site will permanently alter the character of the landscape for bird species and excludes areas of peatland habitat that could potentially be restored in the future.'

I acknowledge that the National Parks and Wildlife Services (NPWS) owns 100ha of nearby wetlands at Sharragh and Abbyville, which they intend rewetting. I have considered the DHLGH and the Inspectorate Ecologist's concerns regarding the potential for the proposed development to interrupt ecological connections with adjacent peatland sites and future potential impacts. I also acknowledge the Inspectorate Ecologist's view that the proposed wind farm on the site will permanently alter the character of the landscape for bird species and that it will exclude areas of peatland habitat that could potentially be restored in the future.

However, I am not convinced that the subject lands will be rewetted in the future given their current ownership status. The subject lands proposed for the wind farm are in the main cutover bog in private ownership, which are the subject of continued turbary rights. Their future use for peat extraction would likely continue and will lead to further degradation of this bog and its habitat. For this reason, I am of the view that the proposed wind farm development would potentially provide the only realistic possibility of habitats improvements on the subject lands through the implementation of the Biodiversity Management and Enhancement Plan (BMEP), which is contained in Appendix 6 - 4 of the applicants EIAR. The BMEP commits to the following in relation to biodiversity enhancement and nature positive projects;

'Turbines 1, 3 and 5 are located on actively cut and drained cutover raised bog (PB4), as well as spoil and peat repository areas and internal access roads. There will be approx. 9.9ha loss of cutover bog habitat of Local Importance

(higher value) associated with this. In order to contribute towards the offset of this loss, the following commitments will be made as part of the proposed development:

- Commitment to providing a portion of the community benefit fund to biodiversity enhancement/nature positive projects within 10km of the proposed development.*
- Commitment to offering compensation to turbary rights holders who cease peat extraction on their plots. This initiative aims to prevent further degradation of the peatland habitat within the site and to promote the natural regeneration of peatland areas. From areas of cutover bog which will require excavation, sods and turves of the surface vegetation will be retained and will be emplaced on top of the peat repository areas in order to retain and translocate existing cutover community habitats. Reseeding of spoil repository areas will also be carried out as described in Section 2.2.'*

I reiterate that the proposed lands are in private ownership and have no ecological designation. Hence, I consider that the redevelopment of the site for a wind farm could have a positive impact on the peatland habitat if peat extraction were to cease and the habitats were able to naturally regenerate based on the effective management of the community benefit fund, as outlined above. In addition, I consider that a move away from peat extraction and burning fossil fuels through the introduction of renewable wind energy is necessary to address climate change, which if left to continue will have a detrimental impact on all of our native habitats and birdlife.

I have discussed Wetland Restoration and Loss of Peatland in Section 13.7.1 of this report where I concluded in my assessment that I am satisfied that the potential for impacts on groundwater flows and hydrochemistry outside of 50m of the development footprint, with implementation of the prescribed mitigation, is highly unlikely, and hence, there will be no potential for impact on rewetting opportunities for adjacent cutover bog habitats in the future.

To conclude, I consider that there is potential for residual moderate impact through loss of peatland habitat at the local scale, but I consider the mitigation proposed in relation to funding of biodiversity and commitment to offering compensation to turbary

rights holders to be a positive impact for the promotion and natural regeneration of the peatlands.

14.8.18.3. Impact on Local Whooper Swans

In relation to the potential impact on the Local Whooper Swan population, I note the Inspectorate Ecologist's conclusion that;

'.....the introduction of the windfarm at this location will result in local level impacts that may be underestimated particularly for the local population of Whooper Swans and in terms of the current and future ornithological ecological value of the site.'

I note to the Board that whooper swan are a wintering species in Ireland. Based on the extensive bird surveys carried out by the applicant, a whooper swan roosting site was identified approximately 400m from the Wind Farm Site boundary, with a maximum count of 27 birds recorded (County importance).

The EIAR details that the Wind Farm Site is of No Ecological Importance for this species during the breeding season (EIAR 7.4.1.9).

I note the Inspectors Ecologists concern regarding a possible underestimation of impacts on the local whooper Swans based on the size and range of whooper Swans, as follows;

'Whooper Swan was the most frequently observed bird species flying over/ in proximity to the windfarm. Flight activity is described as random across the windfarm site with no distinct regular flight paths to/from the known roost site (see figure 7.4.9.1).

However, the regularity of observations shows that the locally occurring flock evaluated as being of county importance (EIAR 7.4.19) passes regularly through this air space while moving around the wider area between foraging sites and the roost site. The fact that of 42 recorded observations during VP watches, only 16 flights were recorded over the windfarm could underestimate the overall impacts as 32 observations were within 500m with the remainder illustrated on figure 7.4.9.1 as being just beyond this distance. For a bird of the size and range of Whooper swans these distances are not significant, and I consider that the

impacts predicted for disturbance and barrier effects and collision risk for this locally occurring population may be underestimated.'

The EIAR notes the following in relation to the potential impacts during **Construction Phase** on Whooper Swans (7.5.2.5 EIAR);

*'**Disturbance** - Whooper swan was recorded flying over the Wind Farm Site on 16 occasions over the 2.5 years of bird surveys, with an additional 16 observations within 500m of the Wind Farm Site. There were no records of whooper swan utilising habitats within the Wind Farm Site. A roost site was identified approximately 400m from the Wind Farm Site (approximately 600m from the nearest construction works). The maximum flock size of birds at the roost site was 26. All roosting observations were recorded during the 2021/22 winter season. A disturbance buffer zone of between 200-600m from construction works is recommended for whooper swan (Goodship & Furness, 2022). By design, following the consideration of the project constraints, the identified roost site is located beyond the most conservative limit of this buffer zone from nearest proposed infrastructure and proposed construction works (600m). Therefore, based on the survey data, there is little potential for significant disturbance effects given that whooper swan were not dependent on the habitats located in close proximity to development infrastructure for foraging/roosting, and the recorded roost site is beyond the zone for potential disturbance effects. Significant effects are not predicted.'*

Based on the surveys, there were no records of whooper swans utilizing the wind farm site. I am satisfied that the disturbance buffer distance for construction works and the nearest proposed infrastructure of 600m proposed by the applicants to be of sufficient distance to ensure that no significant effects will occur on the nearby whooper swan roost.

The EIAR also details the following in relation to the potential impacts during **Operational Phase** on Whooper Swans (7.5.2.5 EIAR);

*'**Displacement and Barrier Effect** - There were no records of whooper swan utilising habitats within the Wind Farm Site. All records of this species within the Wind Farm Site comprised birds commuting. There were 16 observations of whooper swan within 500m of the proposed turbine layout. Flight activity was*

random over the Wind Farm Site, with no distinct commuting route to or from the roost identified. Whooper swan has been shown to be susceptible to displacement from habitats up to 300m from wind energy installations (McGuinness et al., 2015 & Percival, 2003). The recorded roosting location is located approximately 620m from the nearest proposed turbine location, and is therefore beyond any potential for displacement effects. Significant effects are not predicted.'

Collision Risk - *This species was recorded flying the potential collision risk zone during vantage point surveys. A "Random" collision risk analysis has been undertaken (full details provided in Appendix 7-5). The collision risk has been calculated at a rate of 0.326 collisions per year. Annual mortality of adult whooper swan has been calculated 20% per annum (Brazil, 2003). If 0.326 collisions were to occur per year, it would mean that the losses at the proposed wind farm would increase the annual mortality of the county population (i.e. 441 birds (please see Section 7.4.1 for further details)) by 0.37%. The predicted collision risk is therefore negligible as per Percival criteria (2003).'*

In relation to Displacement and Barrier Effect, I note that whooper swan are susceptible to displacement from habitats up to 300m from wind energy installations. I accept that the location of the local whooper swan roost which is located c. 620m from the nearest turbine is beyond any potential for displacement effects.

In relation to Collision Risk, the assessment in Chapter 7 of the applicants EIAR (Ornithology) and 'Random' collision risk analysis (Appendix 7 – 5) is based on extensive bird surveys carried out over three winter seasons, which is in full compliance with NatureScot guidance 2017.

Collision risk is calculated using a mathematical model to predict the number of birds that may be killed by collision with moving wind turbine rotor blades. The modelling method used in the collision risk calculation for the proposed wind farm is known as the Band Model. The EIAR notes that these are theoretical predictions, therefore results must be interpreted with a degree of caution. This corresponds with the concern of the Inspectors Ecologist who has concern that the collision risk may be underestimated.

The predicted collision risk for the whooper swan as outlined above is considered 'negligible' as per Percival criteria (2003). Negligible is defined as '*Very slight change from baseline condition. Change barely distinguishable approximating to the no change situation.*', with, <1% population/habitat lost.

The avoidance rates applied to the collision risk for whooper swan was 99.5%. The collision risk was calculated at a rate of 0.326 collisions per year. This amounts to one bird collision in 3 years in the worst-case scenario for the proposed wind farm.

I am of the opinion that even if the collision risk has been underestimated, which is the concern raised by the Inspectorate Ecologist, and the collision rate was three times higher than predicted, for example, this would amount to 1 bird collision per annum. This would still be considered negligible in the County level. (441 birds in the County / 100 = 4.41 birds) based on the Percival criteria (2003) of <1% population/habitat lost.

On balance, I consider that even if there is an underestimation of impacts in relation to disturbance, displacement and barrier effect and collision risk on the whooper swan, I do not believe that the impact would be significant on a County basis.

14.8.19. **Conclusion: Direct and Indirect Effects (Ornithology)**

I have considered all of the written submissions made in relation to Ornithology and the relevant contents of the file including the EIAR. I have also reviewed the Technical Ecological Note prepared by the Inspectorate Ecologist. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed development, the bird monitoring programme and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in relation to ornithology.

15.0 Land, Soils and Geology

15.1. Issues Raised

The following prescribed bodies responded to the applicants scoping consultation process which informed the EIAR (Table 8-1 and Appendix 2-1 of Applicants EIAR);

Geological Survey of Ireland (GSI) – GSI has concern that with the current plan, there may be potential impacts on the integrity of current CGSs (County Geological Site) envisaged by the proposed development should these sites not be assessed as constraints. Ideally, the sites should not be damaged, or integrity impacted or reduced in any manner, but if this is the situation appropriate mitigation should be implement to minimise or mitigate potential impacts.

Irish Fisheries Ireland (IFI) – IFI raised concern about soils, their structure and types around turbines, the access road and site development. In particular, the IFI are concerned about soil stability and impact that works on both the turbines and access roads may have either directly or by vibration on the stability of soils. IFI has serious concern regarding development on peat soils where there is excessive slope and or where the peat depth exceeds one meter. Soil movement and landslides should be assessed fully.

15.2. Context

EIAR Chapter 8 with Appendix 8-1 (Peat Stability Risk Assessment) and associated figures and tables, has assessed the potential impacts on the land, soils and geology associated with the Proposed Development. The EIAR provides a statement of authority and describes the legislation and guidance, the methodology used, the baseline conditions, the mitigation measures proposed and any residual impacts.

15.3. Baseline

The site measuring c.314ha is a low-lying area (surrounded by hills) of cutaway raised bog (basin peat), with pockets of intact bog towards the centre. The site also includes areas of agricultural grassland (southwest) and forestry on the bog particularly to the northeast, northwest and west. 4 no. of the 7 no. turbines are located on open cutaway

bog, 2 no. are located within a conifer plantation on bogland on the north of the site and 1 no. on grassland at the southwest of the site. The substation is in an area of mixed forestry. Turbary plots are extensive across the bog area. The ground is largely flat and sits at c. 60m OD. The ground level rises to 70m OD on the east and west of the site where small hills are present.

The grid connection route to Dallow 110kV substation measures a total distance of 13.7km within the carriageway of the existing public roads. Land use along the route is predominantly agricultural with a scattered pattern of rural houses and farmyards. Soils along the grid connection route are described as largely well drained mineral soils and cutover peat.

All proposed wind farm site infrastructure is mapped to be underlain by Cutover Raised Peat with the exception of a short section of proposed access road on the southwest of the wind farm which is mapped as limestone tills. (Details in Figure 8-1 of Applicants EIAR). Peat depths at the turbine locations ranged between 0.6 (T4) and 3.7m (T2) with an average peat depth of 2.3m. Overall the peat would be considered shallow for midlands basin peat. (Refer to Table 8-5 and Figures 8-2 and 8-3 of Applicants EIAR)

15 No. trial pit investigations and a gouge core (T2) was carried out in November 2022 and March 2023, which mainly encountered Clay or Silt dominated soils below the peat or topsoil layer. Marl (a soft light-coloured mud-like sediment) was encountered at T5. (Refer to Figure 8-1 of Applicants EIAR)

Geological Survey Ireland (GSI) bedrock mapping indicate 4 no. bedrock geological formations underlying the site. No karst features have been mapped by GSI on the site. Limestone bedrock was confirmed at 1.8m bgl at turbine T3 and 2.8m bgl at the construction compound as well as presumed bedrock at T2 at a depth of 3.7m bgl.

The overlying peat deposits at the wind farm site could be classified as “Low” importance as the peat is not designated in this area and is significantly degraded in most places due to peat cutting and coniferous forestry plantations drainage.

The GSI do not map the presence of any mineral localities, active quarries or pits along the grid connection route (www.gsi.ie). Crushed rock aggregate potential along the grid route is mapped predominantly as low to moderate, with some areas of high. Granular aggregate potential along the grid route is mapped as low to high.

The GSI map two geological heritage sites, which are described as active raised bogs within 3km of the wind farm site. Arragh More Bog (Site Code: TY004) is located immediately to the west of the site, while Kilcarren-Firville Bog (Site Code: TY037) is located 2km to the west of the site. Also noted is Ballyduff-Clonmona Mushroom rocks (Site Code: TY006), Ballyduff/Clonfinane Bog SAC (Site Code: 000641), Arragh More Bog (Derrybreen) SAC (Site Code: 002207), Kilcarren-Firville Bog SAC (Site Code: 00647) and Kilcormac Esker (Site Code: OY018). The EIAR notes that from a Land, Soils and Geology perspective, the Proposed Development will have no effect on these local designated sites. From a Land, Soils and Geology perspective, the Proposed Development will have no effect on these local designated sites and that Hydrological and hydrogeological effects on local designated sites are assessed in the Water Chapter of the applicants EIAR (Chapter 9).

15.3.1. Characteristics of the Proposed Development

The Proposed Development will involve removal of peat, subsoils and, in places, bedrock for access roads, internal access road networks, internal cable network, hardstanding emplacement, turbine foundations, substation, crane hardstands, construction compounds, drainage works and met mast installation. Rock for construction purposes will be sourced off-site from local quarries. Turbine bases in the range of 25m in diameter are proposed. The plan area of the material to be removed will be dictated by the enabling temporary works design, allowable excavation angle and the mean peat and overburden depths across each turbine location. The design of the turbine base foundations is subject to further confirmatory ground investigation.

The total volume of spoil (peat and non-peat superficial deposits) requiring placement/reinstatement on wind farm site is estimated at 99,700m³ (refer to Table 8-10 of Applicants EIAR). These volumes assume a gravity base foundation which is worst case in terms of excavation volumes. If piling is carried out, excavations volumes will be significantly less. A conservative reinstatement volume of 20% of the total peat excavation has been considered available for side casting and re-use across the site, while 10% of the total spoil volumes has been considered as available for re-use in the construction of safety berms across the site. The excess material will be

placed in 5 no. dedicated Peat Repository Areas (PRA) and 3 no. Spoil Repository Areas (SRA).

15.3.1.1. **Peat Stability Assessment**

A Peat Stability Risk Assessment (PSRA) which considers hydrological, hydrogeological and ecological factors is contained with Appendix 8-1 of the Applicants EIAR, prepared by Gavin and Doherty Geosolutions (GDG). GDG completed an analysis of peat sliding at all the main infrastructure locations across the site to determine the Factor of Safety (FoS) of the peat slopes. The entirety of the site is mapped by GIS as having low susceptibility to landslide due to the low slope angles encountered. This view was supported by the project team during field visits. Investigations included intrusive peat depth probing, trial pits and a stability analysis and risk assessment at 176 locations across the site. No peat failures/landslides are recorded on the proposed development site which suggests that site conditions do not pre-dispose themselves to failures/landslides. The calculated FoS for an undrained and a drained analysis are in excess of 1.30 for all proposed development locations assessed, indicating a low risk of peat instability. (Table 8-8 and Table 8-9 of Applicants EIAR)

In summary, the findings of the peat assessment showed that the proposed development site has an acceptable margin of safety, is suitable for the wind farm and is considered to be at low risk of peat failure. The findings include a series of control (mitigation) measures for construction work in peatlands to ensure that all works adhere to an acceptable standard of safety. The residual risk of a landslide occurring is determined to be negligible/none.

15.4. **Potential Effects**

Likely significant effects of the development, as identified in the EIAR are summarised in Table 15.1 below.

Table 15.1: Summary of Potential Effects (Land, Soils and Geology)	
Do Nothing	
	<ul style="list-style-type: none">• If the Wind Farm were not to proceed, peat cutting, and forestry operations will continue and may be extended to occupy a larger portion of the land. Forestry will be felled as forests reach maturity and then re-planting is likely.

Construction Impacts

- **Land and Land Use** - There will be a loss of commercial forestry (9.7ha, amounting 14.9% of the existing forestry coverage at the site which is c. 64.8ha.) and a loss of agricultural land (4.5ha, which is 6% of the existing agricultural land coverage at the site of c. 75ha.). On a local or regional scale, the loss is minimal and therefore the effects of actual agricultural land loss is imperceptible. There will be no effects on land adjoining the site. Turf cutting and agriculture will continue during construction and operation.
- **Peat and Subsoil Excavation** - Excavation and extraction of peat will be required for the construction phase which will result in a permanent removal and relocation of peat and subsoil at most excavation locations. The negative effect is the disturbance and relocation of c. 99,700m³ of peat, soil and subsoil during construction. There will be no net loss of peat or subsoil, it will just be relocated within the site.
- **Contamination of Soils by Leakages and Spillages of Hydrocarbons or Chemicals** - Accidental spillage during refuelling of construction plant with petroleum hydrocarbons is a pollution risk at the site, through seepage into peat, soil and subsoil and underlying bedrock pore space. Hydrocarbon has a high toxicity to humans and all flora and fauna. Large spills or leaks have the potential to result in significant effects on the geological and water environment.
- **Erosion of Exposed Subsoils and Peat During Construction of Infrastructure** - There is a high likelihood of erosion of peat and spoil during its excavation and during landscaping works through vehicle movement, surface water and wind action, which could affect the water environment, and therefore this aspect is further assessed in detail in Chapter 9.
- **Peat Instability and Failure** – Peat failure at the study area could result in death or injury to site personnel, damage to machinery, damage or loss of infrastructure, drainage disruption, site works damaged or unstable, contamination of watercourses and water supplies and degradation of the peat environment by relocation of peat and soil.

Operational Impacts

- During the operational phase, effects include potential minor accidental leaks or spills of fuel/oil from construction vehicles or plant used for maintenance of turbines, potential for spills/leaks of oils from the oil used for cooling the transformer in the substation causing contamination of soils and groundwater, granular material may be required to maintain access tracks during operation will place intermittent minor demand on local quarries. These potential impacts are not considered significant, due to their small-scale intermittent nature.

Decommissioning Impacts

- The Proposed Development has been designed with an operational life of 35 years, at the end of which it can be decommissioned. Impacts are considered to be a similar nature and duration to those arising from the construction phase but of reduced magnitude.

Cumulative Impacts

- There is no potential for significant cumulative effects in-combination with other local developments on the land, soils and geology environment as all effects are direct within the Proposed Development site. The construction of the grid connection works will only require relatively localised excavation works within the site boundary and therefore will not contribute to any significant cumulative effects.

15.5. Mitigation

15.5.1. Construction and Decommissioning Phase Mitigation Measures

Mitigation measures associated with Peat Stability are indicated in Section 8.5.2.5 of the EIAR and includes mitigation measures by design such as placement of turbines in areas with shallower peat, use of floating roads where appropriate, localisation of peat and subsoil removal, avoidance of sensitive habitats within the site and construction of settlement ponds. Measures to protect against contamination of soils be leakages and spillages of hydrocarbons or chemicals are listed in Section 8.5.2.3 and includes standard best practice for construction. Measures to protect against erosion of peat and soil include correct storage of sods, re-seeding and spreading/planting in peat storage areas and brash/bog mat usage to support vehicles on soft ground. A full Peat and Spoil Management Plan is included in Appendix 4-2 of the applicants EIAR.

Proposed mitigation measures for peat stability includes the preparation of a peat stability risk assessment, which provides a number of mitigation/control measures to reduce the potential risk of peat failure at each infrastructure location. Sections of access roads to the nearest infrastructure element will be subject to the same mitigation/control measures that apply to the nearest infrastructure element. The required mitigation/control measures are explained in Section 8.5.2.5 and Appendix 8-1 of the EIAR.

Mitigation measures applied during decommissioning activities will be similar to those applied during construction phase as outlined above. Some impacts will be avoided by leaving elements of the proposed development in place, for example The substation will be retained by EirGrid. The turbine bases will be rehabilitated by covering with local topsoil/peat. Internal roads will remain as amenity pathways and forestry access roads.

15.5.2. Operational Phase Mitigation Measures

Measures include the use of aggregate from authorised quarries for use in road and hardstand maintenance and the substation transformer will be in a concrete bund capable of holding 110% of the stored oil volume. Turbine transformers are located within the turbines, so any leaks would be contained within the turbine. These

measures will eliminate potential risks to ground/peat/soils and subsoils, and groundwater and surface water quality.

15.6. Residual Effects

15.6.1. Construction and Decommissioning Phase

Land Take - Due to the small footprint of the Proposed Development on a local scale the residual effect is considered Negative, direct, slight, likely, permanent impact on land and landuse. The land and landuse along the underground electrical cabling route will not change.

Peat and Subsoil Excavation - The granular soil and peat at the site can be classified as of “Low” importance and the bedrock of “Medium” importance. The overall site area is approximately 1.9% of the overall EIAR Site Boundary area of 314ha. The residual effect following mitigation will be negative, slight, direct, likely, permanent effect on peat, soil, subsoils and bedrock due to disturbance and relocation within the site.

Contamination by Soils by Leakages and Spillages of Hydrocarbons or Chemicals – The residual effect following effective measures to mitigate the risk of spills and leaks will be - Negative, imperceptible, direct, short-term, unlikely effect on peat, soil, subsoils and bedrock.

Erosion of Exposed Subsoils and Peat During Construction of Infrastructure – Following implementation of mitigation measures the residual effects will be Negative, slight, direct, short-term, likely effect on peat, soils and subsoils by erosion and wind action. No significant residual impacts are expected if works are carried out in accordance with the Peat and Spoil Management Plan.

Peat Instability and Failure - A detailed Geotechnical and Peat Stability Assessment (GDG, 2023) (Appendix 8-1) has been completed for the development proposal. The findings of that assessment have demonstrated that there is a low risk of peat failure at the site as a result of the proposed development. With the implementation of the control measures outlined in Section 8.5.2.5, the residual effect is considered negative, imperceptible, direct, permanent, unlikely effect on peat and subsoils. No significant effects on peat, soils and subsoils are expected to occur.

No significant effects on the land, soils and geological environment will occur during the decommissioning stage.

No mitigation measures are considered necessary to address cumulative impacts, given the lack of potential impacts identified.

15.6.2. Operational Phase

In the operational phase no significant impacts are anticipated, however the EIAR includes mitigation measures for the management of leakages and spillages. These comprise standard good practice measures as outlined above. Potential health effects arise mainly through the potential for soil and ground contamination. The proposed wind farm is not a recognised source of pollution (e.g. it's not a waste management site, or a chemical plant), and so the potential for effects during the operational phase is very low.

15.6.3. Residual Impacts Conclusion

Following implementation of the mitigation measures, no significant residual impacts on the land and soils environment are anticipated as a result of the construction, operation and decommissioning of the proposed development.

15.7. The Assessment: Direct and Indirect Effects

15.7.1.1. Introduction

I have examined, analysed and evaluated Chapter 8 of the EIAR, the associated documentation, and submissions on file regarding the proposed development and the potential effects of the proposed project on land, soils and geology.

During the construction phase, potential impacts include land take with the loss of commercial forestry and agricultural land, the disturbance and relocation of c. 99,700m³ of peat, soil and subsoil, potential spills and leakages from fuel storage and oils, erosion of exposed subsoils and peat and peat instability and failure. During the operational phase, potential impacts include spillages and leaks of fuels and hydrocarbons which could contaminate soils and groundwater and an indirect impact is that a small amount of granular material may be required to maintain access tracks during operation which will place intermittent minor demand on local quarries.

15.7.1.2. **Land Take**

The loss of agricultural and forestry land resulting from the proposed wind farm is small in comparison to the size of the overall site, with the proposed development footprint being only 1.9% of the overall site boundary. Land take equates to 14.9% of the existing forestry coverage and 6% of existing land coverage. I consider that no significant effects will likely occur in relation to land take for the proposed development.

15.7.1.3. **Peat and Subsoil Excavation**

Excavation of peat, subsoil and bedrock is required for the installation of roads, foundations for the turbines and all associated wind farm infrastructure. The negative effect associated with this excavation is the disturbance and relocation of c. 99,700m³ of peat, soil and subsoil during construction. The granular soil and peat at the site has been described in the EIAR as of low importance and the bedrock of medium importance. The EIAR proposes to mitigate potential impacts in relation to peat and subsoil excavation through mitigation by design for example by positioning of turbines and associated infrastructure in areas with shallower peat, use of floating roads where appropriate to reduce peat extraction and re-use of all excess material to form pond bunds and surrounding landscape. The EIAR notes that there will be no net loss of peat or subsoil and that it will be just relocated within the site.

I am satisfied that the mitigation measures proposed in the EIAR will minimise the amount of excavations and disturbance of peat, subsoil and bedrock to be removed for the proposed development and that the excavations will result in no net loss of material and that no significant impacts are likely.

15.7.1.4. **Contamination of Soils by Leakages and Spillages of Hydrocarbons**

Large leakages and spillages of contaminants has the potential to result in significant negatives effects on the geological and water environment including groundwater. For all phases of development, potential impacts relating to accidental spills and leakages to soil from fuel storage areas and oil from the maintenance of the turbine transformers, would be managed by EIAR mitigation measures described in the EIAR.

I am satisfied that a suitably detailed and comprehensive range of measures has been proposed to ensure that no contamination impacts or contamination of groundwater will arise as a result of the proposed development.

15.7.1.5. Erosion of Exposed Subsoils and Peat during Construction

The nature of the proposed construction works and associated heavy machinery and materials gives rise to the potential for soil erosion of peat and spoil during excavation and during landscaping works. Peat soils and spoil can be eroded by vehicle movements, wind action and by water movement and this could impact the water environment.

A Peat and Spoil Management Plan (P&SMP) has been prepared in Appendix 4-2 of the applicants EIAR, which details management of peat during construction works and long-term storage thereafter. Peat removed during the excavation works will be deposited in the proposed spoil and peat repositories. The P&SMP notes that the plan will be further developed and implemented subsequent to planning consent, following detailed design and further confirmatory site investigations. This plan will form part of the final CEMP for the development.

I consider that if excavations are carried out in accordance with the P&SMP, the mitigation measures proposed will be adequate to prevent erosion of subsoils and peat and will prevent negative impacts on the water environment.

15.7.1.6. Peat Instability and Failure

Having reviewed the information submitted by the applicant including the PSRA in Appendix 8 - 1 which analysed 176 no. locations across the site, the geotechnical investigations and having inspected the site, it appears that the peat is shallow on the site. The stability analysis in the applicants EIAR aims to determine the stability, i.e., the Factor of Safety (FoS) of the peat slopes on the site. The FoS provides a direct measure of the degree of stability of a peat slope. An acceptable FoS for slopes is 1.3 or greater. The report has indicated that the site has an acceptable margin of safety and low risk of peat failure and that it is suitable for a wind farm. I am satisfied that the risk of peat failure as a result of the proposed wind farm has been appropriately assessed in line with PLHRAG (Scottish Government, 2017) and I am satisfied that the risk of peat failure is low.

15.8. **Conclusion: Direct and Indirect Effects (Land, Soils and Geology)**

I consider the applicants assessment has identified the relevant issues in relation to Land, Soils and Geology. With the implementation of Mitigation Measures outlined in the EIAR, I consider that the proposed development will not give rise to significant adverse impacts to Land, Soils and Geology at any phase of the development.

16.0 **Hydrology and Hydrogeology**

16.1. **Issues Raised**

The following prescribed bodies responded to the applicants scoping consultation process which informed the EIAR (Table 9-1 and Appendix 2-1 of Applicants EIAR);

Irish Fisheries Ireland (IFI) – IFI raised concern about soils, their structure and types around turbines, the access road and site development. In particular, the IFI are concerned about soil stability and impact that works on both the turbines and access roads may have either directly or by vibration on the stability of soils. IFI has serious concern regarding development on peat soils where there is excessive slope and or where the peat depth exceeds one meter. Soil movement and landslides should be assessed fully.

Geological Survey of Ireland (GSI) – Geoheritage - GSI notes that there is a County Geological Site (CGS) in the vicinity of the proposed wind farm, namely Arragh More Bog, Tipperary (GR 197387, 201288). GSI states that the CGS should not be damaged or integrity impacted or reduced in any manner due to the proposed development. If this is unavoidable, then appropriate mitigation should be used to minimise potential impacts.

Groundwater – GIS notes that there is groundwater drinking water abstraction within the site for which there is a source protection area: Abbeyville Group Water Scheme (GWS). To protect ground water and drinking water supplies it is necessary to prevent ingress of road runoff to the aquifer. Appropriate design and mitigation measures are required to protect water supplies from contamination / dewatering as a result of the development.

The following issues were raised in relation to hydrology and hydrogeology;

- Impact on hydrogeology including a threat to the integrity of the local NPWS managed wetlands.
- The DAU raised the concern that drained or damaged peatland emit large amounts of greenhouse gases to the atmosphere. If the development proceeds it will cause the direct destruction of significant volumes of peat and cause direct release of green-house gas but less directly it is likely to lead to further drainage of adjoining peat and be a barrier to future rewetting of the site that would stop carbon loss to the atmosphere and simultaneously create important habitat.

16.2. Context

EIAR Chapter 9 with Appendix 9-1 (Flood Risk Assessment Report), 9-2 (Surface Water Quality Laboratory Reports and 9-3 (Water Framework Directive Assessment Report), has assessed the potential impacts on hydrology and hydrogeology associated with the Proposed Development. The EIAR provides a statement of authority and describes the legislation and guidance, the methodology used, the receiving environment, the characteristics of the proposed development and the likely significant effects and associated mitigation measures proposed. Monitoring and site investigations hydrological walkover survey and detailed drainage mapping and baseline monitoring/sampling, Geotechnical ground investigations and a Peat Stability Risk Assessment Report. 163 no peat probes, 10 no. gouge cores sample points and 15 no. trail pits, field hydrochemistry measurements, surface water flow measurements, and 2 no. rounds of surface water samples.

16.3. Baseline

Regionally, the site is located in the Lower River Shannon surface water catchment within Hydrometric Areas 25A and 25B of the Shannon International River Basin District. Locally, the site is located entirely within the LittleBrosna_SC_020 sub-catchment (Little Brosna River catchment). The Little Brosna River flows to the east of the site at a downstream distance of c. 5.5km. The Little Brosna River flows into the Shannon River c. 22km downstream of the wind farm site. The grid connection crosses over the Little Brosna River northwest of Birr Town. The site drains directly

into the Little Brosna River via 3 main river waterbodies including The Fadden Beg Stream (EPA Code:25F29) on the north of the site, the Holy Well Clohaskin Stream (EPA Code:25F29) and Fadden More Stream. The surface waters in the vicinity and downstream of the Proposed Development site are Sensitive to pollution due to the presence of downstream designated sites such as River Shannon Callows SAC and pNHA (Site Code: 000216) and Middle Shannon Callows SPA (Site Code: 004096).

The topography of the wind farm site is low-lying (surrounded by small hills) where the ground is largely flat and sits at c. 60m OD and rises to 70m OD on the east and west of the site where small hills are present. This forms a divide running through the centre of the site which creates gentle falls to the north and south.

The proposed total permanent development footprint is c. 2% (c. 6.5ha) of the EIAR Site Boundary area of 314ha.

The Regionally Important Aquifer – Karstified (diffuse) which underlies the majority of the site can be classed as Very Sensitive to pollution, while the Locally Important Aquifers which underlie the remainder of the site can be classed as being Sensitive to pollution. However, due to the presence of peat and low permeability subsoils across the wind farm site, the area has low rates of groundwater recharge.

Groundwater flows in a southeasterly direction towards the Little Brosna River. A shallow perched ground water table exists in the peat and is largely isolated from the underlying regional groundwater system (which occurs in the underlying till and bedrock). The GSI describe groundwater vulnerability as a term used to represent the natural ground characteristics that determine the ease with which groundwater may be contaminated by human activities. The EIAR concludes that based on the site investigation data groundwater vulnerability across most of the wind farm site is likely to be “Moderate” to High”. Groundwater vulnerability along the grid connection route ranges from “Moderate” to “Extreme X” with much of the grid route mapped in areas of “Moderate” and “High” vulnerability. The GSI map Extreme groundwater vulnerabilities along the N52 at Carrig and in the townland of Killeen to the west of Birr. There are no groundwater quality data for the wind farm site and groundwater sampling would not be undertaken for this type of development in terms of EIAR reporting, as groundwater quality impacts are extremely unlikely. There are also no proposed discharges to ground. The WFD status for the local groundwater bodies

underlying the wind farm site in terms of water quality is Good and therefore this is assumed to be the baseline condition for groundwater underlying the wind farm site.

16.4. Flood Risk Assessment

Flooding can result in downstream Major Accidents and Disasters (MADs). However, due to the small scale of the development footprint, the naturally high runoff rates and with the implementation of the proposed mitigation measures, the increased flood risk associated with the proposed wind farm is negligible/none. Flooding of property can cause inundation with contaminated flood water. Flood waters can carry waterborne disease and contamination/effluent. Exposure to such flood waters can cause temporary health issues.

A Flood Risk Assessment is provided in Appendix 9-1. The majority of the site is mapped in Flood Zone C (Low Risk). The National Indicative Fluvial Flood Map show that a short section of proposed access road close to the wind farm site entrance on the south of the site, is mapped inside a 100-year and 1000-year flood zone. The proposed wind farm access roads can be categorised as “Less Vulnerable Development” and a Justification Test is carried out for this element of the proposed infrastructure. The proposed development will have no impact on flood risk elsewhere in the locality and this is largely due to the avoidance of fluvial flood zones for all sensitive aspects of the proposed infrastructure. On-site (construction and operation phase) drainage control measures will ensure no downstream increase in local flood risk. The flood assessment has shown that there will be no residual risks to the proposed development or the local area.

16.5. Water Framework Directive

A Water Framework Compliance Assessment is included in Appendix 9-3 of the EIAR, which assesses Surface Water Bodies (SWB's) and Ground Water Bodies (GWBs) hydraulically inked to the site. No abstraction of groundwater or alteration of drainage patterns is proposed. The EIAR notes that the River Basin Management Plan (2022 - 2027) objectives, have been integrated into the design of the wind farm and mitigation measures outlined in Section 9.5 of the EIAR will maintain water quality.

The wind farm site is located in the Little Brosna_040 river sub-basin which has been identified as being under significant pressure from agriculture, hydromorphology and peat extraction activities. Overall, the assessment concludes that *'...the Proposed Development will not impact upon any surface water or groundwater body as it will not cause a deterioration of the status of the body and/or it will not jeopardise the attainment of good status.'*

16.6. Peat Stability Risk Assessment

The main risk of Major Accidents and Disasters (MADs) at peatland sites is related to peat stability. A peat stability risk assessment is included in Appendix 8-1 of the EIAR. It concludes that due to the flat topography of the wind farm site, and with the implementation of the proposed mitigation measures, that the risk of a peat failure at the Proposed Development Site is negligible/none.

16.7. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 16.1 as follows;

Table 16.1: Summary of Potential Effects (Hydrology and Hydrogeology)	
Do Nothing	
<ul style="list-style-type: none"> • If the wind farm were not to proceed, forestry, peat cutting and agricultural activities will continue at the site. Forestry will be felled and re-planting is likely to occur. Surface water drainage carried out in areas of forestry will continue to function and may be extended in some areas. • If the Proposed Development were not to proceed, the opportunity to generate renewable energy and electrical supply to the national grid would be lost, as would the opportunity to further contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. 	
Construction Impacts	
<ul style="list-style-type: none"> • Sedimentation of Surface Waters - Potential impacts identified include sedimentation of surface water features from construction works, groundwater seepages in trench excavations which will create additional volumes of water to be treated by the runoff management system to reduce suspended sediments. • Clear felling of 9.7ha of coniferous plantation is proposed which will be subject to a Felling Licence from the Forest Service. Tree felling can result in the release of suspended sediments to water courses and nutrient release as described in Section 9.5.2.3 of the EIAR. • Groundwater Levels During Excavation Works - Dewatering of deeper excavations (i.e. turbine bases) as well as turbine base piling have the potential to impact on local groundwater levels and flows. However, the effects are likely to be localised due to the relatively shallow excavation depths and the local hydrogeological regime with low to moderate permeability peat and glacial tills 	

overlying the limestone bedrock. Effects on groundwater levels will only be for a temporary basis during the construction work. Water level impacts will be temporary and are unlikely to be significant beyond 50m from any excavation. Regarding works along the grid route, no groundwater level effects will occur.

- **Potential Release of Hydrocarbons** - Accidental spillage during refuelling of construction plant with petroleum hydrocarbons can cause significant pollution risk to groundwater, surface water and associated aquatic ecosystems, and to terrestrial ecology. In addition, the accumulation of small spills of fuels and lubricants during routine plant use can also be a pollution risk.
- **Groundwater and Surface Water Contamination from Wastewater Disposal** - Release of effluent from on-site temporary wastewater treatment systems has the potential to impact on groundwater and surface water quality if site conditions are not suitable for an on-site percolation unit. Impacts on surface water quality could affect fish stocks and aquatic habitats.
- **Release of Cement-Based Products** - Entry of cement-based products into the site drainage system, into surface water runoff, and hence to surface watercourses or directly into watercourses represents a risk to aquatic species and habitats.
- **Potential Effects Associated with Piled Foundations** - Due to the possibility of deep peat and glacial tills at some of the proposed turbine's locations, a range of foundation scenarios are proposed. This could cause the creation of preferential pathways, through a low permeability subsurface layer (an aquitard such as lacustrine clay), to allow downward flow into the underlying aquifer or the creation of preferential pathways, through a low permeability subsurface layer (an aquitard such as lacustrine clay), to allow upward migration alkaline groundwater to the acidic bog surface, thus potentially altering local hydrochemistry and therefore vegetation at the bog surface and, the creation of a blockage to regional groundwater flow within the underlying aquifer due to placement of pile clusters.
- **Morphological Changes to Surface Water Courses & Drainage Patterns within Wind Farm Site** - Diversion, culverting and bridge crossing of surface watercourses can result in morphological changes, changes to drainage patterns and alteration of aquatic habitats. Construction of structures over water courses has the potential to significantly interfere with water quality and flows during the construction phase. There are 2 no. proposed watercourse crossing locations within the wind farm site.
- **Morphological Changes and Surface Water Quality Effects Along Grid Connection Route** - The grid connection route is located in the catchment of the Little Brosna River. There are a total of 4 no. crossings proposed over EPA mapped watercourses and 3 no. drain crossings along the grid route which are existing bridge and culvert crossing. There is potential for runoff of sediments into water courses.
- **Potential Effects on Local Groundwater Well Supplies** - The groundwater flow in the mineral soil deposits beneath the peat at the wind farm site will discharge into the local surface water drainage network, i.e. the existing bog drainage network which discharges to tributaries of the Little Brosna River. Groundwater flow is expected to be to the southeast and discharge into the Little Brosna River and its tributaries. An impact assessment for local wells was undertaken, which was completed in accordance with "Wind farms and groundwater impacts - A guide to EIA and Planning considerations" (DoE/NIEA, 2015). The biggest risk to groundwater wells will be from where deep excavations are required such as the turbine bases. Construction of the Proposed Development site access road, underground cable route trench between the turbines and the substation and the construction of substation and the grid connection will not have the potential to affect local wells due to the shallow nature of the works. There are no registered abstraction groundwater supplies down-gradient of the wind farm site that can be impacted by the Proposed Development. The GSI do not map any wells with a locational accuracy of $\leq 100\text{m}$ in the vicinity of the wind farm site. There are a

number of dwellings situated along local roads to the southeast which are potentially down-gradient of turbine locations. Due to the shallow nature of the excavation works at the proposed substation location, no effects on groundwater levels or local wells will occur. All turbines are located c. >740m from nearest dwellings. This is a sufficient distance to ensure that there will be no effects on these local wells.

- **Use of Siltbuster and Impacts on Downstream Surface Water Quality** - Siltbusters are regularly used to remove suspended sediments on construction sites by means of chemical dosing and sedimentation (i.e. use of coagulants and flocculants to accelerate the settlement process). The benefits of using enhanced settlement systems on downstream surface water quality are widely known, and are a positive effect. However, potential overdosing with chemical agents means there is a perceived risk of chemical carryover in post treatment water which could result in negative effects on downstream water quality.
- **Potential Effects on Designated Sites** - The wind farm site is not located within any designated conservation site.
- **Adjacent Designated Sites** - The Proposed Development has no potential to affect the status of the Arragh More Bog NHA, Arragh More (Derrybreen) Bog SAC and Ballyduff/Clonfinane Bog SAC and pNHA. These designated sites are located up-gradient of all proposed wind farm infrastructure and proposed works areas. Surface and groundwater flows within the wind farm site are to the southeast, towards the Little Brosna River. Therefore, there is no potential for water quality (surface and groundwater) effects to occur to the Arragh More Bog NHA, Arragh More (Derrybreen) Bog SAC and Ballyduff/Clonfinane Bog SAC and pNHA.
- **Groundwater Effects** - In terms of groundwater levels effects during earthworks, the designated sites are located a sufficient distance from proposed works areas as detailed below: Arragh More Bog NHA is located ~200m from the closest works area which is turbine T5; Arragh More Bog SAC is located ~1km from T5. Ballyduff/Clonfinane Bog SAC/pNHA is located ~340m from turbine T6. As stated in Section 9.5.2.4, any potential water level effects associated with temporary dewatering works are unlikely to be significant beyond 50m from any excavation due to the dominance of moderate to low permeability glacial till subsoils and lacustrine deposits below the wind farm site. Therefore, the distances between the proposed works areas and the designated sites are sufficient to ensure that the Proposed Development has no potential to effect groundwater levels within these adjacent designated sites.
- **Downstream Designated Sites** - Other designated sites located downstream of the Proposed Development include: Dovegrove Callows SPA and pNHA which is located c. 6.7km northeast of the wind farm along the Little Brosna River and downstream of the wind farm site/grid route; The Little Brosna Callows SPA and NHA, situated c. 3.3km north of the wind farm site on the Little Brosna River. This designated site is also downstream of the grid route; The River Shannon Callows SAC, located c. 8.5km west and downstream of the wind farm site via the Little Brosna River; The Middle Shannon Callows SPA, located c. 8.5km west of the wind farm site and is downstream of the Little Brosna River. The surface water connections from the wind farm site and the grid connection could transfer poor quality surface water that may affect the conservation objectives of these designated sites. Due to physical and hydrological and hydrogeological separation all other designated sites have no potential to be affected by the Proposed Development.
- **Potential Effects on Surface Water and Groundwater WFD Status** - Changes in surface water or groundwater flow regimes and water quality has the potential to impact on the objectives and status of the associated GWB and SWBs.

Operational Impacts

- **Progressive Replacement of Natural Surface with Lower Permeability Surfaces** – Progressive replace of the peat or vegetate surface with impermeable

surfaces could potentially result in an increase in the proportion of surface water runoff reaching the surface water drainage network. This could potentially increase runoff from the site and increase flood risk downstream of the wind farm.

- **Runoff Resulting in Contamination of Surface Waters** - Some minor maintenance works could, if unmitigated, result in the release of suspended solids and hydrocarbons to surface water which could affect the water quality and fish stocks of downstream water bodies.
- **Effects on WFD Objectives** - There is no direct discharge from the Proposed Development to downstream receiving waters.

Decommissioning Impacts

- Upon decommissioning, the wind turbines the wind turbines and meteorological masts will be dismantled and all above ground components would be removed off-site for recycling. A decommissioning plan is included as Appendix 4-5 of the EIAR to be agreed with the local authority.
- The potential effects associated with decommissioning of the Proposed Development will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works. Turbine and mast foundations will remain and will be covered with earth and allowed to revegetate. Site roads will continue to be used as amenity pathways and will therefore not be removed. The underground cables will be cut and tied and the ducting will be left in place.

Cumulative Impacts

- The main likelihood of cumulative effects is assessed to be hydrological (surface water quality) rather than hydrogeological (groundwater). Due to the local hydrogeological setting (i.e. low permeability peat and glacial tills) and the near surface nature of construction activities, cumulative effects with regard groundwater quality or quantity arising from the Proposed Development are assessed as not likely.
- The primary potential for cumulative effects will occur during the construction phase as this is when earthworks and excavations will be undertaken on site. Operational phase cumulative impacts will be significantly reduced as there will be no exposed excavations, there will be no sources of sediment to reach watercourses, there will be no use of cementitious materials and fuels/oil will be kept to a minimum at the site. During the decommissioning phase, the potential cumulative effects are similar to the construction phase, but to a lesser degree with less ground disturbance.
- Downstream of the Little Brosna River catchment (i.e. the River Shannon itself) no cumulative hydrological effects are likely due to large upstream catchment area of the River Shannon (i.e. c. 8,124km²) and the very high dilution effects afforded by such a large regional catchment and subsequent large surface water flows. In comparison, the Little Brosna River catchment (c. 588km²) only accounts for 7% of the River Shannon catchment upstream of the Little Brosna River confluence. The potential for dilution effects is very high.
- **Agriculture** - Agriculture is the largest pressure on water quality in Ireland and has been listed as a significant pressure on the Little Brosna_040 SWB in the vicinity of the wind farm site. The mitigation measures detailed in Section 9.5 for the construction, operation and decommissioning phases will ensure the protection of downstream surface water quality, and hence, will not be a significant cumulative effect with agriculture.
- **Forestry** - Cumulative Impacts are not expected to be significant associated with commercial forestry activities,
- **Turbary Peat Cutting Activities** - The Little Brosna_040 SWB is under significant pressure from peat extraction activities. Private peat cutting on turbary plots will likely continue in the vicinity of the wind farm site and in the wider cumulative area.

The mitigation measures detailed for all phases of the development will ensure the protection of downstream surface water quality and no significant impacts expected.

- **Other Wind Farms** - A potential cumulative total of 15 no. turbines (7 no. from the Carrig Renewable Energy Wind Farm site and 8 no. turbines from the other wind farms (i.e. Carrig WF – 3 no. and Skehanagh WF – 5 no.) has been identified in the study area, all of which have been subject to EIAR. With the implementation of proposed mitigation measures, there will be no cumulative effects associated with any phase of the development with other wind farms.

16.8. Mitigation

16.8.1. Construction and Decommissioning Phase Mitigation Measures

A number of mitigation measures outlined in the EIAR will be implemented to prevent sedimentation of surface waters including the use of interceptor drains and silt traps, carrying out of works during periods of low rainfall and monitoring of all installed drainage systems. A 50m buffer zone to main watercourses is proposed except at the 3 no. watercourse crossing locations. Mitigation measures include pre-commencement temporary drainage works to prevent siltation of watercourses (Details in Appendix 4 - 4 – Surface Water Management Plan). It is proposed that excavated soil will be used for landscaping where required and excess material will be placed in 5 no. dedicated Peat Repository Areas (PSA) and 3 no. Spoil Repository Areas (SPA). During the initial construction of roads, silt fences, straw bales and biodegradable geogrids will be used to control surface water runoff from works areas. Where applicable, the vegetative top-soil layer of the spoil management areas will be rolled back to facilitate placement of excavated spoil up to a maximum height of 1.0 metres, following which the vegetative-top soils layer will be reinstated. Where reinstatement is not possible, spoil and peat management areas will be sealed with a digger bucket and seeded as soon possible to reduce sediment entrainment in runoff.

Mitigation for the management of excavation seepage and subsequent treatment prior to discharge is detailed in Section 9.5.2.2 of the EIAR. Mitigation measures for the protection of groundwater supplies are outlined in Section 9.5.4.2 – 9.5.2.8.

All tree felling operations will confirm with best practice Forest Service regulations and will include mitigation measures described in Section 9.5.2.3 of the EIAR. All felling operations are located outside the 50m watercourse buffer zone.

Mitigation measures are proposed in the EIAR to prevent the release of hydrocarbons and cement to ground water and watercourse receptors.

During construction, a self-contained port-a-loo will be used at the construction compound. Water supply for the site compound will be brought to site and removed afterwards. No wastewater will be discharged to the site.

Potential effects associated with piled foundations will be mitigated at all construction work areas as described in Section 9.5.2.2, 9.5.2.5 and 9.5.2.7 of the EIAR to prevent upward/downward movement of surface water/groundwater. This means that a long-term pathway between the upper peat/bog water and the lower bedrock aquifer will not be sustained.

To protect against morphological changes to surface water courses and drainage patterns mitigation measures include bottomless or clear span culverts and the existing banks will remain undisturbed, no in-stream excavation works, cable will pass over or below the culvert within the access road, OPW or IFI guidance/mitigation measures is incorporated into design, use of double silt row fences if required. Along the grid connection route silt traps/dams will be used, culverts, manholes and other drainage inlets will be blocked and a double silt fence perimeter will be placed along the road verge. A suite of mitigation measures outlined in Section 9.5.2.10 of the EIAR will be employed to protect water courses during the construction of the grid connection.

Mitigation measures employed to prevent overdosing and potential chemical carryover from siltbuster systems are outlined in Section 5.2.12 of the EIAR and include an electronic in-line dosing system and continued monitoring.

Downstream Designated Sites will be protected by the implementation of mitigation measures to ensure the protection of surface water quality and groundwater quality outlined in Section 9.5.2.1 – 9.5.2.8 of the EIAR.

16.8.2. Operational Phase Mitigation Measures

Operational Phase mitigation in relation to Progressive replacement of natural surface with lower permeability surfaces include a number of proposed mitigation measures by design including installation of interceptor drains, swales/roadside drains, transverse grips, check dams and settlement ponds. The proposed integration of the wind farm drainage with the existing forestry and bog drainage is a key component of the proposed drainage management within the development. All wind farm drainage

water captured within individual site sub-catchments will be attenuated and released within the same sub-catchments that it was captured.

Mitigation measures for sediment control are outlined in Section 9.5.2.1 and mitigation for control of hydrocarbons during maintenance works are outlined in Section 9.5.2.5 of the EIAR. Mitigation for the protection of surface water during the operational phase of the Proposed Development will ensure the qualitative status of the receiving SWBs will not be altered by the Proposed Development. Similarly, there is no direct discharge to groundwaters associated with the Proposed Development. Mitigation for the protection of groundwater during the operational phase will ensure that the qualitative status of the receiving GWB will not be altered by the Proposed Development.

16.9. Residual Effects

For the Construction Phase following mitigation measures set out in Section 9.5.2.1 – 9.5.2 of the EIAR, the residual effect will be a negative, indirect, imperceptible, temporary, unlikely effect on the water environment within and downstream of the Proposed Development site (Fadden Beg and Holy Well Clohaskin Streams and the Little Brosna River).

Groundwater levels during excavation works - Due to large separation distances between proposed works and water wells, local streams and rivers, and the relatively shallow nature of the proposed works, and also the prevailing geology of the proposed site the potential for water level drawdown impacts at receptor locations are considered negligible. The residual effect will be imperceptible, direct, temporary, unlikely effects on local groundwater levels.

Potential Release of Hydrocarbons and Cement-based products - The residual effect will be a negative, indirect, imperceptible, short term, unlikely effect on surface water quality and groundwater quality.

Morphological Changes to Surface Water Courses & Drainage Patterns within Wind Farm Site and Along the Grid Connection - With the application of the best practice mitigation and proven and effective measures to mitigate the risk of releases of sediment, the residual effect will be a negative, imperceptible, direct, long term, unlikely effect on stream flows, stream morphology and surface water quality.

Siltbuster systems - With the implementation of the dosing technology and the continual monitoring of pre and post treatment water, the appropriate volume of chemical agent can be added to ensure that chemical carryover concentrations are present only in tiny trace amounts which will not cause any effects to receiving waters or associated aquatic ecology. The residual effect will be negative, imperceptible, indirect, temporary, unlikely effect on downstream water quality.

Designated Sites - Construction activities pose a threat to designated sites hydrologically linked with the proposed development. Proven and effective measures to mitigate the risk of surface and groundwater contamination have been proposed which will break the pathway between the potential source and the downstream receptors. These mitigation measures will ensure that surface water runoff will be equivalent to baseline conditions and will therefore have no effect on downstream water quality. No significant effects on adjacent or hydrologically connected designated sites will occur.

Water Framework Directive – For all phases of development, there is no direct discharge from the site to downstream receiving surface waters or the underlying GWB. Mitigation for the protection of surface and groundwater during the construction phase will ensure receiving waters will not be altered by the Proposed Development. There will be no change in GWB or SWB status in the underlying GWB or downstream SWBs resulting from the Proposed Development. There will be no change in quantitative (volume) or qualitative (chemical) status, and the underlying GWB and downstream SWBs are protected from any potential deterioration. There will be no residual effect on Groundwater Bodies. There will be no residual effect on Surface Water Bodies.

Operational Impacts – Following implementation of mitigation measures outlined in Section 9.5.2.1 of the EIAR relating to control of sedimentation and Section 9.5.2.5 of the EIAR in relation to control of hydrocarbons, there will be no residual effect on surface water quality.

16.9.1. Residual Impacts Conclusion

Based on mitigation measures proposed during all phases of development, no significant effects on the surface water quality will occur.

16.10. The Assessment: Direct and Indirect Effects

I have examined, analysed and evaluated Chapter 9 of the EIAR, and all of the associated documentation and submissions on file in relation to hydrology and hydrogeology. The main impacts identified prior to mitigation occur during the construction phase which include sedimentation of surface water and ground water from construction works and clear felling of coniferous plantation and the temporary impact on localised groundwater levels during excavation works. I am satisfied that during operational phase following implementation of mitigation measures outlined in Section 9.5.2.1 of the EIAR relating to control of sedimentation and Section 9.5.2.5 of the EIAR in relation to control of hydrocarbons, there will be no residual effect on surface water quality. I consider the applicants assessment has identified the relevant issues and that with the implementation of mitigation measures outlined in the EIAR, I consider that the proposed development is not predicted to give rise to significant adverse at any phase of the development.

16.10.1. Impact on Rewetting and Local Designated sites.

I note the concerns raised by the DAU in relation to impact on hydrogeology, specifically the threat to the integrity of the local NPWS managed wetlands and the concern that if the development proceeds it will cause the direct destruction of significant volumes of peat and it is likely to lead to further drainage of adjoining peat and be a barrier to future rewetting of a site that would stop carbon loss to the atmosphere and simultaneously create important habitat.

The EIAR notes that the proposed development has no potential to affect the status of the Arragh More Bog NHA, Arragh More (Derrybreen) Bog SAC and Ballyduff/Clonfinane Bog SAC and pNHA which are located up-gradient of all proposed wind farm infrastructure and proposed works areas. Surface and groundwater flows within the wind farm site are to the southeast, towards the Little Brosna River. Therefore, there is no potential for water quality (surface and groundwater) effects to occur to the Arragh More Bog NHA, Arragh More (Derrybreen) Bog SAC and Ballyduff/Clonfinane Bog SAC and pNHA.

In terms of ground water, Section 9.5.2.4 states that any potential water level effects associated with temporary dewatering works are unlikely to be significant beyond 50m

from any excavation due to the dominance of moderate to low permeability glacial till subsoils and lacustrine deposits below the wind farm site. I am satisfied that a robust assessment has been carried out and that the distances between the proposed works areas and the designated sites are sufficient to ensure that the proposed development has no potential to effect groundwater levels within these adjacent designated sites.

I have addressed concerns raised relating to rewetting in my assessment under Biodiversity and will not repeat it here (See Section 13.7.1 of this report – Wetland Restoration and Loss of Peatland Habitat). I consider the potential for impacts on groundwater flows and hydrochemistry outside of 50m of the development footprint, with implementation of the prescribed mitigation, is highly unlikely. Therefore, there will be no potential for impact on rewetting opportunities for adjacent cutover bog habitats in the future.

16.10.2. Impact on Local Private Wells

I note the third-party concerns in relation to impact of the proposed development on local private wells. An impact assessment for local wells was undertaken as part of the applicant's assessment in accordance with DoE/NIEA, 2015 guidance. The biggest risk to groundwater wells will be during the construction phase from where deep excavations are required such as the turbine bases. There are no registered abstraction groundwater supplies down-gradient of the wind farm site that can be impacted by the proposed development. There are a number of dwellings situated along local roads to the southeast which are potentially down-gradient of turbine locations, but I note from the EIAR that all turbines are located c. >740m from the nearest dwelling. I consider that this is a sufficient distance to ensure that there will be no effects on these local wells and I am satisfied that due to the shallow nature of the excavation works at the proposed substation location, no effects on groundwater levels or local wells will occur.

16.10.3. Flood Risk

Having regard to the applicants Flood Risk Assessment (Appendix 9-1), I am satisfied that the majority of the site is at a low risk of flooding being mapped in Flood Zone C. However, it is clear from the National Indicative Fluvial Flood Map that a short section of proposed access road close to the wind farm site entrance on the south of the site,

is mapped inside a 100-year and 1000-year flood zone. The proposed wind farm access roads can be categorised as “Less Vulnerable Development”. A Justification Test has been carried out for this element of the proposed infrastructure. I consider the turbines and access road to be a water compatible development, with the turbine base elevated above predicted levels and sensitive infrastructure located in Flood Zone C. I am satisfied that the drainage control measures for construction and operation phases will ensure no downstream increase in local flood risk.

16.10.4. Water Framework Directive (WFD)

Under the WFD the Board is obliged to ensure that development will not result in the deterioration in status of surface or groundwater, support the restoration of surface and groundwater to good status, protect and enhance the status of artificial or heavily modified bodies and achieve compliance with the standards and requirements for designated protected areas.

I note from the applicants EIAR that for all phases of development, there is no direct discharge from the site to downstream receiving surface waters or the underlying Ground Water Bodies(GWB). Mitigation for the protection of surface and groundwater during the construction phase will ensure receiving waters will not be altered by the wind farm. There will be no change in GWB or Surface Water Bodies(SWB) status in the underlying GWB or downstream SWBs as a result of the proposed wind farm and there will be no change in quantitative (volume) or qualitative (chemical) status, and the underlying GWB and downstream SWBs are protected from any potential deterioration.

Having regard to these factors, which typically include best practice and proven measures preventing water pollution, I am satisfied that there is no potential for adverse effects on groundwater or surface water bodies. I recommend that conditions in respect of the implementation of all mitigation measures set out in the EIAR and AA be required.

16.11. Conclusion: Direct and Indirect Effects (Hydrology and Hydrogeology)

I am satisfied that the potential for significant adverse impacts can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the

proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on hydrology and hydrogeology.

17.0 Air Quality

17.1. Issues Raised

No issues raised in relation to air quality.

17.2. Context

EIAR Chapter 10 has assessed the potential impacts on the air quality associated with the Proposed Development. The EIAR describes the legislation and guidance, provides a statement of authority and then describes air quality standards, the baseline conditions, the likely significant impacts and associated mitigation measures and cumulative effects.

17.3. Baseline

The baseline environment is described in Section 10.2.3 of the EIAR. The EPA has designated four Air Quality Zones for Ireland: Zone A: Dublin City and environs Zone B: Cork City and environs Zone C: 16 urban areas with population greater than 15,000 Zone D: Remainder of the country. These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the Cafe Directive, Framework Directive and Daughter Directives. The site of the Proposed Development lies within Zone D, which represents rural areas located away from large population centres. The EIAR presents the findings from the latest EPA report on air quality in Ireland which provides SO₂, PM₁₀, NO₂ and O₃ concentrations for areas in Zone D. The EIAR notes that air quality in the vicinity of the site is typical of that of rural areas in the West of Ireland in Zone D. Prevailing south-westerly winds carry clean, unpolluted air from the Atlantic Ocean onto the Irish mainland. Air quality sampling was deemed to be unnecessary for the EIAR due to the non-industrial nature of the proposed wind farm and the general character of the surrounding environment. It is expected that air quality in the existing environment is good, since there are no major

sources of air pollution (e.g. heavy industry) in the vicinity of the site. Energy from wind turbines has no direct emissions as is expected from fossil-fuel based power stations. Some minor short term or temporary indirect emissions associated with the construction of the Proposed Development include vehicular and dust emissions.

17.4. Characteristics of the proposed development

The construction of turbine foundations and hardstands, substation and borrow pit extraction and all other infrastructure and works will require the operation of construction vehicles and plant and will give rise to exhaust and dust emissions during the construction phase.

17.5. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 17.1 below.

Table 17.1: Summary of Potential Effects (Air Quality)
Do Nothing
<ul style="list-style-type: none"> If the wind farm were not to proceed, the opportunity to reduce emissions of carbon dioxide, oxides of nitrogen (NO_x), and sulphur dioxide (SO₂) to the atmosphere would be lost due to the continued dependence on electricity derived from coal, oil and gas-fired power stations, rather than renewable energy sources. This would result in an indirect, slight, negative impact on air quality nationally.
Construction Impacts
<ul style="list-style-type: none"> Exhaust Emissions – The operation of construction vehicles and plant on site and transport of workers will create exhaust emissions such as NO₂, Benzene and PM₁₀. This potential effect will not be significant and will be restricted to the duration of the construction phase and localised to works areas. Therefore, this is considered a short-term, slight, negative impact. Dust Emissions Turbines and Other Infrastructure - Using the NRA criteria, the Proposed Development is considered to be a Major construction activity with an estimated average dust soiling of 100m from the site, a PM₁₀ deposition of 25m with potential effects on vegetation up to a distance of 25m from the site. However, the nearest sensitive receptor to any wind farm site infrastructure is located over 200m west of a proposed new road. Therefore, the potential for impacts on off-site receptors during the construction of the Proposed Development is considered a short term Slight Negative Impact. Haul Route - In order to accommodate the delivery of turbine components and other abnormal loads, accommodation works will be required at 2 no. locations along the N52 in the townlands of Clohaskin and Ballyloughnane, Co. Tipperary. Excavation works will give rise to localised dust emissions. It is considered a moderate construction site as it will result in soiling effects which have the potential to occur up to 50m from the source, with PM₁₀ deposition and vegetation effects occurring up to 15m from the source. There is one residential dwelling located 50m from the accommodation works proposed in the townland of Ballyloughnane and no

<p>residential dwellings within 50m of the accommodation works in the townland of Clohaskin. These works are considered to be temporary and will have a slight negative impact.</p> <p>Grid Connection Cable - The excavation of the grid connection cabling route trench will give rise to localised dust emissions. Some houses may experience soiling and deposition of vegetation effects depending on how close to the road corridor they are located. These works will not be concentrated in any one area of the route for any considerable length of time. Effects are considered to be temporary and slight negative impact.</p> <p>Transport to site - The transport construction materials to and waste from the wind farm site will give rise to some localised dust emissions during periods of dry weather. This is a temporary imperceptible negative impact.</p>
<p>Operational Impacts</p> <ul style="list-style-type: none"> • Exhaust Emissions - During the operational phase, exhaust emissions associated with the operational phase will arise from occasional machinery and Light Goods Vehicles (LGV) that are intermittently required onsite for maintenance. This will give rise to a Long-term Imperceptible Negative Impact. • Air Quality - The production of renewable energy will have a long-term, significant, positive impact on air quality. Further details on the carbon dioxide savings associated with the Proposed Development are presented in Section 10.3.3. • Human Health - Exposure to chemicals such as SO₂ and NO_x are known to be harmful to human health. The production of clean renewable energy will offset the emission of these harmful chemicals by fossil fuel-powered sources of electricity and, therefore, will have a long term slight positive impact on human health.
<p>Decommissioning Impacts</p> <ul style="list-style-type: none"> • The applicant notes in Section 10.2.4.4 that any impact and consequential effects that occur during the decommissioning phase are similar to that which occur during the construction phase, be it of less impact.
<p>Cumulative Impacts</p> <ul style="list-style-type: none"> • There will be minor emissions from construction plant and machinery and potential dust emissions associated with the construction activities. However, once the mitigation proposals, as outlined in Section 10.2.4 of the EIAR are implemented during the construction phase, there will be no cumulative negative effect on air quality. • There will be no net carbon dioxide (CO₂) emissions from operation of the Proposed Development. Exhaust emissions of carbon dioxide (CO₂), oxides of nitrogen (NO_x), sulphur dioxide (SO₂) or dust emissions during the operational phase of the will be minimal, relating to the use of operation and maintenance vehicles onsite, and therefore there will be no measurable negative cumulative effect with other developments on air quality. • The nature of the Proposed Development is such that, once operational, it will have a long-term, moderate, positive impact on the air quality.

17.6. Mitigation

Mitigation measures are discussed in Section 10.2.4.2.1 and 10.2.4.2.2 in relation to exhaust emissions and dust and comprise standard good practice measures. During operational phase, any vehicles or plant brought onsite will be maintained in good operational order.

17.7. Residual Effects

No significant residual impacts have been identified at any stage of the proposed development. Once operational, the proposed wind farm will result in the avoidance of emissions from fossil fuel generators, with a residual positive impact on air quality.

17.8. The Assessment: Direct and Indirect Effects

I have examined, analysed and evaluated Chapter 10 of the EIAR, in relation to Air Quality. I am satisfied with the applicants understanding of the baseline environment with air quality in the area expected to be good and typical of a rural environment located in Zone D (as per EPA designation). The main potential for significant effects will arise during the construction stage associated with exhaust emissions from plant and machinery and the generation of dust from construction works. Subject to the mitigation measures proposed in the EIAR and a construction stage CEMP, which will comprise good practice methods and measures, I am satisfied that no significant adverse effects on air quality are likely to occur during any phase of the development.

During the operational phase, I consider there will be a slight positive residual impact on air quality due to the displacing of fossil fuel energy generation and the associated displacement of CO₂ and other greenhouse gas emissions.

I accept the conclusions of the EIAR and am satisfied that following the implementation of mitigation measures outlined in the EIAR, that no significant impacts are likely in relation to air quality either alone or in combination with other developments.

17.9. Conclusion: Direct and Indirect (Air Quality)

I am satisfied that the potential for significant adverse impacts on air can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on air quality.

18.0 Climate

18.1. Issues Raised

The DAU raised the concern that drained or damaged peatland emit large amounts of greenhouse gases to the atmosphere. The DAU are concerned that if the development proceeds it will cause the direct destruction of significant volumes of peat and cause direct release of green-house gas but less directly it is likely to lead to further drainage of adjoining peat and be a barrier to future rewetting of the site that would stop carbon loss to the atmosphere and simultaneously create important habitat.

18.2. Context

EIAR Chapter 11 and Appendix 11–1 (Carbon Calculations) has assessed the potential impacts on climate associated with the proposed development. The EIAR provides a statement of authority, describes the legislation and guidance and then describes the baseline conditions, calculates carbon losses and savings and describes the likely significant effects and associated mitigation measures and cumulative assessment.

Section 11.3 of the EIAR details Irelands commitment to addressing climate change and greenhouses gases including international agreements such as the Kyoto Protocol which came into effect in 2005 to the Climate Action and Low Carbon Development (Amendment) Act 2021 which commits Ireland to move to a climate resilient and climate neutral economy by 2050. The EIAR provides an update of the Environmental Protection Agency (EPA) emissions projections key trends which notes that Ireland is not on track to meet the 51% emissions reduction target by 2030 (as compared to 2018 levels) and that almost all sectors are projected to breach their sectoral emission ceiling (SEC) for 2025. Achievement of the 80% renewable energy target is expected.

18.3. Baseline

Climate and weather in the existing environment is described in Section 11.4 of the EIAR. The Met Éireann weather station at Birr located c.11.1km to the north-east of the site, is the nearest weather and climate monitoring station to the site that has

meteorological data recorded for the 30-year period from 1978-2008. Meteorological data recorded at Birr over the 30-year period from 1978-2008 is shown in Table 11-4 of the applicants EIAR.

18.4. Characteristics of the proposed development

Section 11.5 of the applicants EIAR describes the calculation of carbon losses and savings from the proposed development. The full life cycle and embodied carbon of the proposed turbines have been taken account of in the Macauley Institute model. The emissions associated with the embodied carbon, along with the construction phase transport movements, of the remaining features of the site are considered using the Transport Infrastructure Ireland (TII) Carbon Tool (TII 2022).

The worksheet models and online tools calculate that the Proposed Development will give rise to 88,168 tonnes of CO₂ equivalent losses over its 35-year life.

Forestry cleared for the Proposed Development will be replaced by replanting at alternatives sites. A total of 9.7ha of new forestry will be replanted at alternative sites to compensate the loss of forestry at the development site. Given that losses due to felling forestry account for 4,481 tonnes of CO₂, which will be replaced like for like.

18.5. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 18.1 below.

Table 18.1: Summary of Potential Effects (Climate)	
Do Nothing	
<ul style="list-style-type: none"> If the Proposed Development were not to proceed, the opportunity to further significantly reduce emissions of greenhouse gas emissions, including carbon dioxide (CO₂), oxides of nitrogen (NO_x), and sulphur dioxide (SO₂) from fossil fuels to the atmosphere would be lost. The opportunity to contribute to Ireland's commitments under the Kyoto Protocol and EU law would also be lost. This would be a long-term slight negative effect. 	
Construction Impacts	
<ul style="list-style-type: none"> Greenhouse Gas Emissions – Greenhouse gas emissions associated with the removal and reinstatement of peat habitat, tree felling, production of construction materials, and operation of vehicles and plant, transport of turbines and construction materials will arise as a result of the wind farm construction activities. This impact will be short-term and slight only, given the quantity of greenhouse gases that will be emitted to the atmosphere and will be restricted to the duration of the construction phase. Some potential long-term slight negative impacts will occur due to the removal of carbon fixing vegetation and habitat, however, that has been avoided where possible 	

<p>by the design and layout of the wind farm. This impact will be long-term and slight only, given the quantity of greenhouse gases that will be emitted to the atmosphere.</p> <ul style="list-style-type: none"> • Waste disposal - Construction waste will arise from the construction. This potential impact will be short-term and slight only, given the quantity of greenhouse gases associated with the generation and management of these waste streams that will be emitted to the atmosphere and will be restricted to the duration of the construction phase.
Operational Impacts
<ul style="list-style-type: none"> • Greenhouse Gas Emissions - The wind farm will generate energy from a renewable source. This energy generated will offset energy and the associated emission of greenhouse gases from electricity-generating stations dependent on fossil fuels, thereby having a positive effect on climate. The Proposed Development will assist in reducing carbon dioxide (CO₂) emissions that would otherwise arise if the same energy that the Proposed Development will generate were otherwise to be generated by conventional fossil fuel plants. This is a long-term significant positive effect on climate. • Some potential long-term slight negative impacts that may occur during the operational phase of the Proposed Development are the release of carbon dioxide to the atmosphere due to maintenance and monitoring activities, and the removal of carbon fixing vegetation and habitat, peat reinstatement and associated drainage.
Decommissioning Impacts
<ul style="list-style-type: none"> • The wind farm has an expected lifespan of approximately 35 years. Following the end of the operational life of the wind farm, the wind turbines may be retained and the operational life extended or replaced with a new set of turbines, subject to planning permission being obtained. In the event that neither of the above options are implemented, the Proposed Development will be decommissioned fully as agreed with the Planning Authority. The onsite substation will remain in place as it will be under the ownership of the ESB and will form a permanent part of the national electricity grid. • Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less impact.
Cumulative Impacts
<ul style="list-style-type: none"> • The nature of the proposed development is such that, once operational, it will have a long-term, moderate, positive impact on climate. • During the construction phase of the wind farm and other permitted or proposed projects and plans in the area, that are yet to be constructed, there will be greenhouse gas emissions arising from production of construction materials (such as cement), and the operation of construction vehicles and plant. These will be restricted to the duration of the construction phase, and as such will give rise to emission over a short-term duration. However, once emitted to the atmosphere, the greenhouse gas emissions that will arise from construction phase activities will have a permanent imperceptible negative effect on Climate. • There will be no cumulative effects arising on climate from the proposed development and other permitted or proposed projects and plans in the area.

18.6. Mitigation

Construction and decommissioning phase mitigation measures are discussed in Section 11.6.2.1 of the applicants EIAR and include general good practice measures. A Decommissioning Plan is included as Appendix 4-7 of the applicants EIAR, the detail of which will be agreed with the local authority prior to any decommissioning.

During the operational phase mitigation measure to reduce greenhouse gas emissions as described in Section 11.6.3.1 of the EIAR include ensuring that all maintenance and monitoring vehicles will be maintained in good operational order while onsite, and, when stationary, be required to turn off engines thereby minimising any emissions that arise. In addition, as detailed in Appendix 6-4 of the EIAR, a Biodiversity Enhancement Plan has identified enhancement activities such as planting of hedgerow and woodland.

18.7. Residual Effects

Following implementation of mitigation measures, no significant residual impacts have been identified at any stage of the proposed development.

The EIAR notes that when considering greenhouse gas emissions within the context of the national Electricity Sector Emissions Ceilings detailed in Section 11.3.1.11 of the EIAR, Carbon Budget 1 (2021-2025) has an Electricity Sector budget of 40 MtCO₂eq. and Carbon Budget 2 (2026-2030) has an Electricity Sector budget of 20 MtCO₂eq for large-scale deployment of renewables. The proposed development will displace carbon dioxide from fossil fuel-based electricity generation, over its proposed 35-year lifespan. Therefore, while there will be greenhouse gas emissions associated with the construction phase, this will take place under the Electricity sector emissions ceiling and will be offset by the operation of the wind farm within its operational life.

The 88,168 tonnes of CO₂ that will be lost to the atmosphere due to changes in soil and ground conditions and due to the construction and operation phases will be offset by the wind farm in approximately 26 months of operation.

Following implementation of the biodiversity enhancement, the loss of carbon fixing vegetation and in particular peat habitat over the lifetime of the wind farm will be partially offset by the biodiversity enhancement plan. A rated output of 6.2 MW was chosen to calculate the power output of the proposed 7-turbine renewable energy development, which would result in an estimated installed capacity of 43.4 MW, displacing approximately 40,512 tonnes of carbon dioxide per annum from traditional carbon-based electricity generation. Whilst there are potentially higher rated turbines, the residual effect will not be altered.

18.8. The Assessment: Direct and Indirect Effects

I have examined, analysed, and evaluated Chapter 11 and associated Appendix 11 – 1 of the EIAR, and the submissions on file in respect of Climate. It is my view that the proposed wind farm would not have significant adverse effects on climate during any phase of the development.

I consider that the construction phase would generate GHG emissions primarily from the removal and reinstatement of peat habitat, tree felling, construction materials, and the operation of vehicles and plant.

The EIAR uses the Scottish Carbon Calculator to calculate the total carbon emissions associated with the proposed wind farm development including manufacturing of the turbine technology, transport, construction of the development and carbon losses due to peatland disturbance. The model also calculates the carbon savings associated with the proposed wind farm. It estimates that the 88,168 tonnes of CO₂ that will be lost to the atmosphere due to changes in soil and ground conditions and due to the construction and operation of the proposed wind farm will be offset in approximately 26 months of operation due to the renewable energy generated. This would be a significant positive outcome, aligning with Ireland's trajectory towards net zero by 2050.

During the operational phase there will be a positive residual impact on climate due to the displacing of fossil fuel energy generation and the associated displacement of CO₂ and other greenhouse gas emissions. The EIAR estimates displacement of c. 40,152 tonnes of CO₂ per annum. Over the proposed 35-year lifetime of the development, 1,417,934 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation. I consider that the proposed development would have a significant positive, long-term impact on climate due to its contribution to renewable energy targets and the reduction of GHG emissions. The operational phase would further enhance this positive impact through continuous renewable energy generation, contributing to the Climate Action Plan 2024 (CAP24) commitment of achieving 80% of electricity demand from renewable sources and a key target of achieving up to 6 GW of onshore wind capacity by 2025 and 9 GW of onshore wind capacity by 2030.

I accept the conclusions reached in the EIAR that the impacts on climate associated with the proposed development on its own in in combination with other existing

permitted or proposed developments are not likely to be significant and will be mitigated by the measures outlined in the EIAR.

18.9. Conclusion: Direct and Indirect (Climate)

I have considered all of the written submissions in relation to climate and the relevant contents of the file including the EIAR. The proposed wind farm will have an export capacity of approximately 43.4MW and the project accords with relevant guidelines and would contribute positively to Ireland's environmental climate objective of accelerating renewable energy generation. The wind farm would have a significant positive impact on climate due to the displacing of fossil fuel energy generation and the associated displacement of CO₂ and other greenhouse gas emissions. Over the proposed 35-year lifetime of the development, 1,417,934 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation, which is a significant positive, long-term impact on climate due to its contribution to renewable energy targets and the reduction of GHG emissions.

I am satisfied that the potential for significant adverse impacts on climate can be avoided by the mitigation measures outlined in the EIAR. I consider the proposed wind farm development would have a significant positive effect on climate and am satisfied that the development would not have any unacceptable direct, indirect or cumulative impacts.

19.0 Noise and Vibration

19.1. Issues Raised

EIA Scoping Report - The EIAR notes that An EIA Scoping Report was issued to consultees and the Environmental Health Service on 14th September 2022. No scoping response was provided.

Irish Fisheries Ireland (IFI) – IFI raised concern about soils, their structure and types around turbines, the access road and site development. In particular, the IFI are concerned about soil stability and impact that works on both the turbines and access roads may have either directly or by vibration on the stability of soils. IFI has serious concern regarding development on peat soils where there is excessive slope and or

where the peat depth exceeds one meter. Soil movement and landslides should be assessed fully.

Third Parties - I note the third-party concerns regarding the impact of noise. Of particular concern was that the noise assessment was based on 2006 wind guidelines without regard to 2019 guidelines. Another issue raised was the lack of detail of turbine model results in uncertainties regarding noise assessment. Issues were raised in relation to inconsistency in the EIAR between Appendix 12 regarding noise and noise levels in the non-technical summary. It was highlighted that the noise assessment does not have regard to neighbouring European and National conservation sites and concern was raised in relation to construction and operational noise impacts.

19.2. Context

EIAR Chapter 12 and Appendices 12 – 1 (Construction Noise Report) and 12 – 2 (Operational Noise Report) and associated Figures 12-1 – 12-3 has assessed the potential impacts associated with noise and vibration with the proposed development. The EIAR provides a statement of authority, describes the legislation and guidance, consultation undertaken, assessment of methodology and significance criteria, baseline conditions, describes the likely significant effects and associated mitigation measures and residual effects.

The EIAR states that the guidance in the Wind Energy Development Guidelines 2006 (WEDG 2006) has been used to assess potential operational noise, which has been supplemented by the guidance in ETSU-R-97 and the IOA GPG. With regard to the Draft Wind Energy Development Guidelines 2019 (WEDG 2019), the EIAR states that given the limitations of the draft and the likelihood that significant changes require before they could be adopted, an assessment using those WEDG 2019 draft guidelines has not been undertaken. The EIAR further noted that the use of the 2018 World Health Organisation guidelines was not used based on the practicality of using a threshold which is based on a weighed annual average which can't be measured. It was not considered appropriate to undertake an assessment against Lden levels based on the wind turbine noise guidelines.

In relation to potential construction vibration, two sets of vibration limits were considered in the assessment. The first being the potential for damage to buildings which are detailed in BS 7385-2:1993 (also referred to in BS 5228), which is measured in Peak Particle Velocity (PPV) and the second being the impact of vibration on people within buildings which is detailed in BS5228-2. (Table 12-3 of EIAR)

In relation to operational noise, the EIAR notes that the Guidelines states that a “*fixed limit of 43 dB(A) will protect sleep inside properties during the night*”, however, whilst it is not explicit within the Guidelines, the addition of a night-time ‘*background noise +5 dB*’ parameter is commonly applied in wind turbine noise assessments. It is noted that this is detailed in numerous examples of planning conditions issued by local authorities and An Bord Pleanála. On that basis, the night-time noise limits used in the assessment have been based on 43 dB or background noise + 5 dB, whichever is the greater. Calculations of operational wind turbine noise have been undertaken in accordance with International Standard ISO 9613-2, ‘Acoustics – Attenuation of sound during propagation outdoors’ (ISO 1996).

Construction noise was assessed under BS 5228 criteria. Table 12-1 of the EIAR indicates 13 no. Construction Noise Assessment Locations (CNAL). The receptors are assessed as Noise Assessment Locations (NALs). Construction will take place over a period of between 12 and 18 months. Noise was modelled under seven different construction scenarios (Detailed in Appendix 12-1 of the EIAR).

Predictions of wind turbine noise has been assessed on a worst-case basis at each of the NALs. Table 12-4 of the EIAR provides a summary of operation noise assessment locations. There are 61 no. Noise Sensitive Receptors (NSRs) within c. 2km area identified all of which were residential. 5 no. representative Noise Monitoring Locations (NMLs) were selected where noise monitoring was undertaken over the period of November 2022 to January 2023 at all five selected NMLs (shown on Figure 12-2 of EIAR). These were chosen to represent the noise sensitive receptors located closest to the proposed development during either the construction or operational phase. Cumulative wind turbine locations are indicated on Figure 12-3 of the EIAR. The operational noise assessment was undertaken in three stages, which involved setting the Total WEDG Noise Limits (which are limits for noise from all wind farms in the area) at the nearest noise sensitive receptors, predicting the likely effects

(undertaking cumulative noise predictions) and finally setting Site Specific Noise Limits for the operation of the wind farm on its own.

The EIAR notes that predictions of wind turbine noise were made based upon the sound power level data for a candidate wind turbine with an output capacity of 6.2 MW with serrated trailing edge blades and a hub height of 105 m to 110.5 m.

Topics relating to operational wind farm noise such as Amplitude Modulation (AM), a potential characteristic of wind turbine noise, and Low Frequency Noise (LFN), are also discussed in Appendix 12-2 of the EIAR. The EIAR states there is no evidence that LFN has adverse impacts on the health of wind farm neighbours and currently there is no agreed methodology which can be used to predict the occurrence of AM or an agreed methodology that can be used to determine whether the effects of AM, should it occur, are likely to be significant and as such they have not been considered further in the assessment.

19.3. Baseline

Baseline conditions are described in Section 12.5 of the EIAR. The site is located within a rural location where existing background noise levels at the Noise Sensitive Receptors (NSRs) are generally considered to be low (<30 dB at low wind speeds as defined in the WEDG 2006). The predominant noise sources in the area are wind induced noise (wind passing through vegetation and around buildings), farm activity and birdsong. At some receptors the soundscape is affected by some distant road traffic noise, inclusive of the N52 National Secondary Road.

19.4. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 19.1 below.

Table 19.1: Summary of Potential Effects (Noise and Vibration)	
Do Nothing	
<ul style="list-style-type: none">Do-nothing scenario not discussed, but it is presumed that under the Do-Nothing scenario, the noise environment would remain largely unchanged.	
Construction Impacts	
Noise	
<ul style="list-style-type: none">Blasting was scoped out of further detailed consideration in Section 12.4.2.2.The construction noise assessment results show that the worst-case predicted construction noise levels are below the Category A Threshold Levels (lowest	

threshold in BS8223) for all of the CNALs and for all scenarios, therefore, there would be no significant construction noise effects.

- Although noise levels from the laying of the underground electrical cabling route have the potential to exceed the BS 5228 threshold levels during the daytime, due to the transient nature of the underground electrical cabling works, this will only occur for a short period of time at any one location. Accordingly, the impact is not deemed significant.

Vibration

- Due to the large separation distances between the construction activity areas on the Wind Farm Site and the nearest receptors, no significant effects are anticipated. Where construction activities on the underground electrical cabling route are close to residential receptors, some local vibration effects may be present, however, levels are expected to be low and of limited duration.

Operational Impacts

Noise

- **Cumulative Noise Assessment** – Table 12-12 and 12-13 of the EIAR assesses the Total WEDG Noise Limits and predicted likely cumulative wind turbine noise levels for daytime hours and night-time hours, using the worst-case 110.5 m hub height predictions. The result of the likely cumulative noise assessment show that the Proposed Development can operate concurrently with the operational wind farms near to the NALs, whilst still meeting the Total WEDG Noise limits established in accordance with WEDG at all NALs. The only exception is at NAL 9 where a marginal exceedance of 0.8 dB is observed only in daytime at 7m/s. Such minor exceedance would be removed by using low noise mode for the candidate turbine in that specific wind speed and in specific directions only. Therefore, there are no significant effects anticipated.
- **Site Specific Noise Limits** – Section 12.6.3.3 of the EIAR describes Site Specific Noise Limits for the proposed development in order to protect residential amenity. The minor exceedance identified in NAL 9 would be removed by using low noise mode for the candidate turbine in that specific wind speed and in specific directions only, or alternatively by using an alternative candidate wind turbine. As such there would be no significant effects.
- **Onsite Substation** - The 38 kV substation will be installed in the eastern half of the Wind Farm Site. With a separation distance of 325 m to the closest receptor (H4), the level the predicted noise level from the substation at the receptor is less than 9dB using a simplistic calculation that does not take into account the attenuation that would be provided by atmospheric effects, topography, barriers etc. A level of 9dB is unlikely to be audible and there is no potential for significant effects.
- **Grid Connection Route** - There will be no operational noise from the underground electrical grid connection cabling route.

Vibration

- Potential operational phase vibration impacts have been scoped out of further assessment in Appendix 12 – 2, Operational Noise Report. The report makes reference to research carried out at Keele University which states;
'Whilst the testing showed that vibration can be detected several kilometres away from wind turbines, the levels of vibration from wind turbines were so small that only the most sophisticated instrumentation can reveal their presence and they are almost impossible to detect..... Vibrations at this level and in this frequency range will be available from all kinds of sources such as traffic and background noise they are not confined to wind turbines. To put the level of vibration into context, they are ground vibrations with amplitudes of about one millionth of a millimetre. There is no possibility of humans sensing the vibration and absolutely no risk to human health.'
- Hence, the EIAR scopes out operational vibration from further consideration.

Decommissioning Impacts
<ul style="list-style-type: none"> Activities that occur during the decommissioning of the Proposed Development are unlikely to produce higher noise levels than those produced during construction and many of the activities will be similar in nature. As such it is considered that if construction noise levels are predicted to be below the threshold levels, then decommissioning noise will also be within the threshold levels.
Cumulative Impacts
<ul style="list-style-type: none"> Construction Phase - No significant cumulative construction noise effects. Operational Phase - The operational noise assessment has taken cumulative impacts with other existing nearby wind farms into consideration. The likely cumulative operational noise assessment show that the Proposed Development can operate concurrently with the operational and consented wind farms near to the NALs and there would therefore be no significant cumulative operational noise effects.

19.5. Mitigation

Noise (Construction Phase) – Section 12.7.1 of the EIAR notes that a range of good practice measures set out in the Construction Environmental Management Plan (CEMP) and detailed in Section 4.7.7.4 of Chapter 4 of the EIAR and in accordance with Section 8 of BS5228-1:2009+A1:2014 will be employed to minimise noise impacts as part of the construction management. The core hours for construction activity will be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 Saturday. Typically, there will be no working on Sundays and Public Holidays, with occasional works outside these hours when agreed in advance with the planning authority. Acoustic blanket panels will be used in Carrig village and at any location within 30m of a residential receptor to mitigate noise emissions.

Noise (Operational Phase) - In order to meet the site-specific noise limits at NAL9 the two nearest candidate turbine may need to be operated in a lower noise mode for a limited range of wind speeds and wind directions (7 ms⁻¹ westerlies) in daytime period only. Other wind turbine models would be available which may not require the use of low noise modes.

Vibration (Construction Phase) - It is recommended that vibration from construction activities will be limited to the values set out in Section 12.4.1.2 of the EIAR. Given that construction activities are only likely to occur for a short duration, the use of internal vibration limits is likely to be unnecessary. Therefore, no mitigation measures are proposed.

19.6. Residual Effects

Predicted construction noise levels compared with the Category A criteria outlined in Section E.3 of BS5228: Part 1 2009+A1:2014 indicate that construction noise levels are below the guidelines considered acceptable at all receptors for all construction phases and therefore no significant effects are anticipated.

The guidance contained within the WEDG 2006 was used to assess the likely operational noise impact of the Proposed Development. Predicted cumulative levels and measured background noise levels indicate that for neighbouring dwellings, wind turbine noise from a candidate turbine would meet the Total WEDG Noise Limit, therefore the operational noise impact is not significant.

A Site-Specific Noise Limit was calculated using worst-case assumptions and the assessment has shown that the Proposed Development operating on its own would meet that limit, with minor requirements for mode management for the two nearest turbines to NAL9, for certain wind speeds and wind directions (7m/s and westerlies) in daytime only.

Overall, it was predicted that without mitigation there would be no significant cumulative residual construction or operational noise effects.

19.7. The Assessment: Direct and Indirect Effects

I have examined, analysed, and evaluated Chapter 12 and associated Appendices 12 – 1 and 12 - 2 of the EIAR, and the submissions on file in respect of Noise and Vibration.

19.7.1. Construction Phase Noise and Vibration Impacts

19.7.1.1. Relevant Section 28 Guidelines (WEDG 2006 and WEDG 2019)

I note the third-party concern in relation to the use of the WEDG 2006 guidelines in undertaking the noise assessment rather than the Draft WEDG 2019 guidelines. Noting the delays in finalising the Draft WEDG 2019 and the issues highlighted by the applicant in relation to the practicalities of using the thresholds contained in the WHO Guidelines, it seems that the issue of wind turbine noise guidelines is in a state of flux. For this reason, I consider the appropriate guidance in relation to noise limits to be the

current WEDG 2006, which have not been withdrawn by the Minister and which are therefore still the relevant section 28 guidelines that the Board must have regard to.

In the absence of convincing evidence or scientific consensus that the WEDG 2006 are not adequate or fit for purpose and noting that the noise assessment has been undertaken in accordance with the ETSU-R-97 and the IOA GPG, I consider the application of the WEDG 2006 noise limits to be appropriate.

19.7.1.2. Impact of Construction on Sensitive Noise Receptors

I note third party concerns in relation to the noise impacts of construction works. The EIAR concludes that the wind farm meets daytime and night-time criteria in accordance with the WEDG 2006 and are below the threshold values within BS 5228 for the construction phase for all of the CNALs and for all scenarios.

The EIAR notes that there is no published statutory Irish guidance that contains suggested noise limits for construction activities, other than for road construction works, however, the Association of Acoustic Consultants of Ireland (AACI) have published 'Environmental Noise Guidance for Local Authority Planning & Enforcement Departments', which states;

"The chief guidance document applied in the assessment of construction phase noise impacts is British Standard BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites Part 1: Noise (2014)".

The EIAR notes the construction noise assessment was undertaken using the BS 5228 guidance. The prediction of construction noise levels was undertaken using the calculation methodology presented in ISO 9613:1996, together with published noise data for appropriate construction plant.

The assessment in the EIAR was based on a worst-case scenario. I note the EIAR states that for much of the working day, the noise associated with construction activities will be less than predicted as the assessment has assumed all equipment is constantly operating at full power and is located at the closest point to each receptor, whereas in practice equipment load and precise location will vary.

I consider noise impact will not be significant based on the assessment carried out. Noise levels from the laying of the underground electrical cabling route have the potential to exceed the BS 5228 threshold levels during the daytime but this will only

occur for a short period of time at any one location. Accordingly, I consider the impact to be temporary and not significant. Similarly, the decommissioning phase noise levels are expected to be no higher than the construction phase and will be carried out in the same locations as the construction phase. I consider impacts in relation to noise for decommissioning will not be significant.

I note the range of activities associated with the construction phase including construction and upgrading of tracks, preparation of the construction compound, felling, deliveries, excavation and construction of foundations and turbine hardstanding, backfill, landscape works, turbine erection and use of diesel generators at construction compounds. I note the construction period is estimated to last between 12 – 18 months. The applicant has described the site management measures and mitigation in the EIAR and the CEMP which comprise good practice construction methods. I am satisfied that the implementation of the measures outlined would be sufficient to reduce noise nuisance and disturbance during the construction phase, noting the significant distance between the development works and the nearest sensitive residential receptors. I consider that impacts in relation to construction noise and vibration will not be significant and any issues can be dealt with by way of condition in relation to compliance with the mitigation outlined in the EIAR and compliance with a final CEMP.

The decommissioning phase works will be similar to the construction phase, but of less magnitude given that various elements will be left in situ. I therefore consider it reasonable to draw similar conclusions for the decommissioning phase as those drawn for the construction phase, i.e. that the impacts would be short-term and would not be significant.

19.7.1.3. Potential Vibration Impact due to Construction Works

The impact of vibration during the construction stage has been assessed in Section 12.4.1.2 of the applicants EIAR which, assesses impacts on buildings and people within buildings. The EIAR concludes that there will be no significant vibration impacts associated with the construction phase and that no specific mitigation measures are required above those values set out in Section 12.4.1.2 of the EIAR in this regard. In terms of construction vibration, I consider that due to the separation distance of 324m to the closest residential receptor that vibration impacts will not be significant. There

may be some local vibration effects experienced by residential properties along the route of the underground electrical cabling. I consider the level of the vibration impacts will be low and of a temporary nature and not significant.

I note the IFI concern relating to soil stability and the impact that works on the turbines and access road may have either directly or by vibration on the stability of soils and that in the event of turbines being located on peat soils, especially if they are located in upland areas, the IFI caution against deleterious discharges to waters. The proposed site is located on peat soils but is not located in an upland area. As mentioned previously in this report, a Peat and Spoil Management Plan (P&SMP) has been prepared in Appendix 4-2 of the applicants EIAR, which details management of peat during construction works and long-term storage thereafter. This plan will form part of the final CEMP for the development. I consider that if excavations are carried out in accordance with the P&SMP, the mitigation measures proposed will be adequate to prevent erosion of subsoils and peat and will prevent negative impacts on the water environment.

19.7.1.4. Inconsistencies in the EIAR

I note a third party raised a concern in relation to inconsistency in the EIAR between Appendix 12 regarding noise and noise levels in the non-technical summary. Specifically, the third party states the following;

‘Appendix 12 – 1 confirms that there will be some periods of time where noise levels may exceed BS5228 thresholds. The Non-Technical summary in the Noise Chapter contradicts this statement, stating that construction noise levels at the nearest noise sensitive receptors during all phases of construction are below the threshold values. This contradiction again raises doubts about the level of due diligence and lack of a precautionary approach taken with this noise assessment.’

In this regard, the Summary in Section 6 of the Construction Noise Report (Appendix 12 – 1) states that there may be exceedances of the BS 5228 threshold levels only for the construction of the grid connection route directly opposite a residential property. The duration of such work will be short and the EIAR concludes that no significant impacts are expected.

The non-technical summary states that *‘Predicted construction noise levels at the nearest noise sensitive receptors during all phases of construction are below the threshold values within BS 5228 and are therefore deemed to be not significant.’*

I consider the nearest noise sensitive receptors the report is referring to is the 13 representative Construction Noise Assessment Locations (CNALs) described in the methodology in section 12.4.1.1 of the EIAR. A Summary of the CNALs is provided in Table 12-1 of the EIAR and the location of the CNALs are indicated on Figure 12.1 – Construction Noise Assessment Site Layout. The noise levels for all Scenarios assessed in the EIAR have been calculated at the (CNALs) and compared to the appropriate BS5228 threshold. I consider a suitable condition be included to limit daytime and night-time noise at noise sensitive receptors. Subject to compliance with the identified mitigation measures and noise limits and noting the significant separation distances between the proposed turbines and the nearest residential receptors, I do not consider that the proposed development would be likely to have a significant impact on sensitive receptors in relation to noise.

19.7.2. Operational Phase Noise and Vibration Impacts

19.7.2.1. Turbine Type and Noise

I note the third-party concern in relation to the adequacy of the noise assessment based on the use of a representative Turbine Type. As the final choice of turbine has not been made at application stage, the noise assessment undertaken in the EIAR utilised a candidate turbine, the Vestas V162 model with a power output of 6.2 MW with serrated trailing edge blades which was considered as being representative of the type of turbine that could be installed on the site based on the proposed range of turbine dimensions. The minimum and maximum proposed hub heights of 105 m and 110.5 m have been modelled to illustrate the noise level differences across the proposed range of turbine dimensions. I am satisfied that the turbine modelled is considered representative of the type of turbine that could be installed at the site.

Having reviewed the information submitted by the applicant in the EIAR, associated appendices and figures, I consider that a robust noise assessment, informed by adequate background noise monitoring, was undertaken. I note in this regard that the cumulative noise modelling assessment used worst-case assumptions, based on a

110.5m hub height. The EIAR indicates from the cumulative assessment that the proposed development can operate concurrently with other operational wind farms while meeting the WEDG 2006 noise limits except at NAL 9 where there is a marginal exceedance of 0.8dB in daytime at 7m/s. The EIAR notes that this is a minor exceedance and that it would be removed by using low noise mode for the candidate turbine in that specific wind speed in specific directions only. I am satisfied that this issue has been assessed and that appropriate mitigation has been proposed in the EIAR to ensure that no significant noise impacts will occur at NAL 9.

The assessment has demonstrated that the proposed development complies with daytime and nighttime noise limit criteria at noise sensitive receptors as per the WEDG 2006. The EIAR has based noise limits on WEDG 2006 and recent permissions issued by An Bord Pleanála with the daytime Total WEDG Noise Limit was set at 40 dB(A) where background noise levels were <30 dB. And 45 dB(A) or background plus 5 dB whichever is the greater where background noise levels were >30 dB. The nighttime Total WEDG Noise Limit has been set at 43 dB(A) or background plus 5 dB whichever is the greater. The 'Site Specific Noise Limits' were derived to take account of the proportion of the Total WEDG Noise Limit that has been allocated to, or could theoretically be used by, other wind farm developments (operational or consented) in proximity to the Proposed Development.

I consider a suitable condition be included to limit daytime and night-time noise at noise sensitive receptors in line with the WEDG 2006 and the applicant is required to submit and agree a noise compliance monitoring programme for the proposed wind farm with the planning authority to include the mitigation measures required to achieve compliance with the noise limits such as curtailing of particular turbines. The condition should also require that the results of the initial noise compliance monitoring to be submitted to and agreed in writing with the planning authority within 12 months of commissioning of the wind farm.

Subject to compliance with the identified mitigation measures and noise limits and noting the significant separation distances between the proposed turbines and the nearest residential receptors, I do not consider that the proposed development would be likely to have a significant impact on sensitive receptors in relation to noise.

19.7.2.2. Impact of Noise on European and National Conservation Sites

Third parties have highlighted that the noise assessment does not have regard to neighbouring European and National conservation sites. I consider that due to the separation distances between the nearby European and National conservation sites and the proposed wind farm, that cumulative noise impacts will have no significant negative impact on the sites.

19.8. Conclusion: Direct and Indirect (Noise and Vibration)

I have considered all of the written submissions made in relation to noise and vibration and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse noise and vibration impacts can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative noise and vibration impacts.

20.0 Cultural Heritage

20.1. Issues Raised

The EIAR notes that no responses were received in relation to archaeology, architectural or cultural heritage from Tipperary and Offaly County Councils and the National Monuments Services /DAU following statutory consultations.

The following issues were raised by third parties in relation to archaeology and cultural heritage;

- Impact of turbine haul route accommodation on protected structures in particular Ballyloughnane Bridge (TRPS522) and TRPS336 – Map 4, Impact on a local 13th Century Anglo-Norman Structure, Clohaskin Hall House.
- Archaeological Impacts - Bogs harbour ancient relics of profound archaeological significance. The submission notes significant local finds close to the development site including the Fadden More Psalter / Impact on Holy Well.

20.2. Context

EIAR Chapter 13, Appendix 13 – 1 (Photographic Record) presents the results of an archaeological, architectural and cultural heritage impact assessment of the proposed development. The assessment was based on desktop research, field surveys, GIS based mapping, Zone of Theoretical Visibility (ZTV) and was also assisted by photowire images from certain assets (Appendix 14 - 5).

The assessment of impacts on visual setting was undertaken using both the ZTV map in the Landscape and Visual Impact Assessment (LVIA), as presented in Chapter 14 of this EIAR, and also photomontage / wireline technology from specific cultural heritage assets. The analysis used in the assessment of potential impacts on the visual setting of cultural heritage assets in the wider landscape of 10km and 20km considers the effects of the proposed turbines only.

The EIAR describes the legislation and statutory consultation undertaken, provides an assessment of methodology, existing environment, describes the likely effects and associated mitigation measures and the cumulative impacts.

The TCDP 2022 – 2028 and OCDP 2021 - 2027 contains a variety of policy in relation to the protection of Cultural Heritage and Archaeology. No archaeological landscapes have been formally identified or designated in the CDP.

20.3. Baseline

The applicants EIAR describes the following baseline in Section 13.3, summarised as follows;

UNESCO World Heritage Sites (WHS) (20km distance considered from proposed turbines) - No WHS or those on the Tentative list are located within 20km of the nearest proposed turbine.

National Monuments (10km distance considered from proposed turbines) - Five National Monuments in State Care are located within 10km of the nearest proposed turbine. Three monuments subject to a Preservation Order are located within 10km of the nearest proposed turbine. The closest significant national monuments which have been considered include Lismacrory Mounds (TN008-021 and TN008-022), Lackeen Castle (TN004-022001), c. 4km from the site, Lorrha Friary, Priory & Church (TN004-

010008, TN004-010006 & TN004-010001) located c. 7km from the site, Killeen Castle (TN005-021), c. 5.5km from the site.

The ZTV demonstrates theoretical visibility of all seven proposed turbines from the majority of cultural heritage assets within 5km and from some National Monuments within 10km. Potential effects on setting are based on the worst-case scenario in that natural screening, boundaries, buildings and vegetation are not taken into account in the ZTV model and in reality the potential effect is likely to be less.

Recorded Monuments (5km distance considered from proposed turbines) -

There are 2 recorded monuments within the proposed windfarm site, which include TN008-002 (well), c. 117m southeast of T4 and TN005-025 (enclosure), c. 129m north of T3. The EIAR notes that are not located within the footprint of any proposed infrastructure.

The ZTV indicates that 130 no. of the 136 no. recorded monuments are located in areas where 7 no. turbines will theoretically be visible. The EIAR notes that nearly half of monuments are represented by Enclosures, Ringforts and Souterrains.

Protected Structures (5km distance considered from proposed turbines) - The EIAR considered protected structures within 5km of the nearest turbine, finding 36 no. structures located between c 1.9km and 4.9km from the nearest turbine. The nearest structures comprise Oak Park house (TRPS121) located c. 1.9km from T1 and the ruins of Derrylahan Park house (TRPS399) c. 2.2 km from T6.

National Inventory of Architectural Heritage (NIAH) and Historic Gardens – There are 21 no. structures listed on the NIAH within 5km of the nearest proposed turbine and there are 18 no. historic gardens located within 5km of the nearest proposed turbine.

Proposed Underground Cable Route - All cultural heritage assets within 100m of either side of the proposed underground electrical cabling route were assessed for potential impacts. The report considered 5 no. recorded monuments within 100m of the proposed cabling route, 3 of which are within the zone of notification.

There are 11 no. protected structures located within 100m of the underground electrical cabling route, two of which comprise bridges. There are 17 no. structures listed in the NIAH located within 100m of the grid connection.

Proposed Turbine Delivery Route - A windscreen survey of the Proposed Turbine Delivery Route and associated pinch points was carried out as part of this assessment. The pinchpoints represent areas where there is either oversail over walls etc. or where there will be temporary works put in place to facilitate delivery (i.e., the stoning out of a grassy verge or portion of a roundabout/junction). Oversail will be required at bridge which is a recorded monument (OF035-069/TN005-035), a Protected Structure (Ref. TRPS522) and is also listed in the NIAH (Reg. 22400518).

20.4. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 20.1 below.

Table 20.1: Summary of Potential Effects (Cultural Heritage)	
Do Nothing	
<ul style="list-style-type: none"> If the proposed development were not to proceed, no changes would be made to the current land-use practice of low intensity agriculture and commercial forestry. It is not anticipated that the do-nothing scenario would have any negative effects on the existing environment in terms of archaeology, architectural and cultural heritage. Land use would continue without the need for mitigation measures. 	
Construction Impacts	
<p>Indirect Effects</p> <p>No indirect effects were identified which would occur at the construction stage. This includes impacts on visual setting of any cultural heritage assets in the wider landscape.</p> <p>Direct Effects</p> <ul style="list-style-type: none"> Direct Impact refers to a 'physical impact' on a monument or site. The construction phase of a development may consist of earthmoving activities such as topsoil removal and excavation works as part of the construction phase. This may have a number of potential negative impacts on the known and potential archaeological heritage. UNESCO Sites – No direct effects to such assets. National Monuments - No potential direct impacts as a result of the proposed turbines or associated on-site wind farm infrastructure (proposed roads, compounds, substation etc) are identified given that the nearest National Monument is situated c. 2.6km from the nearest proposed turbine (Nat. Mon. No. 348 Lismacrory Mounds). Electrical Cabling Route – The castle – motte and bailey (PO 43/1976) is located immediately east of the proposed underground electrical cabling route at Killeen townland. The cable route extends through the Zone of Notification for the monument c. 9m to the west of the outer extent of the motte as indicated on the second edition OS map. Ground works associated with the construction of the underground electrical cabling route has the potential to uncover sub-surface archaeological features or deposits associated with the adjacent motte and bailey. In the absence of mitigation measures a potential direct, negative and permanent impact to such features, if they exist, would occur. Recorded Monuments - Two recorded monuments (TN008-002---- well) and TN005-025---- enclosure) are located within the proposed Wind Farm Site. The well 	

is situated c. 117m south-east of T4 and c. 33m east of an existing road due for upgrade. The enclosure TN005-025---- is situated c. 129m north of T3 and c. 24m west of the proposed new road between T3 and T2 . Accidental damage as a result of the tracking of plant and machinery is possible in the absence of appropriate mitigation.

- **Recorded Monuments along the Grid Connection Underground Electrical Cabling Route** - Five recorded monuments are located within 100m of either side of the underground electrical cabling route. No monuments will be directly impacted by underground electrical cabling route as they are located off the public road. There are a number of instances where the underground electrical cabling route intersects the Zone of Notification (ZoN) for some monuments and therefore mitigation measures will be implemented during construction works in order to avoid any negative effects arising during construction.
- **Recorded Monuments along the Transport Delivery Route (TDR)** - Ground works associated with the Transport Delivery Route (TDR) are proposed for two locations; 1. within the Wind Farm site boundary and 2. at the junction of the N52-L1071 west of the village of Riverstown, Co. Tipperary. No recorded monuments are located where proposed works along the TDR will occur therefore no direct impacts to same as a result of the works are identified.
- **Sub-surface Archaeological Potential** - Due to the extent of groundworks associated with the construction phase and the presence of peatland, it is possible that previously unrecorded sub-surface archaeological finds, features or deposits are located within the site. The potential exists that sub-surface archaeological sites or features, if present, may be directly impacted by construction phase activities.
- **Protected Structures** – 36 no. protected structures located within 5km of near turbine. No direct impacts as a result of ground works identified.
- **Protected Structures within 100m of the Grid Connection Underground Electrical Cabling Route** – 11 no. protected structures identified. The majority of these comprise roadside structures and direct impacts to same as a result of ground works associated with the cable trench are not anticipated. Two bridges, Croghan Bridge, (Ref. TRPS519) and a railway bridge (Ref. TRPS336) are located on the proposed underground electrical cabling route. Directional drilling will be utilised at both bridge crossings therefore direct impacts to either bridge structure are not anticipated. Given that the railway bridge is located on the line of a disused railway some mitigation is recommended in order to ensure that accidental damage does not occur to any associated railway infrastructure/features should they exist at this location.
- **Protected Structures and NIAH Structures along the Transport Delivery Route** - No Protected Structures or NIAH structures are located in the vicinity of the proposed works within the Wind Farm site boundary therefore no potential direct impacts to such structures at this location are identified.
A railway bridge which is a Protected Structure (Ref. (TRPS336) and is also included in the NIAH (Reg. 22400514) is located c. 10m south of the proposed temporary works at the junction of the N52- L1071 west of the village of Riverstown. No works to the bridge itself will take place therefore no direct impacts to same are identified. The proposed temporary works will traverse the line of the associated railway which is no longer extant and of which no upstanding remains are apparent in the field through which the works extend. Given that the proposed works traverse the line of a disused railway some mitigation is recommended in order to ensure that damage does not occur to any associated railway infrastructure/features should they exist at this location.
- **NIAH Structures along the Transport Delivery Route** – 21 no. structures listed in the NIAH and 18 no. historic gardens are located within 5km of the nearest proposed turbine. Due to separation distances, no direct impacts to this resource will occur.

<ul style="list-style-type: none"> • NIAH structures within 100m of the Grid Connection Underground Electrical Cable Route – 17 no. structures listed in the NIAH are located within 100m of the proposed underground grid connection route. The majority of these features comprise roadside structures such as houses, a church, a post box, etc to which no direct impacts will occur as a result of the ground works associated with the excavation of the cable trench. The two bridges (TRPS519 and TRPS336) are also NIAH structures and the mitigation proposed will apply to the railway bridge (NIAH Reg. 22400514/TRPS336). • Features of Local Cultural Heritage Merit - A ruinous rectangular structure (CH1) which is indicated on both editions of the historic OS mapping was noted within the Proposed Wind Farm Site during field inspection. It is located immediately adjacent to the proposed access road which will extend from the proposed site entrance in a north-westerly direction towards T4. It is not included in the NIAH or Record of Protected Structures and is regarded as a feature of local cultural heritage merit, most likely dating to the early-mid 19th century. Given the proximity of the proposed access road to the ruinous rectangular structure CH1 accidental damage could occur to same as a result of the movement of machinery. The potential impact would be direct, significant and permanent.
Operational Impacts
<ul style="list-style-type: none"> • The overall significance of effects is regarded as Not Significant for the operational phase of the proposed wind farm.
Decommissioning Impacts
<ul style="list-style-type: none"> • There will be no significant potential impacts on the archaeological, architectural and cultural heritage environment during the decommissioning of the Proposed Development. Any potential direct impacts will already have been resolved through mitigation measures during the construction phase.
Cumulative Impacts
<ul style="list-style-type: none"> • While some potential cumulative visual effects to the wider setting of cultural heritage assets is possible when considered with the operational and proposed wind farms, no significant cumulative impacts have been identified and no cumulative effects to the immediate setting of cultural heritage assets will occur.

20.5. Mitigation

Electrical Cabling Route – Mitigation measures for the proposed cable route are outlined in Section 13.4.2.2 of the EIAR including the cable trench being located on the west side of the public road where it extends past the motte and bailey and archaeological monitoring of all ground works within the Zone of Notification under a National Monuments Service licence.

Recorded Monuments within the Wind Farm – Mitigation measures outlined in Section 13.4.2.3 of the applicants EIAR include a 20m buffer zone around monuments, no ground works, storage or tracking of machinery in the buffer zone and archaeological monitoring.

Recorded Monuments within 5km of the Nearest Proposed Turbine - No direct effects to the monuments will occur due to the separation distance from the turbines.

Recorded Monuments along the Grid Connection Underground Electrical Cabling Route – Mitigation measures are outlined in Section 13.4.2.5 of the EIAR. Archaeological monitoring will be carried out along the cabling route. Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) may be required and a report will be prepared following monitoring.

Sub-surface Archaeological Potential – Mitigation measures are outlined in Section 13.4.2.7 of the EIAR and include pre-development archaeological testing, monitoring of ground works and further mitigation such as preservation in situ and by record as necessary.

Protected Structures within 100m of the Grid Connection Underground Electrical Cabling Route – Mitigation measures are outlined in Section 13.4.2.10 which include archaeological monitoring and associated report and further mitigation as required.

Protected Structures and NIAH Structures along the Transport Delivery Route – Mitigation measures are outlined in Section 13.4.2.11 which include archaeological monitoring and associated report and further mitigation as required.

Features of Local Cultural Heritage Merit – Mitigation measures are outlined in Section 13.4.2.15 and advises that protective fencing should be placed around the thicket of trees within which the structure CH1 is located for the duration of the construction stage as per the Final CEMP.

20.6. Residual Effects

Any archaeological sites/features, if detected, during monitoring will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same. The potential impact after implementation of mitigation measures is likely to be Not Significant.

The fencing around the feature of Local Cultural Heritage Merit will ensure that accidental damage does not occur to the structure CH1 during the construction stage

of the Proposed Development. In this regard, the potential impact after the implementation of the mitigation measures is likely to be Imperceptible.

20.7. The Assessment: Direct and Indirect Effects

I have examined, analysed, and evaluated Chapter 13 and all of the associated documentation on the file. I note that the Planning Authority has raised no issue in relation to the Cultural Heritage chapter of the EIAR and has accepted the findings of the EIAR that there will be no direct or indirect impacts associated with the proposed wind farm.

A visual assessment of the impact of the proposed wind farm on cultural heritage assets including UNESCO Sites, National Monuments, Recorded Monuments and NIAH structures ranging in distance from 20km to 5km from the nearest turbines has been undertaken. I note that the assessment also considers the grid connection route and the turbine delivery route (TDR). I am satisfied that the proposed development would not have an impact on the character or setting of any cultural heritage asset.

Two recorded monuments including a well and an enclosure are located within the site boundary, but which are not located within the footprint of any proposed infrastructure or works. I consider these monuments will not be adversely impacted by any development works and I am satisfied that the mitigation measures proposed to prevent accidental damage to these protected monuments are sufficient to ensure that no adverse impacts will occur.

The EIAR did not predict any significant adverse impacts on archaeology during the any phase of development, other than potential sub-surface archaeology. The removal of peat and spoil during the construction phase has the potential to have a permanent, significant, negative effect on previously unrecorded sub-surface archaeological site and artefacts. With the implementation of mitigation measures outlined in Chapter 13 of the EIAR the potential for negative effects on unrecorded sites and artefacts during excavations, will be reduced.

In terms of archaeological impact, I am satisfied that this is an accurate assessment of the likely significant impacts in relation to proposed construction works and am satisfied that the recommended mitigation measures which includes pre-development archaeological testing and monitoring during construction to be appropriate.

All cultural heritage assets within 100m of either side of the proposed underground electrical cabling route were assessed for potential impacts. No direct impacts to the recorded archaeological, architectural or cultural heritage resource as a result of the proposed grid connection route have been identified in the EIAR. I am satisfied that a robust assessment has been carried out in this regard and that no adverse impacts will occur following implementation of mitigation measures outlined in the EIAR.

Cumulative effects considered include other extant planning applications and operational and proposed wind farms within 20km. The EIAR notes that while some potential cumulative visual effects to the wider setting of cultural heritage assets is possible when considered with the operational and proposed wind farms, no significant cumulative impacts have been identified and no cumulative effects to the immediate setting of cultural heritage assets will occur. I am satisfied that no cumulative adverse impacts will occur.

20.7.1. Response to Third Party Concern

A third party raised the issue regarding the impact on protected structures including Ballyloughnane Bridge (Ref. TRPS522), a stone railway bridge (Ref. TRPS336), and Clohaskin Hall House, a 13th Century Anglo-Norman Structure, and the Holy Well (Ref. TN008-002).

The EIAR states in relation to the proposed turbine delivery route, that although oversail will be required at Ballyloughnane Bridge (Ref. TRP552), no potential direct impacts to the bridge are anticipated. In addition, no temporary works are proposed to the stone railway bridge (Ref. TRPS336) and the proposed temporary works will not directly impact on the bridge. I am satisfied that the mitigation measures proposed in the EIAR will prevent accidental damage to these protected structures and that no adverse impacts will occur.

The 13th Century Anglo-Norman Structure, Clohaskin Hall House referred to is a ruined castle which lies in a farmyard near Carrig, Co. Tipperary. No details have been provided in relation to the Protected Structure Reference number from the TCDP 2022 – 2028. Hence, the location of the structure is not available and I am unable to carry out an assessment of impact, if any, on the structure.

I also note the concern raised in relation to the well (Ref. TN008-002), which is located within the site boundary. The EIAR notes that the ZTV demonstrates theoretical visibility of all seven turbines from the well, but that the well was not readily apparent and is a low visibility monument. The EIAR notes that since the monuments are barely discernible, the turbines are not capable of effecting the settings since the monuments have little/no above ground expression and hence, no mitigation is required. I accept the findings of the EIAR and consider that no significant impacts will occur in terms of visual impact. In terms of accidental damage to the well, the EIAR notes that mitigation measures are proposed to ensure no accidental damage as a result of the tracking of plant and machinery will occur to the monuments within the wind farm site and along the underground electrical cabling route. Mitigation measures include a 20m buffer around monuments where no works will occur and archaeological monitoring of all ground works is proposed. I am satisfied that with the implementation of the mitigation measures proposed in the EIAR, no accidental damage associated with construction works will occur to the well or any other protected cultural heritage asset.

I have considered the third-party observation in relation to the profound archaeological significance of bogs and their potential for harbouring ancient relics. I note the monitoring approach set out in the mitigation measures included in the EIAR. I consider that it is a reasonable and proportionate approach to the potential for impacts on unknown subsurface remains or sites and I consider that archaeological monitoring as outlined in the EIAR can be dealt with by way of condition.

20.8. Conclusion: Direct and Indirect (Cultural Heritage)

I have considered all of the written submissions made in relation to archaeology, architectural and cultural heritage and the relevant contents of the file including the EIAR. I consider a robust assessment has been undertaken in the EIAR.

I am satisfied that the potential for significant adverse impacts on archaeology, architectural and cultural heritage can be avoided, managed and/or mitigated by measures that form part of the proposed development, the proposed mitigation and monitoring and through suitable conditions. I consider that temporary effects arising from the process of decommissioning will be similar in nature and duration to those temporary effects arising from the construction process. I consider the proposed

mitigation in relation to archaeological sites/features which includes monitoring of all ground works and fencing to ensure accidental damage will not occur during construction phase, to be appropriate and I consider this can be dealt with by condition. The removal of peat and spoil during the construction phase has the potential to have a permanent, significant, negative effect on previously unrecorded sub-surface archaeological site and artefacts. With the implementation of mitigation measures outlined in Chapter 13 of the EIAR the potential for negative effects on unrecorded sites and artefacts during excavations, will be reduced.

I consider the visual assessment of the impact of the proposed wind farm on cultural heritage assets to be robust and am satisfied that there will be no impact on the setting of any cultural heritage asset.

Overall, I am satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on archaeology, architectural and cultural heritage, due to the separation distances, the intervening topography and hedgerow/ treeline vegetation and the mitigation measures proposed within the EIAR.

21.0 Landscape and Visual

21.1. Issues Raised

The TCC planners report notes in its reasoned conclusion on the EIAR that;

‘significant landscape and visual impacts will arise given the nature of the landscape and height of the turbines. Having regard to the existing windfarms and the existence of mature forest it is considered that the landscape has the capacity to accommodate the development without adversely affecting the landscape character of the area’.

The following issues were raised by third parties and observers to the appeal in relation to Landscape and Visual;

- Impact on the visual amenity of the area due to scale of proposed turbines / Impact on tourism and local business /Impact on the character of the landscape.
- Setbacks from turbines to residential dwellings incorrect and not in accordance with WEDG 2019.

21.2. Context

Landscape and Visual Impact is addressed in Chapter 14 of the EIAR and Appendices 14 – 1 Landscape and Visual Impact Assessment Methodology, 14 – 2- Landscape Character Assessment, 14 – 3 Viewpoint Assessment, 14 – 4 Landscape and Visual Impact Baseline Map, 14 – 5 Photowire Visualisation Booklet, 14 – 6 LVIA Maps (Part 1 – Part 3) comprising Figures 14 -1 – 14 -25, EIAR Volume 2 presents the 18 no. Photomontage Layouts.

Chapter 14 including appendices sets out the Methodology, Regulatory and Policy Framework, Visibility of the Proposed Development, Landscape Baseline, Visual Baseline, Cumulative Context and Likely Significant Landscape and Visual Effects.

The chapter has been prepared in accordance with the 2022 Environment Protection Agency (EPA) Guidelines on the Information to be contained in Environmental Impact Assessment Reports as well as the 2013 Landscape Institute guidelines on preparing Landscape and Visual Impact Assessments. (GLVIA3, 2013) and Appendix 3, WEDGs – DoEHLG, 2006 (including reference to the draft WEDGs DoEHLG, 2019).

The landscape of the area is described in terms of its existing character, which includes a description of landscape values and the landscape's sensitivity to change. The assessment uses visibility mapping, representative viewpoints, and photomontages. The potential impacts in both landscape and visual terms are then assessed, including cumulative impacts. The Zone of Theoretical Visibility (ZTV) of 20km has been chosen to represent the area over which the development can theoretically be seen and is based on a Digital Terrain Model (DTM), overlaid on a map base (Figure 14 -1).

The EIAR notes that a range of turbine dimensions have been assessed in the EIAR as follows:

- Turbine Tip Height – Maximum Height 185m, Minimum Height 179.5m
- Hub Height – Maximum height 110.5m, Minimum height 105m
- Rotor Diameter – Maximum length 163m, Minimum length 149m

The combination of rotor diameter and hub height has been identified in the EIAR as the most representative on the basis that the greatest extent of the entire turbine structure (blades and tower) would potentially be visible from viewpoints assessed in

the EIAR. Thus, irrespective of which combination of hub height and blade length within the range outlined above is installed on site, the significance of residual landscape and visual effects will not be altered.

It is estimated that the construction phase of the Proposed Development will last between 12–18 months.

21.2.1. **Baseline**

Section 14.4 of the EIAR sets out the landscape baseline having regard to both the landscape designations and policy context. The proposed development is located within a flat landscape predominantly covered by flat cutover peat, agricultural land, and commercial forestry. The site is currently used primarily for agriculture, with substantial screening occurring from the presence of mature forestry present on site and the surrounding area.

Under the Tipperary CDP, the Site is located within the generalised landscape designation '*Landscape Archetype A – The Plains*' which is defined as working landscapes containing most settlements and services as well as large continuous areas used for pasture, tillage and peat harvesting. This landscape also contains major rivers and many historic sites. The landscape of 'A – the Plains' are generally representative of the rural landscape of the Irish Midlands and is generally the lowest sensitivity landscape in the County. The Plains contains two Landscape Character Type designations, with the proposed site within type '*A2 Peatlands and Wet Mixed Farmland*', noted as containing large areas where impeded drainage and peat formation give rise to less densely inhabited areas and more marginal agriculture.

Table 14 – 5 of the EIAR notes in relation to Landscape Designations that there are no Co. Tipperary Primary or Secondary Amenity Areas within the site boundary. Lough Derg is the nearest located 6.7km from the nearest turbine. The site is located within Landscape Character Area (LCA) 7 of County Tipperary – Borrisokane Lowlands. In addition, there are no designated scenic viewpoints located within the site.

The EIAR notes that '*the Proposed Development Site is located within an area designated as 'Areas Unsuitable for New Wind Energy Development'. However, as discussed previously in that section, it is apparent from a review of the Tipperary*

Renewable Energy Strategy (TRES) and related policy that the site of the Proposed Development is not a sensitive landscape area by virtue of the designation of the area as 'Areas Unsuitable for New Wind Energy Development'.

21.3. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 21.1 below.

Table 21.1: Summary of Potential Effects (Landscape & Visual)
Do Nothing <ul style="list-style-type: none"> If the Proposed Development were not to proceed, no changes would be made to the current land-use practice of low intensity agriculture and commercial forestry. Should this occur the landscape and visual impact would be neutral in the context of this EIAR.
Construction Impacts
<u>Landscape Effects</u> <ul style="list-style-type: none"> The earthworks such as cut, and fill required to facilitate construction will have a direct effect on the landscape and have the greatest potential for landscape effects. In general, it is considered that the construction phase will have a Short-Term, Moderate, Negative effect in terms of direct landscape effects.
<u>Visual Effects</u> <ul style="list-style-type: none"> The most substantial visual effects will arise from requisite construction activities such as building tower sections and erecting the turbines. These construction activities will cause Slight, Short-Term Negative visual effects.
<u>Ancillary Project Elements</u> <ul style="list-style-type: none"> Underground Cable Route - The underground electrical cabling route will be located underground, therefore the greatest effects attributed to this element of the Proposed Development will occur during the construction phase. The works will include roadside vegetation removal, soil/road surface stripping, excavation, and other associated construction activities. The proposed grid connection underground cabling works are likely to cause 'Slight' Temporary, Negative landscape and visual effects. Turbine Delivery Route Accommodation Works - Works such as road widening are sometimes required along proposed turbine transport routes to accommodate the large vehicles used to transport turbine components to wind farm sites. These works are likely to cause 'Not Significant' Temporary, Negative landscape and visual effects. Proposed Substation, Site Access Roads and Hardstand Areas, Meteorological (Met) Mast - Impacts due to the earthworks and requisite construction activities. Visual effects are likely to be highly localised, Negative, Short-Term and will be 'Imperceptible' and Slight.
Operational Impacts
<u>Landscape Effects of the Proposed Development Site</u> <ul style="list-style-type: none"> The landscape character of the Site will undergo major changes in the landscape by the introduction of vertical man-made structures within the landscape of the Site. The footprint of the proposed turbines and ancillary infrastructure comprises 7.18ha. There will be a substantial magnitude of change to the landscape in localised areas within the site where the landscape is materially altered (infrastructure footprint). The Site is located in a modified remote working landscape of local value. Cutover peat and commercial forestry is the dominant landcover of the relatively flat

landscape within the site itself. The landscape value and sensitivity of the Proposed Development Site was deemed to be Low in Section 14.4.2.2 of the EIAR. Low sensitivity balanced with a substantial magnitude of change amounts to long-term landscape effects of Moderate significance upon the physical fabric of the landscape of the site (See LVIA Methodology, Appendix 14-1). These direct landscape effects will be highly localised to the footprint of the Proposed Development. Effects on the perceptual and aesthetic character of the site are also deemed to be of Moderate significance.

Landscape Effects on Receptors of High Sensitivity

- The EIAR assessed Lough Derg and River Shannon which is a Primary Amenity Area of County Tipperary (8.8km from nearest turbine), Slieve Bloom Mountains which is an Area of High Amenity in County Offaly (13.4 km from nearest turbine) and Other Eskers which are Areas of High Amenity in County Offaly (7km from nearest turbine).
- In all instances, there will be no 'Significant' impact on the sensitivities of these receptors due to the large set back distances and limited visibility of the Proposed Development from them.

Landscape Character Areas – Landscape Effects

- An assessment of the effects on landscape character was undertaken for the Landscape Character Areas within the LVIA Study Area for Landscape Character (within 15km from the Proposed Development Site) that were identified as having potential for visibility of the proposed turbines.
- The proposed turbines are likely to be most visible from areas within 5km of the Proposed Development Site and elevated areas within this LCA.
- Table 14-21 of EIAR indicates that no 'Significant' landscape effects are likely to occur on landscape character in the LVIA Study Area.

Visual Effects

- Photomontages were used to assess the visual effects arising as a result of the proposed development from 18 no. viewpoint locations (EIAR Vol. 2). In addition, 18 no. additional photowires are presented in Appendix 14 – 5 which are used to illustrate certain points.
- The visual effect of the Proposed Development was assessed as recommended in the GLVIA 3 (2013) guidelines as well as a detailed review of the photomontages.
- The assessment of visual effects determined the residual significance of the visual effects to range from 'Significant' to 'Imperceptible', with the number of findings at each level of significance listed in Table 14-23 of the EIAR.
- The significance of the residual visual effect was not considered to be 'Very Significant', or 'Profound' at any 18 viewpoint locations. A residual effect of 'Significant' was deemed to arise at two locations, with a residual effect of 'Moderate' deemed to arise at two other locations, whilst all other viewpoints were assessed as resulting in 'Slight' (7), 'Not Significant' (5) and 'Imperceptible' (2) residual visual effects.
- The ZTV indicates vast areas of the LVIA Study Area where the Proposed Development will not be visible.
- **Designated Scenic Routes and Views** – Section 14.7.3.3.3 assesses 7 no. scenic routes and views, with no significant impacts likely to occur.
- **Settlements** – 8 no. settlements were screened in for assessment including Carrig, Aglish, Ballingarry, Rathcabbin, Riverstown, Birr, Crinkle and Banagher with likely impacts ranging from 'Imperceptible' to 'slight' for all settlements except Carrig which was deemed as having a 'Moderate' residual visual effect.
- **Recreational Routes and Tourist Destinations** – Viewpoints from 5 no. recreational and tourist destinations were assessed including Ormond Way, Birr Cycle Hub Route 3/3A/3B/Loop 4 & 5 and Birr Castle and Demesne with 'Moderate' residual visual effects deemed to arise on the Ormond Way within 5km of the site

and no significant residual visual effects deemed likely from the various Birr Cycle Hub Routes due to screening from existing vegetation. There are no views from Birr Castle and Demesne of the proposed turbines.

- **Major Transport Routes** – Routes assessed include the N52 National Road, R489 Regional Road, R348 Regional Road, N65 National Road and N62 National Road. No 'Significant' effects deemed likely to arise in relation to these transport routes.
- **Residential Visual Amenity** – Section 14.7.3.3.4 notes that the proposed development is located in a flat landscape, well set back from sensitive landscape and visual receptors, large population centres and receptors protected in local planning policy. It further notes that a visual impact assessment of each cluster of residences is reported, identifying the worst-case scenario for potential visual effects on residential receptors. The design process was informed by set-back distances, with regard to the siting of turbines in proximity to residential dwellings, with 500m set back distance provided as per WEDGs (DoEHLG, 2006) and also the 4 times tip height set-back distance set out for residential visual amenity prescribed by the draft WEDGs (DoHPLG, 2019).
- The closest residential receptors are arranged along a network of small local roads to the southeast of the site, in proximity to Carrig village with occasional one-off dwellings located along the roads to the north and west.
- The EIAR notes that as a result of factors such as distance in a flat landscape, and screening from vegetation cause visual effects on residential receptors to dramatically decrease beyond 3km from the proposed turbines.
- 'Significant' visual effects were deemed to arise in relation to a very low number of residential properties located within 800m of the proposed turbines (VP6 and VP17). See EIAR Table 14 – 22 which presents the Viewpoint Assessment Summary.
- The EIAR notes that the baseline views are generally unremarkable and are typical of many other views of agricultural fields and forestry within the surrounding area. The turbines will be seen as large vertical features within views from these residential properties, however, given the relatively lower base elevations of the turbines in relation to these receptors, the field structure, vegetation, and other landscape elements seen throughout these views act as a physical landscape buffer and provide a sense of scale in relation to the setback distance of the turbines, with turbines viewed as sited beyond multiple fields or behind a treeline. These are the only residential receptors identified within the LVIA Study Area for which these residual visual effects will arise
- The EIAR states that the highest effects on residential visual amenity will occur in relation to a relatively small number of receptors located within 800m of the proposed turbines, with the scale of turbines in view reducing quickly from locations further from the site (see VP2). Beyond 1.5km from the site (see VPs 16 and 18) the scale of the turbines reduces substantially. In addition, the various viewpoints located between 3-5km from the nearest turbine (VPs 7, 9, and 11) show that effects on residential receptors will be dramatically reduced in comparison to the closer receptors identified on Figure 14-21.

Decommissioning Impacts

- Decommissioning Impacts similar nature and duration to Construction Impacts.
- The important element of decommissioning from a landscape and visual impacts perspective is the dismantling and removal of the wind turbines. This will occur for a limited period of time and will predominantly involve cranes adjacent the turbines during the dismantling process. Once dismantled, turbine foundations would remain in place underground and will be covered with earth and reseeded as appropriate. Removal of the turbines and ancillary infrastructure from the site will result in a Short-term, Slight, Negative visual effect.

Cumulative Impacts

Cumulative Landscape Effects

- Cumulative impacts on the character of the wider landscape are most likely to occur as a result of the proposed turbines, where they might be visible in conjunction with other wind farm developments.
- In a cumulative context, the site is located within a flat agricultural plain located between the Slieve Bloom Mountains and Lough Derg. There is some existing wind farm development in this landscape, with the Skehanagh and Carrig wind farms located along a ridgeline approximately 4km southeast of the site. Aside from these existing turbines there are no other turbines located within this flat plain.
- The landscape within this plain is flat and heavily vegetated resulting in intermittent views of the existing turbines (Carrig and Skehanagh). In addition, this flat plain extends over a relatively large area with no turbines visible from large areas of land. In this regard there is capacity to absorb another wind energy development within this landscape area without 'Significant' detrimental effects on the character of the landscape.
- Cumulative landscape effects are noted as being limited to areas of lower landscape sensitivity in the LVIA Study Area and are concentrated in a landscape area which has capacity to absorb further wind energy development without 'Significant' effects on its landscape character.

Cumulative Visual Effects (Section 14.7.3.4)

- There are five other existing or permitted wind farms located within 20km of the Proposed Development. These wind farms are located as separate clusters to the southeast (Carrig and Skehanagh) and northeast (Meenwuan, Derrinlough, and Cloghan) of the Proposed Development.
- The Proposed Development will be viewed in the same viewshed as the existing Carrig and Skehanagh turbines with combined (in succession) views occurring along the stretch of the N52 within 5km of the site. Additionally, intermittent vegetation along the roadside will result in sequential views of both the proposed and cumulative turbines. It is considered that with only intermittent views of the Proposed Development along the N52, resulting from different levels of screening at different locations, combined with the setback distance of both the Proposed Development from the N52 and the cumulative turbines, the addition of the Proposed Development will not give rise to 'Significant' cumulative visual effects.
- Sequential cumulative visual effects will also occur along the R438 where the Proposed Development Site and Cloghan, Meenwuan and Derrinlough windfarms are seen at a different point along the road. However, it is noted that there is a substantial distance between this group of cumulative turbines and the Proposed Development (approx. 12.1km) and so cumulative visual effects are not deemed to be 'Significant'.
- Overall, any cumulative visual effects that arise as a result of the Proposed Development are not deemed to be 'Significant'.

21.4. Mitigation

Landscape of the Proposed Development Site - Section 14.7.3.1.1 describes the embedded mitigation measures which form an integral, committed, and deliverable part of the proposed development design or comprise standard construction practices. They are assumed to be implemented and are therefore factored into the determination of residual significant effects. Mitigation measures include

modifications made to the design of the wind farm to avoid and reduce effects and include mainly limiting and carefully selecting the footprint of the proposed infrastructure, siting of components and internal tracks, minimisation of excavation and cut and fill where possible.

21.5. Residual Effects

There are no 'Significant' landscape effects and the only 'Significant' visual effects deemed to arise were in relation to a very low number of residential properties located within 800m of the proposed turbines. Overall, visual effects throughout the LVIA Study Area were limited as a result of the lack of visibility of the proposed development, in general, in the wider area.

Once the wind farm is operational and construction is complete, the landscape will naturally re-vegetate around the development footprint with the aid of mitigation measures (e.g., retention of natural seedbank during soil stripping). Following implementation of mitigation measures, residual effects upon the landscape of the of the proposed development site are deemed to be 'Slight'.

21.6. The Assessment: Direct and Indirect Effects

Construction Stage - There is likely temporary, short-term adverse landscape effects during the construction and decommissioning stages due to the visibility of construction activities such as movement of machinery, building tower sections and erecting the turbines and the temporary storage of materials within the site. These effects will be experienced within the site and from locations with open views of sections of the proposed development. From locations outside the site the impact will not be significant. I consider the construction impacts will be of a short-term temporary duration, with no significant adverse long-term impacts anticipated.

Operational Stage - I consider the LVIA submitted with the applicants EIAR, including the methodologies employed to be a well-considered and a robust analysis. I am satisfied the identified 20km Zone of Theoretical Visibility and location and number of viewsheds selected represents a comprehensive and reasoned consideration of both the landscape and visual impact matters as explained in the EIAR. I consider the assessment in this regard has sufficient and appropriate regard to the Wind Energy

Guidelines 2006, the Draft 2019 guidelines and the GLIVA 3, 2013 Guidelines and allows for adequate consideration of landscape and visual impacts while noting the turbine envelope considerations and highest possible tip height and hub height combination discussed in section 14.7.4 of the applicants EIAR, regardless of the final turbine chosen if permitted within the specified turbine range.

Having reviewed the comparative photomontages, I consider that it is very difficult to visually discern any difference in turbine dimensions between the different scenarios, given the scale of the structures and the relatively minor variations in dimensions. I am therefore satisfied that the LVIA contained in the EIAR is sufficient to allow proper consideration of landscape and visual impacts regardless of the final turbine chosen within the specified turbine range.

I acknowledge the concerns raised by third parties and observers to the appeal, particularly in relation to the potential impact on visual amenity and the character of the area of the proposed wind farm. I note that Tipperary County Council consider that having regard to the existing windfarms in the area and the existence of mature forest, they consider the landscape has the capacity to accommodate the development without adversely affecting the landscape character of the area.

An observer to the appeal has raised concern that the applicant has not adhered to the setback distances from dwellings stipulated in the WEDG 2019, which is 4 times the turbine blade tip height (4x tip height). Permission is being sought for a turbine with a minimum tip height of 179.5m and a maximum tip height of 185m. Hence, based on the maximum proposed tip height, the setback required by WEDG 2019 is $185 \times 4 = 740\text{m}$. The applicant has stated that the closest proposed turbine (T4) is 740m from the nearest dwelling.

The observer has raised concern that measurements for the recommended 4x tip height for visual purposes, set out in the WEDG 2019 were taken to the centre of the house and not to the nearest point of the curtilage of any residential property.

The WEDG 2019 in Section 6.18.1 discusses appropriate setback distances to apply. In this regard SPPR 2 of WEDG 2019 states;

‘With the exception of applications where reduced setback requirements have been agreed with relevant owner(s) as outlined at 6.18.2 below, planning authorities and An Bord Pleanála (where relevant), shall, in undertaking their

development planning and development management functions, ensure that a setback distance for visual amenity purposes of 4 times the tip height of the relevant wind turbine shall apply between each 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 from that residential property. Some discretion applies to planning authorities when agreeing separation distances for small scale wind energy developments generating energy primarily for onsite usage. The planning authority or An Bord Pleanála (where relevant), shall not apply a setback distance that exceeds these requirements for visual amenity purposes.'

The curtilage of a domestic dwelling house for the purposes of the WEDG 2019 is defined as the land immediately surrounding a dwelling house which is used for purposes incidental to the enjoyment of the dwelling house and excludes for example any open fields beyond the immediate surrounds of the dwelling.

The applicant has supplied setback distances from 31 no. dwellings in Table 5 – 9 of the EIAR. The observer has reviewed the ITM coordinates provided and has stated that the measurement is taken to the centre of the house rather than from the curtilage of the residential property to the wind turbine. I have also assessed the ITM coordinates provided by the applicant and agree with the observer that the applicant measured the distance from the turbine to the centre of the buildings rather than to the curtilage of the dwellings. I accept the observers point that this reduces the separation distances of six of the dwellings (4, 14, 36, 37, 51 and 52) below the required setback of 740m (4x tip height) based on the definition of curtilage of a domestic dwelling. The observer has measured the separation distances of those six dwellings from 706m to 730m from the turbines if measured to the curtilage. It is clear that the applicant has measured the distances to dwellings incorrectly and does not meet the WEDG 2019 setback distance of 4 x tip height for six dwellings.

The observer has also raised issue that the applicant has incorrectly calculated the part of the wind turbine structure where the setback measurement should be taken from. The observer states that it should be taken from the blade which, based on Canadian Wind Energy (2007) guidance would provide for greater separation distances from the turbines to 785m – 815m based on a tip height of between 179.5m

and 185m. WEDG 2019 does not provide specific guidance in relation to where on the turbine the measurement for the setback should be taken.

Under Windtake (Section 5.13), the 2006 WEDG state:

'In general, to ensure optimal performance and to account for turbulence and wake effects, the minimum distances between wind turbines will generally be three times the rotor diameter ($=3d$) in the crosswind direction and seven times the rotor diameter ($=7d$) in the prevailing downwind direction. Bearing in mind the requirements for optimal performance, a distance of not less than two rotor blades from adjoining property boundaries will generally be acceptable, unless by written agreement of adjoining landowners to a lesser distance.'

The WEDG 2019 also refer to distance, under 4.9.1 for distance from railways, again, 'of a distance equal to the height of the turbine to the tip of the blade plus 10%'.

As mentioned, SPPR 2 states; 'ensure that a setback distance for visual amenity purposes of 4 times the tip height'.

Tip height is measured from the ground (top of foundation). So, I think it would be appropriate to infer that distance would be measured from centre of turbine to curtilage. Otherwise, separation distance would be greater than 3x rotor diameter, or 4x tip height etc. I consider that there is a consistent approach to 'distance' in the 2006 and 2019 guidelines, and I consider that there is no need to adopt a code from another jurisdiction.

I would like to point out that the current Wind Energy Development Guidelines (2006) do not specify exact separation distances between wind turbines and dwellings. Instead, the guidelines focus on a more comprehensive approach, considering various factors such as the size of the turbines, local topography, and the existing environment. Notably, they provide specific recommendations for mitigating certain impacts: shadow flicker at neighbouring dwellings should not exceed 30 hours per year or 30 minutes per day when within 500 meters of a turbine (Section 7.14). Additionally, the guidelines indicate that noise impacts are generally not significant if the nearest turbine is more than 500 meters away from any noise-sensitive property (Section 5.6). I note that the proposed development adheres to the recommended 500m set back distance in the WEDGs (DoEHLG, 2006).

Notwithstanding the error the applicant has made in calculating the WEDG 2019 setback, a setback of at least 700m from the turbines has been achieved. The WEDG 2019 is a setback for the purposes of visual amenity. As indicated in SPPR2 of WEDG 2019, for visual purposes the 4 times the tip height is the guide, subject to a mandatory minimum setback of 500m for any residential property. In all cases, this minimum setback of 500m has been provided in the proposed development. I consider that the proposed development will give rise to significant visual impacts in the immediate area of the site up to 800m from the turbines and hence, whether there is a setback from the turbines of 700m or 800m, the visual impact will be equally significant.

The introduction of the proposed turbines and ancillary infrastructure into the site will cause major changes to the landscape character resulting in the landscape being materially altered. It is clear that the height and scale of the proposed wind turbines undoubtedly have the potential to impact significantly on the visual amenity and character of the area due to their scale and these impacts cannot be effectively mitigated by for example, the use of screening vegetation. The careful locating, design and layout of the turbines is the only effective means of reducing landscape and visual impacts. I am satisfied that the applicants have assessed various alternatives for the location and design of the wind farm as discussed in Section 14.1.4, 14.1.5 and Chapter 3 of the EIAR – *Consideration of Reasonable Alternatives*.

In terms of overall landscape and visual impact and the capacity of the landscape to absorb the proposed wind farm, I note the existing low-lying character of the landscape, which is considered a modified remote working landscape of low value comprising in the main cutover peat and commercial forestry. I have visited the site and surrounding area, reviewed the applicants LVIA including all figures and photomontages and consider the proposed turbines will be most visible from areas within 5km of the site. I agree with the findings of the LVIA and consider that no significant landscape effects are likely to occur on landscape character in the LVIA study area due to the remoteness of the site, the existing vegetation, the flat topography and due to the low sensitivity and low landscape value of the proposed wind farm site.

I accept the findings of the EIAR that the highest effects on landscape and residential visual amenity will occur in relation to a relatively small number of receptors located within 800m of the proposed turbines, with the scale of turbines in view reducing

quickly from locations further from the site and beyond 1.5km from the site the scale of the turbines reduces substantially. These effects are an inevitable consequence of the introduction of large-scale wind turbines into a peatland/wooded landscape and the development will result in a significant change in local landscape character.

Notwithstanding this, at the separation distances proposed, which are at least 700m from any dwelling, I am satisfied that the turbines will not be overly dominant or overbearing on any property or that they individually or collectively would seriously detract from the residential amenity of any property. I note that the proposed development adheres to the recommended 500m set back distance in the WEDGs (DoEHLG, 2006) and (DoHPLG, 2019).

I conclude that that proposed development is likely to have a significant landscape and visual effect in the immediate area of the site, but I do not consider that these visual effects are sufficient reason to refuse permission for the development.

21.7. Conclusion: Direct and Indirect Effects (Landscape and Visual)

I have considered all of the written submissions made in relation to landscape and visual impact and the relevant contents of the file including the EIAR.

I recognise the proposed wind farm is located in a flat landscape, well set back from sensitive landscape and visual receptors, large population centres and receptors protected in local planning policy. I am satisfied that the potential for significant landscape and visual impacts have been avoided where possible by imbedded design mitigated measures that form part of the proposed scheme for the wider area.

In order to address the climate emergency and meet climate targets discussed in the policy section of this report (Section 7.0) and in the applicants appeal document, I consider the visual and landscape context of an area must be able to embrace change in order to accommodate renewable energy development. The introduction of the turbines will change the existing landscape. This will result in significant residual direct, indirect and cumulative landscape character and visual effects in the immediate area of the site up to 800m. These residual effects will remain.

I acknowledge that a small number of residential receptors within 800m of the wind turbines will experience a major change to the existing landscape character due to the height and scale of the proposed wind turbines.

On balance, based on National Policy supporting renewable energy, I consider that the potential benefits associated with wind farm developments and renewable energy generation within the context of a climate emergency, outweigh the potential perceived adverse visual impact for a small number of residential receptors. I am therefore satisfied, that the proposed wind farm development would be consistent with the Climate Act and National Policy in support of renewable energy and a refusal of permission would not be warranted on the basis of residual landscape and visual effects.

22.0 Material Assets

22.1. Issues Raised – Traffic and Transport

22.1.1. Scoping and Consultation

The EIAR notes the following responses to Scoping and Consultation carried out;

22.1.1.1. Transport Infrastructure Ireland (TII)

TII responded to Scoping on the 23rd of May 2023, providing a list of recommendations to be followed when preparing the EIAR. It is noted that TII guidelines and policies have been taken into account in the preparation of the EIAR. TII provided a list of specific traffic related issues to be addressed in the assessment (See Section 15.1.1.4 of the EIAR – Scoping and Consultation).

22.1.1.2. Department of Transport

The Dept response primarily refers to issues relating to grid connection works within the public road network and recommends that alternative route options to the public road network should be considered. The EIAR notes that the alternative grid connection route options were considered in Chapter 3 of the EIAR.

22.1.1.3. Tipperary County Council

The EIAR notes that a pre-planning meeting was held on the 29th of June 2023. Issues relating to the proposed grid connection, the public roads within the site boundary, the pre and post Proposed Development condition of the public road

network, the turbine delivery route and the quantity of stone that will be required to be delivered to the site were discussed. An additional meeting was held on Monday 4th September with the Planning and Roads Section of TCC where further discussions were held in relation to various matters including the Grid Connection Route, sections of the Grid Connection that will take place within verges, footpaths and carriageways, and proposed traffic management measures for the L5040 during the delivery of cement and stone.

22.1.2. Tipperary County Council

Tipperary County Council - Road Section Planning Report - The Roads Section Report of TCC dated 26th November 2023 has no objection to the proposed wind farm development subject to a number of Roads Conditions, which I have summarised in Section 4.2 of this report and will not repeat here.

Tipperary County Council Refusal Reason No. 2 - The proposed wind farm was refused permission the Planning Authority for the following reason; *‘The proposed development would have a detrimental impact on the capacity and operation of the roads network.’*

22.1.3. Response from Prescribed Bodies – Traffic and Transport

22.1.3.1. Transport Infrastructure Ireland (TII)

TII issued a response on 31st October 2023, which I have summarised in Section 5.1.1 of this report and will not repeat here. The main points include concern that the proposed development is at variance with 2012 Guidance in terms of precedent a grant of permission would set in relation to operation and safety of the national road network, recommending consultation with bodies responsible for the roads which will be traversed for the haul route, requirement for a road safety audit for any proposed works, requirement for full assessment of all structures along the haul route, provide more details of grid route on two sections of the N52, utilise alternative grid connection cable route rather than on the national road network.

22.1.4. **Issued Raised – Traffic and Transport**

The following issues were raised in by third parties and observers to the appeal in relation to traffic and transport;

- **Construction Impacts** – Traffic Impacts due to increased traffic on local roads / Unsuitability of proposed access including capacity of L5040 / Traffic disruption / Insufficient consideration along haul route and on vulnerable buildings, noise, dust, traffic disruption, pedestrian safety.
- **Operational Impacts** - Proposed development would not meet setback from local roads, in particular turbines will overhang the local road, L5041/Required setback distances between turbines not achieved, Traffic nuisance for cyclists (from noise and wind turbulence).

22.2. **Issues Raised – Telecommunications and Aviation**

22.2.1. **Scoping and Consultation – Telecommunications and Aviation**

The EIAR notes the following responses to Scoping and Consultation carried out;

22.2.1.1. **Irish Aviation Authority (IAA)**

IAA responded to scoping in October 2022. The requirements of the IAA include the following: 1. Agree an aeronautical obstacle warning light scheme for the wind farm development. 2. Provide as-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location. Horizontal extent of turbines and blade length will also be provided. 3. Notify the Authority of intention to commence crane operations with a minimum of 30 days prior notification of their erection.

The nearest operational airport to the site is Birr Airfield which is located c. 7km to the northeast of the site. The closest large international airport is Shannon Airport which is located c. 71km to the southwest of the site.

In response to the lighting requirements requested by the IAA, the turbines will be marked on maps, lit at night and entered into aircraft navigation databases and therefore can be avoided during flight.

22.2.1.2. **Department of Defence (Irish Air Corps)**

The Department of Defence (DoD) replied on the 11th of May 2023 and provided the following observations:

- The Minister for Defence is responsible for the regulation of military aviation, whereas the Irish Aviation Authority (IAA) is responsible for the safety regulation of civil aviation including aerodromes. The IAA does not have remit for military aviation or installations. Safeguarding of military flight operations and installations is intended to protect both current and future aircraft operations and also to take account of the security requirements associated with some of those operations.
- Single turbines, structures, or turbines delineating the windfarm should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or of a type visible to Night Vision equipment. Obstacle lighting must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.
- Any Irish Air Corps (IAC) requirements are separate to Irish Aviation Authority (IAA) requirements.

22.2.2. **Response from Prescribed Bodies – Telecommunications and Aviation**

22.2.2.1. **Irish Aviation Authority (IAA)**

IAA issued a response on 17th October 2023 as follows;

- **Air Nav Ireland Consultation** – Applicant should engage with Air Nav Ireland to confirm that the windfarm and cranes used during construction are reviewed for potential impact on en-route communication, navigation and surveillance equipment.
- **IAA Consultation** - No objection, subject to condition. Recommended a condition required the applicant to contact IAA to agree warning lights, provide

as constructed coordinates and notify IAA of commencement of crane operations.

22.2.3. Issued Raised – Telecommunications and Aviation

The following issues were raised by third parties in relation to Telecommunications and Aviation;

- Impact on the I-Lofar Radio Telescope in Birr.

22.3. Issues Raised – Existing Built Services and Utilities

22.3.1. Response from Prescribed Bodies – Existing Built Services and Utilities

Uisce Éireann UE (Irish Water) issued a response on 17th October 2023 which has requested that the applicant engage with Uisce Éireann Diversions Team by submitting a Diversion Application Form in order to assess the potential interactions with public water / wastewater infrastructure.

22.4. Context

EIAR Chapter 15, Appendix 15 – 1 (Traffic Count Data), 15 – 2 (Traffic Management Plan) and 15-3 (Figures)) presents the results of the material assets assessment of the proposed development. Chapter 15 addresses the likely significant on transportation infrastructure (Section 15.1 Traffic and Transport), on Telecommunications and Aviation (Section 15.2) and Other Material Assets (Section 15.3), which are economic assets of human origin including existing built services and utilities and waste management. Waste Management is also addressed in Section 4.3.9.6 of Chapter 4 of the EIAR.

22.5. Baseline

22.5.1. Traffic and Transport

The traffic and transport assessment assesses the effects of traffic during all phases of development and the effect of the grid connection on the road network grid connection, traffic management of large deliveries and abnormal load route

assessment. The EIAR describes the methodology used, the existing environment, the likely significant effects and associated mitigation measures.

It is proposed to access the site via the N52 National Secondary Road (off the Birr to Borrisokane section), followed by the L-5040 Local Road to the southeast of the site. The site is served by a number of existing local and agricultural roads and tracks. The grid connection includes for the proposed onsite 38kV substation in the townland of Faddan More, Co. Tipperary, Proposed Development site and associated underground 38kV cabling connecting to the existing Dallow 110kV substation located to in the townlands of Clondallow, County Offaly. The underground electrical cabling route, measuring approximately 13.7 km in length, is primarily located within the public road corridor. The proposed port of entry for the large wind turbine components is the Port of Foynes in County Limerick. From the port the delivery route travels east on the N69 before joining the M7 to the southwest of Limerick City. The route then travels south of Limerick on the M7 heading east in the direction of Roscrea and Borris-in-Ossory.

The traffic and transport assessment report adopts the guidance set out by TII, in the document number PE-PDV-02045 'Traffic and Transport Assessment Guidelines, May 2014'. The geometric requirements of the transporter vehicles were assessed using AutoCAD and Autotrack. To inform the EIAR, traffic surveys were carried out in the study area in 2023. The figures show there is considerable existing traffic volumes on the proposed turbine delivery route and construction traffic route.

Traffic volumes are discussed in terms of either vehicle numbers, or Passenger Car equivalent Units (PCUs), where each vehicle is expressed in terms of its demand on the network relative to the equivalent number of cars.

The EIAR forecasts traffic for an assumed construction year of 2028 based on TII guidelines. The construction phase will last c. 12 – 18 months and for the purposes of the assessment has been considered in two stages. The first stage includes site preparation, ground works and cable laying. It is estimated that a total of 24,539 deliveries by truck, cement mixer or standard articulated HGVs will be made to the Site during this period. The second stage includes the wind turbine component delivery and construction. During stage two, a total of 56 trips will be made to and from the site by extended articulated trucks, with a further 28 trips made by standard

large articulated HGVs. Transport of large turbine components will be carried out at night when the traffic is lightest in consultation with the relevant road authorities with deliveries accompanied by Garda escort.

The EIAR describes the delivery of turbine components as a specialist operation owing to the oversized loads involved. The turbine delivery assessment has assessed the impact of the longest blade being proposed, which is 81.5m.

22.5.2. Telecommunications and Aviation

Section 15.2.3 of the EIAR describes the way in which wind turbines can potentially interfere with telecommunications signals or aviation activities. The EIAR explains that wind turbines, have the potential to interfere with broadcast signals, by acting as a physical barrier or causing a degree of scattering to microwave links creating a possible flicker effect caused by the moving rotor, affecting, for example radio signals. The most significant potential effect occurs where the renewable energy development is directly in line with the transmitter radio path. This is known as electromagnetic interference and can also occur for other signal types used for communication and navigational systems.

Section 15.2.4 presents details on how such effects will be avoided, with the likely significant effects assessed (and mitigation measures proposed) in Section 15.2.5. The assessment focuses on the scoping and consultation exercise conducted with telecommunications operators and aviation authorities in line with EPA Guidelines. Table 15 – 28 of the EIAR lists the telecommunications and aviation consultees. Appendix 2 -1 of the EIAR provides copies of the responses received.

22.5.3. Existing Built Services and Utilities

Electricity - Section 15.3.1.1 of the EIAR describes the electricity infrastructure currently available to the site. This comprises a 38kV overhead line which traverses the site boundary close to the proposed main site entrance in the townland of Clohaskin. The local rural supply provides electricity from these overhead lines to local residents.

Waste Management – The EIAR notes that a Waste Management Plan (WMP) has been prepared and forms part of the Construction and Environmental Management

Plan (CEMP) in Appendix 4 – 3 of the EIAR. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Development.

22.6. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 22.1 below.

Table 22.1: Summary of Potential Effects (Material Assets)
Do Nothing
<u>Traffic and Transport</u> <ul style="list-style-type: none"> If the Proposed Development does not proceed there will be no additional traffic generated or works carried out on the road network and therefore no effects with respect to traffic.
<u>Telecommunications and Aviation</u> <ul style="list-style-type: none"> If the Proposed Development were not to proceed, there would be no change to existing telecommunications and aviation operations in the area.
<u>Existing Built Services and Utilities</u> <ul style="list-style-type: none"> If the Proposed Development were not to proceed the opportunity to generate renewable energy and electrical supply to the national grid would be lost.
Construction Impacts
<u>Traffic and Transport</u> <ul style="list-style-type: none"> Stage 1 – Concrete Pouring - For 7 days during concrete pouring, 582 additional PCUs will travel to/from the site. This stage will increase traffic on the network approaching the site from c. 3.7 % - c. 22%. On the L5040 leading to the site traffic flows will increase by 200.2% on these 7 days. This will have a temporary, slight, negative effect on the N62 and N52, and a temporary moderate negative effect on the L5040. Stage 1 – Site Preparation and Groundworks – On the remaining 222 days, an additional 585 PCUs will travel to and from the site. Traffic will increase from c. 3.7% - 22.3%. On the L5040 leading to the site traffic flows will increase by 201.1% on these 222 days. This will have a temporary slight negative effect on the N62 and N52, and a temporary moderate negative effect on the L5040. Construction of Grid Network - For construction of the grid network, it is estimated that there will be c. 14 daily return trips made by a truck transporting materials, and 4 made by a car to transport 10 construction staff between one of the proposed temporary construction compounds and the Site. The impacts will be transient and will therefore be temporary and slight. Stage 2 - Delivery of large equipment using extended articulated vehicles - An additional 105 PCUs are forecast on the 19 days / nights that the abnormal loads carrying the large turbine components travel to the site. There will be a temporary, slight negative effect on traffic flows as the delivery of the abnormally sized loads is undertaken at night. Stage 2 - Other deliveries using conventional articulated HGVs - For 9 days an additional 64 PCUs will travel to/from the site. On these days it is considered that the additional traffic will have a temporary imperceptible negative effect on the N62 and N52, and a temporary slight negative effect on the L5040. N52/L5040 Junction - The capacity of the junction most affected on the delivery route will be the priority junction between the N52 and the L5040 leading to the site. This is the only junction on the delivery route where it is forecast that a temporary

increase in traffic flows will exceed 10% during the construction period, thus requiring a junction capacity assessment. The greatest effect will be experienced during peak hours when, during peak construction periods, forecasting c. 11 HGVs (26 pcus).

- **N52 / N62 Junction** - The results of the junction capacity tests set out in Table 15-24 of the EIAR show that the additional HGV's passing through the junction will be accommodated and have a relatively minor effect on the operation of the junction.
- **Grid Connection (See Section 15.1.7 of EIAR)** - The EIAR assesses the impacts of the construction of the grid connection along 13.7km of roadway in 11 no. sections. The estimated duration of construction for each of the 11 no. sections is based on one construction crew operating at one works area along the route at any time. Table 15-25 of the EIAR illustrates the 11 no. sections of roadway assessed indicating the length (KM), Duration of works (days) and potential length of diversion during any road closure. It's estimated that 150m of cable will be constructed in one day and it is estimated that the underground electrical cabling route will take approximately 91 days, or 5 months to construct. Traffic diversions range up to 7.1km (Section 9 for 3 days) for durations of up to 17 days.
- **Abnormal Load Route Assessment (15.1.9 of EIAR)** – An assessment was undertaken of the proposed turbine delivery route from the left turn off the M7 (See Figure 15 – 1b of the EIAR. A swept path analysis was undertaken at all locations using Autotrack in order to establish the locations where the wind turbine transporter vehicles will be accommodated, and the locations where some form of remedial measure may be required. The EIAR assesses a total of 12 no. locations. In some instances, the swept path analysis indicates accommodation areas required, where an over run area will be required, where an overhang into the footpath will be necessary, where an over sail is required, where it will be required to clear existing trees and shrubs and where traffic signals will require to be removed temporarily.
- **Internal Access Junctions (Figure 15-34 of EIAR)** – There are 7 no. internal access junctions (A – G) that provide access through the site for construction and operation. It is noted that traffic volumes on this section of the L5041 are very low, however, the default will be that junctions are managed on site using flagmen as part of the overall site traffic management plan.

Telecommunications and Aviation

- The potential for electromagnetic interference from wind turbines occurs only during the operational phase.

Existing Built Services and Utilities

- **Electricity** - There is potential for overhead electricity lines to be impacted through interference or breakage during the construction phase, specifically during the delivery of turbine components and the laying of grid connection cables along the public road corridor. There will also be a requirement, to temporarily relocate the overhead line pole-set nearest the proposed main site entrance during the turbine delivery phase. This will have a temporary, moderate negative impact on local electricity supply. Working in the vicinity of overhead electricity lines, in the absence of the correct safety measures and procedures has the potential to have a significant, negative impact on health and safety.

Operational Impacts

Traffic and Transport

- Traffic associated with the operational phase will be minimal as the wind farm will be unmanned and will remotely monitored. 3 no. staff members expected to be employed on site with a similar number of vehicle trips, that is 3 car/lgv trips to and from the site per day and potentially some recreational trips. Traffic impact during this phase will be negligible.
- **Internal Access Junctions** - At junctions that will be used for the operational stage, 6m junction radii and 3m x 45m visibility splays are provided in order to ensure safe

access and egress for maintenance staff. This is based on a design (operational) speed of up to 40 km/h.
<u>Telecommunications and Aviation</u>
<ul style="list-style-type: none"> • Pre-Mitigation Effect - Consultation regarding the potential for electromagnetic interference was carried out with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators, which confirmed that no turbines are proposed within the areas requested to be left clear of turbines.
<u>Other Built Services</u>
<ul style="list-style-type: none"> • There will be no operational phase impacts or associated effects on built services and waste management associated with the Proposed Development.
<u>Decommissioning Impacts</u>
<u>Traffic and Transport</u>
<ul style="list-style-type: none"> • Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the site may be decommissioned fully. Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during part of the construction phase when turbines were being erected. The impacts and associated effects will be materially less than during the construction phase as significant ground works are not required to decommission a wind farm. • Traffic generation during decommissioning will be similar but significantly less than the trip generation estimates presented for the construction phase. • The grid connection underground electrical cabling route and onsite substation will remain in place as it will be under the ownership and operation of the ESB and Eirgrid. There are no impacts associated with this.
<u>Telecommunications and Aviation, Other Built Services</u>
<ul style="list-style-type: none"> • No decommissioning impacts noted.
<u>Cumulative Impacts</u>
<u>Traffic and Transport, Telecommunications and Aviation, Other Built Services</u>
<ul style="list-style-type: none"> • No significant cumulative impacts have been identified in the EIAR.

22.7. Mitigation

22.7.1. Traffic and Transport

Mitigation measures are outlined in Section 15.1.12.5 of the EIAR. Mitigation by design measures include selection of the most appropriate delivery route for the turbines. A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures is included as Appendix 15-2 of the EIAR. All measures will be finalised and confirmed in a final TMP which will detail provisions in respect of traffic management to be agreed with the road's authority and An Garda Síochána prior to construction works commencing on site. These requirements are listed in Section 15.1.12.5 of the EIAR. The EIAR notes that details for the Traffic Management Plan for the subject development will be agreed with the Road Section of Tipperary County Council prior to construction and contact will be maintained with the Road and Traffic Section throughout the construction phase.

Mitigation measures for the proposed cable route are outlined in Section 13.4.2.2 of the EIAR including the cable trench being located on the west side of the public road where it extends past the motte and bailey and archaeological monitoring of all ground works within the Zone of Notification under a National Monuments Service licence.

A Decommissioning Plan has been prepared (Appendix 4-6 of EIAR) the detail of which will be agreed with the local authority prior to any decommissioning.

22.7.2. **Telecommunications and Aviation**

Telecommunications - In the event of interference occurring to telecommunications, the Guidelines acknowledge that 'electromagnetic interference can be overcome' using diverter relay links out of line with the wind farm.

Aviation - The scoping response from the IAA and DoD sets out lighting requirements for turbines. These requirements will be complied with and any further details will be agreed in advance of construction with the IAA, i.e. crane erection. The coordinates and elevations for built turbines will be supplied to the IAA, as is standard practice for wind farm developments.

22.7.3. **Existing Built Services and Utilities**

Electricity - Mitigation measures are outlined in Section 15.3.3.2.1 of the EIAR. These measures include measures for working safely with electricity lines such as use to goal posts and signage to the use of site-specific risk assessments.

Other Built Services - Specific measures are incorporated into the CEMP, included as Appendix 4-3 of the EIAR, to ensure that the construction of the Proposed Development will not have effect on underground electrical cables and built services. Mitigations measures are described in Section 15.3.3.2.2 of the EIAR and include measures such as surveying prior to construction so that all existing services will be identified, Liaison will be had with the relevant sections of the Local Authority, Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services. The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.

22.8. Residual Effects

22.8.1. Traffic and Transport

Construction and Decommissioning Stage - During the 12–18-month construction stage, it is forecast that the additional traffic serving the site works will have a short-term slight negative effect on existing road users for the majority of the delivery route, and a short-term moderate negative effect on existing road users and residents on the L5040 approaching the site. While the severity of the traffic effects relates to the additional volumes of traffic movements generated during the construction of the proposed development, the implementation of the mitigation measures included in the proposed traffic management plan will ensure a controlled and efficient operation during this stage and minimise the impacts on local road users. A decommissioning plan will be prepared and implemented in order to minimise the residual effects during this stage. The residual effect will be less than for the construction stage and will be slight to imperceptible.

22.8.2. Telecommunications and Aviation

Telecommunications - No residual impact on the telecommunications signals of any other operator expected, due to distance from or absence of any links in the area.

Aviation - No residual impact on aviation following lighting requirements being implemented.

22.8.3. Existing Built Services and Utilities

Electricity - With the implementation of mitigation measures, the residual impact will be a temporary, slight negative impact on local electricity supply and a short term, slight negative impact on health and safety.

Other Built Services - Following the implementation of mitigation measures, there will be a short-term imperceptible negative residual impact on other services during the construction phase of the Proposed Development.

22.9. The Assessment: Direct and Indirect Effects

I have examined, analysed, and evaluated Chapter 15 and all the associated documentation and submissions received on the file.

22.9.1. Traffic and Transport

The road traffic assessment was based on the worst-case scenario with an assumed construction year of 2028, and I am satisfied that the assessment is robust. I note the third parties concern regarding the impacts of increased levels of traffic on the local roads. The construction phase will last c. 12 – 18 months and it is estimated that a total of 24,539 deliveries by truck, cement mixer or standard articulated HGVs will be made to the site during this period. There is potential for minor localised impacts on the road network and traffic safety during construction and decommissioning phases.

Temporary moderate negative effects on the L5040 and temporary slight negative effects on the N62 and N52 for Stage 1 and the construction of the Grid Network are predicted. Stage 2 which comprises the delivery of abnormal sized loads and other deliveries will cause a temporary slight negative effect on traffic. I note that transport of large turbine components will be carried out at night when the traffic is lightest.

Junction capacity assessments show that the N52/N62 junctions will have a minor effect on the operation of the junction and the N52/L5040 junction will have a temporary increase in traffic flows for the construction period but will operate within acceptable limits.

The Grid Connection will take up to 5 months to construct and will cause local traffic diversions of up to 7.1km for durations of up to 17 days. The abnormal load route assessment has indicated accommodation areas that are required to enable the delivery of the wind turbine components. A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures will be finalised and confirmed in a final TMP which will detail provisions in respect of traffic management to be agreed with the road's authority and An Garda Síochána prior to construction works commencing on site.

I am satisfied that the mitigation measures for the proposed cable route which are outlined in Section 13.4.2.2 of the EIAR including the cable trench being located on the west side of the public road where it extends past the motte and bailey and

archaeological monitoring of all ground works within the Zone of Notification under a National Monuments Service licence, to be appropriate.

I consider there will be moderate negative traffic related impacts on the road network during the construction phase, but I consider these impacts will be temporary and short-term.

The potential impacts associated with the operational phase are not considered significant on any typical day with 3 car/light goods vehicle trips to the site per day and potentially some recreational trips.

A Decommissioning Plan has been prepared the detail of which will be agreed with the local authority prior to any decommissioning, which can be dealt with by condition.

I consider the national, regional and local road network has sufficient capacity to cater for this increase in traffic volumes for all phases of the development. I am satisfied that a robust assessment has been undertaken and that the additional traffic movements for all stages of development will not give rise to any significant traffic hazards or disruptions along any of the roads or main junctions. I am satisfied that there will be no significant adverse impacts in relation to traffic during the operational phase due to the small daily traffic flow generation (3 Car/LGV trips).

I consider that moderate adverse impacts relating to the construction and decommissioning stages can be minimised by conditioning the preparation of a CTMP and conditioning the reinstatement of impacted road surfaces and structures due to the proposed works.

22.9.2. Refusal Reason No. 3: Impact on Road Capacity

Tipperary County Council has refused planning permission based on the proposed development materially contravening the County Development Plan, specifically in relation to policy 12- 4 which seeks to maintain and protect the safety, capacity and efficiency of Tipperary's road network and associated junctions, as follows;

Policy 12 - 4 of the Tipperary County Development Plan, 2022 - 2028 seeks to maintain and protect the safety, capacity and efficiency of Tipperary's road network and associated junctions in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012) and the Trans-European Networks Regulations. The Planning Authority considers that

the applicants' have failed to demonstrate that the proposed development would not have a significant detrimental impact on the capacity and operation of such road network. Accordingly, it is considered that the proposed development would **materially contravene 12-4 of the Tipperary County Development Plan 2022 - 2028** and would be contrary to the proper planning and sustainable development of the area.

In this regard, I note the TCC planners report states;

*'Based on the information provided in the EIAR, the Planning Authority notes the report findings that the proposed development will not result in significant impacts on material assets during construction, operation or decommissioning. However, reference should be taken of the report from the TII outlined earlier in this report which considers that the proposed development is at variance with official policy in relation to control of development on/affecting national roads, as outlined in the DoECLG Spatial Planning and National Roads Guidelines for Planning Authorities (2012), as the proposed development by itself, or by the precedent which a grant of permission for it would set, **would adversely affect the operation and safety of the national road network.**'*

In contrast to this, I note that Tipperary County Council Roads Sections Report dated 26th November 2023 has no objection to the proposed wind farm development subject to a number of roads conditions. (See Section 4.2 of this report)

I note TII's submission on 31st October 2023 in relation to the impact of the development on the operation and safety of the national road network. It seems that the application was refused permission by the Planning Authority based on the applicant failing to demonstrate that the proposed development would not have a significant detrimental impact on the capacity and operation of such road network. This reason for refusal was in line with the concerns raised by TII.

I would like to remind the Bord that permission has been approved under File Ref. 23/60140 by Offaly County Council on 02/05/2024 subject to 10 no. conditions which consists of the provision of 3.3km of underground electrical cabling (38kV) and associated infrastructure and works from the townland of Townparks to the existing Dallow 110kV substation in the townland of Clondallow to facilitate the connection of the proposed Carrig Renewables Wind Farm (the application subject to this appeal)

development to the national grid. In addition, the Bord approved permission under ABP File Ref 304056-19 (Offaly Co. Co. - File Ref – 18/230) for the installation of c. 12.5km of 38kV electricity transmission line. In that case, An Bord Pleanála overturned a refusal of planning related to traffic safety, carrying capacity and the operational efficiency of the material asset (road) and a material contravention of the development plan. I consider there is relevant local precedence for similar type developments, which have received approval from both Offaly County Council and An Bord Pleanála.

The applicant has responded to refusal reason No. 3 as follows;

- The additional information and clarification provided in the appeal documentation demonstrates that a significant detrimental impact on the road will not arise during the construction phase. Upon completion of the construction phase, maintenance and operational traffic will not impact the road network.
- An independent Stage 1 Road Safety Audit was conducted and demonstrates that the N52 / L5040 junction and the proposed traffic management measures on the L5040 will operate safely during the construction phase.

I have reviewed the applicant's response to refusal reason no. 3. The applicant states that it is unclear which policies from the Spatial Planning and National Roads Guidelines for Planning Authorities (DECLG 2012) the application was refused on and hence they have provided a summary of all relevant policies.

The applicant notes that Section 2.5 of the DECLG (2012), relates to the creation of new accesses or additional traffic onto the National Road network at a location within the 100km/h speed limit and highlights that there are Exceptional Circumstances relating to developments of National and Regional Strategic Importance, where a less restrictive approach may be adopted by planning authorities. The applicant states that access to the Wind Farm will be via the junction at the existing L-5040 local road and not a new access point, that traffic generated will be temporary for the construction phase and that there is planning precedent for similar wind farm projects accessing onto the National Road network.

I consider the proposed development is of National and Regional Strategic Importance in relation to Ireland's need to meet renewable energy targets, to combat the climate

emergency. I consider the proposed development will only create additional traffic on a temporary basis for the duration of the construction phase after which there will be negligible traffic relating to the Wind Farm.

The applicant notes that in relation to the Trans-European Transport Network (TEN-T), the proposed wind farm is not a transportation project and will have no impact on other transport related projects.

The application has responded to Nenagh District Engineers concerns in relation to Road Safety at the N52/L-5040 junction. This includes responding to the request for a Traffic and Transport Assessment to address concerns about the capacity of L-5040 to accommodate large quantities of bulk construction material. In relation to traffic capacity on the L-5040, the applicant notes that the Traffic Management Plan (15-2 of the EIAR) shows that there will be sufficient time for organised convoys of HGVs to travel to and from the site unopposed. In relation to structural capacity of the L-5040, pre and post condition surveys of the L-5040 will be undertaken as part of the mitigation measures set out in Section 15.1.12.5 of the EIAR.

Furthermore, the applicant has provided a Stage 1 Road Safety Audit of the proposed temporary traffic management works at the junction of the N52 / L-5040 and the construction delivery route along the L-5040 to the proposed site access. This is provided in Appendix 5 of the appeal document. The audit team identified three problems which the applicant has noted have been resolved as part of the design team response. I am satisfied with the conclusion of the Road Safety Audit for the junction which notes that the N52 / L-5040 junction, the L-5040, together with the proposed Traffic Management Plan, will provide a safe environment for the construction phase of the proposed Wind Farm. The applicants note that a comprehensive Traffic and Transport Assessment was undertaken in the EIAR that accompanied the application. I have reviewed the EIAR and agree that a robust assessment has been undertaken and that based on the information supplied in the application documentation and the appeal documentation, I am of the opinion that no significant traffic impacts will arise and that the proposed development will be in accordance with Policy 12-4 of the Tipperary County Development Plan, 2022 - 2028 which seeks to maintain and protect the safety, capacity and efficiency of Tipperary's road network and associated junctions in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012) and the Trans-European Networks Regulations.

Hence, I do not consider the proposed development materially contravenes 12-4 of the TCDP 2022.

Significant, temporary negative impacts arise during the construction phase of the development. These impacts include additional traffic movements on the local road network, movement of abnormal loads resulting in delays and the provision of alternative routes. Traffic impacts will be short-term and temporary and will be adequately mitigated during construction by the implementation of measures set out in the EIAR, including the final CEMP and Construction Traffic Management Plan.

I have considered the written submissions made in relation to traffic and the reason for refusal in relation to the impact on capacity and operation of the road network and am satisfied that they have been appropriately addressed in terms of the application and the appeal document and that no significant adverse effect is likely to arise, subject to compliance with relevant legislation and guidance, implementation of the EIAR and final CTMP mitigation measures and monitoring and compliance with recommended conditions. The proposed development will not give rise to any significant residual or cumulative impacts with other developments in the surrounding area.

22.9.3. Telecommunications and Aviation

I note the concern raised in relation to the impact on the I-Lofar Radio Telescope in Birr. I am satisfied the applicant has carried out consultation regarding the potential for electromagnetic interference with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators, and that no turbines are proposed within the areas requested to be left clear of turbines. The applicant has stated that in the event of interference occurring to telecommunications, the Guidelines acknowledge that 'electromagnetic interference can be overcome' using diverter relay links out of line with the wind farm.

The applicant has noted that lighting requirements for turbines from the IAA and DoD will be complied with and any further details will be agreed in advance of construction with the IAA. In addition, the coordinates and elevations for built turbines will be supplied to the IAA, as is standard practice for wind farm developments. I note that the IAA has no objection, subject to condition.

Having reviewed the documentation on file and the submissions received, it is my view that the proposed development would not have significant adverse impacts on telecommunications and aviation, subject to the conditions required by the IAA and the Department of Defence and other relevant mitigation measures mentioned in the EIAR. The EIAR assures that no electromagnetic interference with telecommunications will occur and assures that any unforeseen signal disturbances can be overcome. Moreover, adherence to the Department of Defence's specifications for obstacle lighting, ensuring turbine visibility for military aviation, alongside the absence of objections from the IAA, indicates the proposal's compatibility with existing aviation operations. Therefore, subject to conditions and the implementation of the mitigation measures, I conclude the proposed development would not incur significant adverse effects on telecommunications or aviation safety.

22.9.4. Existing Built Services and Utilities

The main impacts for existing built service and utilities occurs during the construction phase. There is potential for overhead electricity lines to be impacted through interference or breakage during the construction phase, specifically during the delivery of turbine components and the laying of grid connection cables along the public road corridor. There will also be a requirement, to temporarily relocate the overhead line pole-set nearest the proposed main site entrance during the turbine delivery phase. This will have a temporary, moderate negative impact on local electricity supply. Working in the vicinity of overhead electricity lines, in the absence of the correct safety measures and procedures has the potential to have a significant, negative impact on health and safety. No operational phase impacts are predicted associated with built services and waste management.

I have assessed the EIAR and consider the mitigation measures outlined in the CEMP and the measures outlined for working safely with electricity lines will enable the safe construction of the wind. I am satisfied that a robust assessment has been completed and consider that subject to conditions and the implementation of the mitigation measures, I conclude the proposed development would not incur significant adverse effects on existing built services and utilities.

22.10. Conclusion: Direct and Indirect (Material Assets)

I have considered the written submissions made in relation to Material Assets and am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise, subject to compliance with relevant legislation and guidance, implementation of the EIAR and final CTMP mitigation measures and monitoring and compliance with recommended conditions. The proposed development will not give rise to any significant residual or cumulative impacts with other developments in the surrounding area.

23.0 Major Accidents and Natural Disasters

23.1. Issues Raised

No issues raised in relation to Major Accidents and Natural Disasters (MA&ND) under this specific Chapter.

23.2. Context

EIAR Chapter 16, presents an assessment of the vulnerability of the project to major accidents and natural disasters (MA&ND). It is a requirement of all EIARs to incorporate a section which identifies and describes the potential major accidents and natural disasters which could occur at the proposed development. These types of events have a very low probability of occurring, but if they do, the impact could be significant, with consequences such as serious harm to people and / or damage to property and the environment. The EIAR identifies the following;

- The relevant major accidents and/or natural disasters, if any, that the Proposed Development could be vulnerable to or could cause;
- The potential for these major accidents and/or natural disasters to result in likely significant adverse environmental effect(s); and

The EIAR provides a statement of authority, then describes the assessment methodology, regulatory and policy framework, the baseline conditions, impacts, mitigation measures, residual effects, monitoring and cumulative impacts.

The assessment of the risk of major accidents and/or disaster is considered in relation to the information required to be provided in the EIAR, i.e., population and human health, biodiversity, land, soil, water, air, climate and material assets, cultural heritage and the landscape.

The EIAR provides a site-specific risk assessment which was carried out in accordance with the Environmental Protection Agency (EPA) 'Guidance on Assessing and Costing Environmental Liabilities' document, 2014.

23.3. Baseline

The EIAR notes in relation to the baseline that a wind farm is not a recognised source of pollution, and it is not subject to Industrial Emissions Directive regulation or any other environmental regulatory consent. Should a major accident or natural disaster occur the potential sources of pollution onsite during the construction, operational and decommissioning phases are limited and of low environmental risk. There is low potential for significant natural disasters to occur at the site. Ireland is noted as being a geologically stable country with a mild temperate climate. The potential natural disasters that may occur are therefore limited to issues such as flooding and fire. The proposed development has low potential to cause natural disasters or major accidents.

The baseline conditions have been assessed in relation to the Major Emergency Plan for Offaly and Tipperary County Councils as outlined in Section 16.3 of the EIAR. Items addressed for Tipperary include Urban Flooding/ Flooding, Aircraft Collision / Loss, Water Contamination, Credible scenario incidents at Merck Sharp & Dohme, Fire/Major Crowd Safety and Civil Disorder, Major Road Traffic Accident/Hazardous Material (Hazmat), Natural Gas Explosion along the main Cork-Dublin Gas Line, Loss of Critical IT Infrastructure, Rail Incident. Items addressed for Offaly include Flooding, Major Road Traffic Accident, Chemical Incident at any industrial premises, Major Fire, Civil disorder at large events and Adverse weather conditions.

23.4. Potential Effects

Likely significant effects of the development, as identified in the EIAR are summarised in Table 23.1;

Table 23.1: Summary of Potential Effects (MA&ND)**Do Nothing**

- If the wind farm were not to proceed, the existing uses for the site would continue, and public road corridor, public open space, discontinuous urban fabric and agriculture along the grid connection route.
- The opportunity to capture a significant part of County Tipperary's and Ireland's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.
- The opportunity to generate local employment and investment would also be lost. This loss of employment and investment would negatively impact the local economy.

Construction Impacts

- The EIAR in Section 16.4.1.2 has identified seven risks specific to the construction phase. These risks are presented in Table 16 – 4 of the EIAR and include critical infrastructure emergencies which would cause a risk of delivery of turbines and infrastructure to site, Severe weather could cause a risk to construction activity on site, Risk of flooding in areas surrounding the site impacting the construction phase, risk of impact on local services and utilities due to construction activity along the grid connection cable route, risk of a traffic incident (collision on site or offsite of construction vehicles) and contamination including discharge or spillage of fuel, chemical solvents into watercourses or percolated to groundwater, discharge due to horizontal directional drilling (HDD) frack out on the grid connection works area, Risk of Fire/Gas explosion due to equipment/infrastructure failure, electrical problems or negligence.
- The scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during construction was identified as 'Contamination' and risk of a Fire / Gas Explosion of the Proposed Development site.

Operational Impacts

- The EIAR in Section 16.4.1.3 has identified four risks specific to the operational phase. These risks are presented in Table 16 – 5 of the EIAR and include the risk of Severe Weather to operational activity on site, blade or turbine damage, the risk of contamination due to discharge or spillage of fuel, chemical solvents, sewage or wastewater into watercourse or percolated to groundwater, risk fire/gas explosion due to equipment or infrastructure failure, electrical problems or employee negligence, risk of collapse or damage to structures due to earthquake, extreme weather events and vehicular collisions due to driver negligence on public roads, risk of traffic incident (collisions onsite and offsite with vehicles involved in the operation of the wind farm).
- The scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during operation was of 'Fire/Explosion'.

Decommissioning Impacts

- The EIAR in Section 16.4.1.4 has identified four risks specific to the decommissioning phase. These risks are presented in Table 16 – 6 of the EIAR and include the risk of Severe Weather to decommissioning activity on site leading to environmental emissions, risk of flooding in areas surrounding the site impacting on decommissioning phase and leading to environmental emissions, risk of traffic incidents (collisions onsite and offsite with construction vehicle) and risk of contamination from discharge or spillage of fuel, chemical solvents into watercourse or percolated to groundwater.
- The scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during decommissioning was of 'Contamination' of the Proposed Development.

Cumulative Impacts
<ul style="list-style-type: none">Section 16.4.5 of the EIAR states that the proposed development with mitigation measures in place, was found to have no potential for significant in-combination or cumulative effects associated with the potential for the project to be impacted by major accidents or natural disaster or the proposed developments potential to cause major accidents or natural disaster.

23.5. Mitigation

Section 16.4.2 of the EIAR confirms that the wind farm will be designed and built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. In addition, a Risk Management Plan will be prepared and implemented on site to ensure an effective response to disasters or the risk of accidents.

Contamination – The EIAR notes that potential effects associated with contamination and mitigation measures to protect the environment are fully addressed in Chapter 9 of the EIAR (Hydrology). The mitigation measures and procedures and measures described in the Construction and Environmental Management Plan (CEMP) in Appendix 4-3 of the EIAR, will ensure the protection of the environment from contamination. A final CEMP will be updated prior to the commencement of the development which will be a live document to ensure that potential risks of major accident and/or disaster are identified, avoided and mitigated, as necessary.

23.6. Residual Effects

Table 16-9 of the EIAR presents the potential risks identified during all phases of development, which have all been classified as 'low risk' scenarios in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010) and that when all mitigation detailed in the EIAR is implemented, there will be no significant residual effect(s) as follows;

Contamination - Section 16.4.1.6 of the EIAR explains that there is a potential risk of contamination from site activities from potential release of hydrocarbons during all phases of development. The risk of contamination was given a risk score of 4 on a very precautionary basis. However, following implementation of environmental protection measures outlined in Chapter 9, Hydrology to reduce the risk of accidental spillage and contamination of pollution risk to groundwater, surface water and

associated ecosystems, and to terrestrial ecology, the risk of contamination is 'very unlikely' to occur and will have 'limited' consequences should it do so, representing a 'low-risk scenario' during the construction and decommissioning phases. Hence, there will be no significant residual effects associated with this potential impact.

Fire / Explosion - There is a potential risk of fire/explosion at the site, however, as outlined in Section 16.2.1, the wind farm will be designed, built and operated in line with current best practice. The Proposed Development will be subject to a fire safety risk assessment which will assist in the identification of any major risks of fire on site, and mitigation of the same during operation.

23.7. The Assessment: Direct and Indirect Effects

I have examined, analysed, and evaluated Chapter 16 of the EIAR. A wind farm by its nature is not a recognised source of pollution and it is not subject to an Industrial Emissions Directive Regulation or any other EPA regulatory consent. I consider there is a low risk for significant natural disasters to occur having regard to the stable geology and mild climate of the country.

The EIAR provides a full risk assessment to establish the likelihood and impact of any major accident or natural disaster. This includes a risk assessment relating to transportation, contamination and fire/explosion during construction, operation and decommissioning phases. The highest risk was identified as 'Contamination' of the development site and risk of 'Fire / Gas Explosion' during all phases of development. Section 16.4.2 of the EIAR confirms that the wind farm will be designed and built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. Furthermore, prior to commencement of development, a Risk Management Plan will be prepared and implemented on site to ensure an effective response to disasters, or the risk of accidents and a final CEMP will be prepared and implemented prior to commencement to ensure that potential risks of major accident and/or disaster are identified, avoided and mitigated. I consider based on the risk assessment undertaken and the mitigation proposed that the proposed development has a low potential to cause natural or major accidents and that the Risk Management Plan and final CEMP can be dealt with by way of condition.

23.8. **Conclusion: Direct and Indirect (MA&ND)**

I consider that an adequate description of the expected significant adverse effects on the environment due to the project's vulnerability to major accidents and disasters has been provided in the applicants EIAR. The EIAR outlines comprehensive risk management and mitigation strategies designed to minimise such impacts. I consider that the risks identified to be reasonable and the mitigation measures proposed will be adequate to minimise the risks highlighted. Based on the above, I am satisfied that the overall risk of Major Accidents and Disasters has been adequately addressed and the risk of MA&D is low.

24.0 **Interactions**

Chapter 17 of the EIAR evaluates the potential interaction of effects described within the EIAR. A matrix of the interactions is presented in Table 17-1 of the EIAR. The EIAR notes that the potential for interactions has been assessed through the EIAR as part of the Impact Assessment process and that where any potential negative impacts have been identified during the assessment process, these impacts have been avoided or reduced by design and the proposed mitigation measures, as presented throughout the EIAR and highlighted in Section 17.2 of the EIAR.

I have considered the interactions and interrelationships between environmental effects and am satisfied that significant impacts in relation to interactions can be avoided, managed and mitigated by the measures contained within the EIAR and any recommended planning conditions.

25.0 **Reasoned Conclusion**

Having regard to the examination of environmental information contained above, to the EIAR provided by the applicant and the submissions received, the contents of which I have noted, I consider that the main significant direct and indirect effects of the proposed development on the environment are, and will be mitigated as follows:

- **Landscape and Visual Effects:** The introduction of the turbines will change the existing landscape. This will result in significant residual direct, indirect and

cumulative landscape character and visual effects in the immediate area of the proposed wind farm site up to 800m. Residual effects will remain.

- **Climate:** The proposed development would have a significant positive impact on climate due to the displacing of fossil fuel energy generation and the associated displacement of CO₂ and other greenhouse gas emissions. Over the proposed 35-year lifetime of the development, 1,417,934 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation, which is a significant positive, long-term impact on climate due to its contribution to renewable energy targets and the reduction of GHG emissions.
- **Traffic:** Negative impacts arise during the construction phase of the development. These impacts include additional traffic movements on the local road network, movement of abnormal loads resulting in delays and the provision of alternative routes. Traffic impacts will be short-term and temporary and will be adequately mitigated during construction by the implementation of measures set out in the EIAR, including the final CEMP, Construction Traffic Management Plan.
- **Population and Human Health:** Potential significant positive impacts on the socio-economic profile of the area due to community funding and investment.
- **Archaeology and Cultural Heritage:** The removal of peat and spoil during the construction phase has the potential to have a permanent, significant, negative effect on previously unrecorded sub-surface archaeological site and artefacts. With the implementation of mitigation measures outlined in Chapter 13 of the EIAR the potential for negative effects on unrecorded sites and artefacts during excavations, will be reduced.
- **Ornithology:** The introduction of the windfarm at this location will result in local level impacts that may be underestimated particularly for the local population of whooper swans and in terms of the current and future ornithological ecological value of the site. Mitigation measures proposed include the use of the Community Benefit Fund for local biodiversity projects and commitment to offering compensation to turbary rights holders. This would have a positive impact for the promotion and natural regeneration of the peatlands.

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. Notwithstanding the foregoing having regard to the pressing need to roll out alternative energy sources, it is considered that these effects are not sufficient to warrant refusing permission for the development and are acceptable.

26.0 The Likely Significant Effects on a European Site

26.1. Introduction

In this section of my report, I carry out a Stage 1 and 2 Appropriate Assessment in relation to the proposed development. I have assessed the Applicants AA Screening and NIS. I have reviewed the Council, the DAU and the Observer to the Appeals documentation regarding issues relating to Appropriate Assessment and have analysed the Applicants appeal documentation, which has sought to address the various concerns raised. I have responded to these concerns and to Tipperary County Councils reason for refusal No. 2 relating to the impact on the Natura 2000 Network in Section 14.8 of this report.

I have completed my own assessment below and have provided a reasoned conclusion at the end of my assessment. The Planning Authorities decision on this application was appealed and the Board is now the competent authority for making the decision.

The areas addressed in this section are as follows;

- Compliance with Articles 6(3) of the EU Habitats Directive
- Appropriate Assessment Screening Determination (See Appendix 1 of this Report)
- Appropriate Assessment Screening (See Appendix 2 of this Report)
- Appropriate Assessment Conclusions

26.2. Compliance with Articles 6(3) of the EU Habitats Directive

Article 6(3) of this Directive requires that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects shall be

subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. The competent authority must be satisfied that the proposal will not adversely affect the integrity of the European Site.

26.3. Issues Raised in relation to Appropriate Assessment

26.3.1. Prescribed Bodies, Third-Party Concerns and Observers to the Appeal

The Dept. of Heritage, Local Government and Heritage (DAU) as well as a number of third parties and observers to the appeal have raised their concern in relation to the level of information submitted with the application regarding the impact of the proposed wind farm on nearby Natura 2000 sites, ornithology and biodiversity in general. I have detailed these concerns in Section 5.1.2 (DAU) and Section 5.2 (Third party observations), and Section 8.3 (Observations to the Appeal) of this report and will not repeat here.

I have assessed the Planning Authorities second reason for refusal in relation to the impact on Impact on Local Sites within the Natura 2000 Network and Annex I bird species in Section 13.8 of this report. To conclude, I disagree with the opinion of the Planning Authority and the DAU and consider that the applicant has carried out sufficient and robust bird surveys over a three-year period to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network. Having considered the connectivity of the proposed wind farm site to the species of birds associated with the local SPAs including the Dovegrove Callows SPA (c. 6.7km) Little Brosna (c. 6.1km), Middle Shannon Callows (c.9.8km) and Lough Derg (c. 7.9km), I am satisfied that due to the separation distance between the site and the nearby SPAs and the foraging distances of the species associated with the SPAs, that the likelihood of significant effects on the environment can be excluded. I do not consider the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species and I do not consider the proposed development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive.

26.4. The Natura Impact Statement (NIS)

The application was accompanied by an Appropriate Assessment (AA) Screening Report (Stage 1) and NIS (Stage 2) which was prepared in line with current best practice and describes the proposed development, the project site and the surrounding area. The AA Screening/NIS comprises the following;

- Natura Impact Statement – Report
- NIS Appendix 1 part 1 – Description of the Proposed Development
- NIS Appendix 1 part 2 – OCC Site Layout Sheets & TCC Layout Sheets
- NIS Appendix 1 part 3 – Peat Management Plan
- NIS Appendix 1 part 4 – Construction and Environmental Management Plan (CEMP)
- NIS Appendix 1 part 5 – Surface Water Management Plan
- NIS Appendix 1 part 6 – Decommissioning Plan
- NIS Appendix 2 part 1 – Hydrology and Hydrogeology
- NIS Appendix 2 part 2 – Flood Risk Assessment
- NIS Appendix 3 part 3 – Surface Water Quality Laboratory Reports
- NIS Appendix 2 part 4 – Water Framework Directive Assessment
- NIS Appendix 3 – Aquatic Baseline Report
- NIS Appendix 4 – Ornithology Figures and Survey Data
- NIS Appendix 5 – Collision Risk Analysis
- NIS Appendix 6 – List of Plans and Projects

The application was accompanied by an NIS which was prepared in line with current best practice and describes the proposed development, the project site and the surrounding area. The NIS contained a Stage 1 Screening Assessment which concluded that a Stage 2 Appropriate Assessment was required. It concluded that;

‘It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Development, individually or in combination with other plans and projects, would be likely to have a significant effect on the following European Sites:

- Ballyduff/Clonfinane Bog SAC [000641]
- Arragh More (Derrybreen) Bog SAC [002207]
- Kilcarren-Firville Bog SAC [000647]
- Lough Derg, North-east Shore SAC [002241]
- River Shannon Callows SAC [000216]
- Dovegrove Callows SPA [004137]
- River Little Brosna Callows SPA [004086]

- *Middle Shannon Callows SPA [004096]*
- *Lough Derg (Shannon) SPA [004058]'*

As a result, an Appropriate Assessment is required, and a Natura Impact Statement shall be prepared in respect of the Proposed Development.'

The applicants NIS outlined the methodology used for assessing potential impacts on the habitats and species within 9 no. European Sites that have the potential to be affected by the proposed development. It predicted the potential impacts for these sites and their conservation objectives, it suggested mitigation measures, assessed in-combination effects with other plans and projects and it identified any residual effects on the European sites and their conservation objectives.

The applicants NIS concludes as follows'

'This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites. Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction and operation of the Proposed Development does not adversely affect the integrity of European sites. Therefore, it can be objectively concluded that the Proposed Development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.'

26.5. AA Screening Determination (See Appendix 1 of this Report)

In accordance with Section 177U(4) of the Planning and Development Act 2000 (as amended) and on the basis of objective information, I conclude that the proposed development is likely to have a significant effect on the protected birds and habitat of the following sites 'alone' in respect of effects associated with construction and disturbance on bird species within the nearby SACs/SPAs;

- Ballyduff/Clonfinane Bog SAC [000641],
- Arragh More (Derrybreen) Bog SAC [002207],
- Kilcarren-Firville Bog SAC [000647],
- Lough Derg, North-east Shore SAC [002241],
- River Shannon Callows SAC [000216],

- Dovegrove Callows SPA [004137],
- River Little Brosna Callows SPA [004086],
- Middle Shannon Callows SPA [004096]
- Lough Derg (Shannon) SPA [004058]

The applicants AA Screening included 21 no. European Sites in total. I do not consider that any other European sites fall within the zone of influence of the project based on a combination of factors including the nature and scale of the project, the distance from the site to European sites, and any potential pathways which may exist from the development site to a European site, aided in part by the applicant's Appropriate Assessment Screening Report and NIS for the proposed development, the conservation objectives of Natura 2000 sites, the lack of suitable habitat for qualifying interests, as well as by the information on file and I have also visited the site. Thus, having regard to the qualifying interests for which the sites were designated and in the absence of connections to and distance between the application site, it is therefore reasonable to conclude that on the basis of the information on the file, which I consider adequate in order to issue a screening determination, that the proposed development, individually or in combination with other plans or projects would not be likely to have a significant effect on the following 12 no. European Sites in view of the site(s) conservation objectives;

- Ridge Road, SW of Rapemills SAC [000919] (1.7km);
- Sharavogue Bog SAC [000585] (2.5km);
- Liskeen Fen SAC [001683] (2.6km);
- All Saints Bog and Esker SAC [000566] (3.6km);
- Lisduff Fen SAC [002147] (4km);
- Island Fen SAC [002236] (7.1km);
- Scohaboy (Sopwell) Bog SAC [002206] (7.7km);
- Redwood Bog SAC [002353] (8.2km);
- Slieve Bloom Mountains SAC [000412] (14.6km);
- Lower River Shannon SAC [002165] (35km overland, 83km hydrological).
- All Saints Bog SPA [004103] (3.6km);
- Slieve Bloom Mountains SPA [004160] (12.7km)

I conclude that a Stage 2 Appropriate Assessment is not therefore required for the 12 no. sites outlined above.

To conclude, I consider that Appropriate Assessment (Stage 2) [under Section 177V of the Planning and Development Act 2000] is required on the basis of the effects of

the project 'alone' for the following sites, for which the potential for significant effects could not be excluded:

- Ballyduff/Clonfinane Bog SAC [000641],
- Arragh More (Derrybreen) Bog SAC [002207],
- Kilcarren-Firville Bog SAC [000647],
- Lough Derg, North-east Shore SAC [002241],
- River Shannon Callows SAC [000216],
- Dovegrove Callows SPA [004137],
- River Little Brosna Callows SPA [004086],
- Middle Shannon Callows SPA [004096]
- Lough Derg (Shannon) SPA [004058]

This conclusion is based on:

- Objective information presented in the Applicants Screening Report and NIS,
- Standard pollution controls that would be employed regardless of proximity to a European site and effectiveness of same,
- Distance from European Sites,
- The absence of meaningful pathway to any European Site,
- Impacts predicted would not affect the conservation objectives.

No measures intended to avoid or reduce harmful effects on European sites were taken into account in reaching this conclusion.

26.6. Appropriate Assessment Conclusion - Stage 2 (Appendix 2 of this Report)

The proposed development has been considered under the assessment requirements of Section 177U and 177AE of the Planning and Development Act 2000 and having regard to:

- The scientific information on file in respect of the Ballyduff/Clonfinane Bog SAC [000641], Arragh More (Derrybreen) Bog SAC [002207], Kilcarren-Firville Bog SAC [000647], Lough Derg, North-east Shore SAC [002241], River Shannon Callows SAC [000216], Dovegrove Callows SPA [004137], River Little Brosna Callows SPA [004086], Middle Shannon Callows SPA [004096], Lough Derg (Shannon) SPA [004058]

- The available information as presented in the submitted documents regarding habitats, species, ground and surface water pathways between the application site and the European sites and other information available, (incl. the desktop studies and field surveys), NPWS website and aerial imagery,
- The nature and scale of the proposed development and works and the nature of potential likely significant effects,
- The separation distances and the lack of connections between the proposed development site and the European sites examined in this assessment,
- The nature of the qualifying interests, special conservation interests and conservation objectives of the European sites,
- The potential impacts and mitigation measures proposed for all phases of the proposed development.

This conclusion is based on a complete assessment of all aspects of the proposed project. I consider that it is reasonable to conclude on the basis of the information on the file, which I consider adequate in order to carry out a Stage 2 Appropriate Assessment, that the proposed development, individually or in combination with other plans and projects would / would not adversely affect the integrity of the European sites including Ballyduff/Clonfinane Bog SAC [000641], Arragh More (Derrybreen) Bog SAC [002207], Kilcarren-Firville Bog SAC [000647], Lough Derg, North-east Shore SAC [002241], River Shannon Callows SAC [000216], Dovegrove Callows SPA [004137], River Little Brosna Callows SPA [004086], Middle Shannon Callows SPA [004096], Lough Derg (Shannon) SPA [004058] or any other European site, in view of the site's Conservation Objectives.

26.7. **Appropriate Assessment Conclusions**

I am satisfied that the proposed development individually or in combination with other plans or projects would not adversely affect the integrity of any European sites in light of their conservation objectives (subject to the implementation of mitigation measures outlined in Appendix 2 of this Report and the applicants EIAR and NIS).

27.0 Recommendation

Having regard to the foregoing, I recommend that permission for the construction of the 7 No. wind turbine wind farm and associated infrastructure should be GRANTED permission for the following reasons and considerations subject to conditions.

28.0 Reasons and Considerations

In coming to its decision, the Board is consistent with:

- Climate Action and Low Carbon Development Act 2015 (as amended) as amended by Climate Action and Low Carbon Development (Amendment) Act 2021
- Climate Action Plan 2024 (CAP 2024) and Climate Action Plan 2025 (CAP 2025),

In coming to its decision, the Board had regard to;

European, National, Regional, County and other support for renewable energy development as follows:

- RED III (European Renewable Energy Directive (EU/2023/2413)),
- European Wind Power Action Plan,
- REPowerEU Plan 2022 and Directive EU 2018/2001, as amended 18.05.2022,
- European Green Deal 2020,
- National Planning Framework 2018-2040 (NPF),
- The National Development Plan 2021-2030 (NDP),
- Energy Security in Ireland to 2030, Energy Security Package, Nov. 2023,
- National Energy Security Framework, April 2022,
- Policy Statement on Security of Electricity Supply, November 2021,
- Long-Term Strategy on Greenhouse Gas Emissions Reductions (April 2023),
- National Climate and Energy Plan 2021-2030 (NCEP),
- National Biodiversity Action Plan 2023-2030 (NBAP)
- National Landscape Strategy for Ireland 2015-2025 (NLS),
- Regional Spatial Economic Strategy for the Southern Region 2020-32 (RSES),
- National Landscape Strategy for Ireland, 2015-2025,
- The National Peatlands Strategy 2015 – 2025 (DAHG, 2015),
- The Wind Energy Development Guidelines, Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government (June 2006) (WEDG, 2006),
- Draft Wind Energy Development Guidelines 2019,
- Tipperary County Development Plan 2022 – 2028 (the Plan),

- The documentation submitted with the planning application including the Environmental Impact Assessment Report (EIAR), Appropriate Assessment Screening and NIS,
- The submissions made in connection with the application,
- The pattern of the existing and permitted development in the area,
- The character of the landscape in the area of the site and in the wider area of the site,
- Mitigation measures proposed for the construction of the site,
- Mitigation measures and monitoring proposed for the operation of the site,
- The separation distances between the proposed development and dwellings or other sensitive receptors,
- 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 absence of likely significant effects of the proposed development on European Sites,
- The report of the Inspector.

28.1. Appropriate Assessment: Stage 1

The Board considered the Screening Report for Appropriate Assessment and all other relevant submissions and carried out an appropriate assessment screening exercise in relation to the potential effects of the proposed development on designated European sites. The Board noted that the proposed development is not directly connected with or necessary for the management of any European Site and considered the nature, scale, and location of the proposed development, as well as the report of the Inspector. The Board agreed with the screening exercise carried out by the Inspector.

The Board concluded that, having regard to the qualifying interests for which the sites were designated and in the absence of connections to and distance between the application site and the European sites, including Ridge Road, SW of Rapemills SAC [000919]; Sharavogue Bog SAC [000585]; Liskeenan Fen SAC [001683]; All Saints Bog and Esker SAC [000566]; Lisduff Fen SAC [002147]; Island Fen SAC [002236]; Scohaboy (Sopwell) Bog SAC [002206]; Redwood Bog SAC [002353]; Slieve Bloom Mountains SAC [000412]; Lower River Shannon SAC [002165], All Saints Bog SPA [004103]; Slieve Bloom Mountains SPA [004160] they could be screened out from further consideration and that the proposed development, individually or in combination with other plans or projects would not be likely to have significant effects

on these European Sites or any other European Site in view of the sites' conservation objectives and that a Stage 2 appropriate assessment is therefore not required in relation to these European Sites.

The Board considered that an appropriate assessment of the implications of the proposed development for the Ballyduff/Clonfinane Bog SAC [000641], Arragh More (Derrybreen) Bog SAC [002207], Kilcarren-Firville Bog SAC [000647], Lough Derg, North-east Shore SAC [002241], River Shannon Callows SAC [000216], Dovegrove Callows SPA [004137], River Little Brosna Callows SPA [004086], Middle Shannon Callows SPA [004096], Lough Derg (Shannon) SPA [004058] required further investigation.

28.2. Appropriate Assessment: Stage 2

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposed development for Ballyduff/Clonfinane Bog SAC [000641], Arragh More (Derrybreen) Bog SAC [002207], Kilcarren-Firville Bog SAC [000647], Lough Derg, North-east Shore SAC [002241], River Shannon Callows SAC [000216], Dovegrove Callows SPA [004137], River Little Brosna Callows SPA [004086], Middle Shannon Callows SPA [004096] and Lough Derg (Shannon) SPA [004058].

The Board considered that the information before it was adequate to allow the carrying out of an Appropriate Assessment as well as the report of the Inspector. In completing the assessment, the Board considered the likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects, the mitigation measures which are included as part of the current proposal and the Conservation Objectives for these European Sites. 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 aforementioned European Sites, having regard to the sites' Conservation Objectives.

In overall conclusion, the Board was satisfied that the proposed development would not adversely affect the integrity of Ballyduff/Clonfinane Bog SAC [000641], Arragh More (Derrybreen) Bog SAC [002207], Kilcarren-Firville Bog SAC [000647], Lough

Derg, North-east Shore SAC [002241], River Shannon Callows SAC [000216], Dovegrove Callows SPA [004137], River Little Brosna Callows SPA [004086], Middle Shannon Callows SPA [004096] and Lough Derg (Shannon) SPA [004058] or any other European Site in view of the sites' Conservation Objectives.

28.3. Likely Effects on the Environment/Environmental Impact Assessment

The Board completed an environmental impact assessment of the proposed development taking account of:

- a) the nature, scale and extent of the proposed development,
- b) the Environmental Impact Assessment Reports (EIAR's) and associated documentation submitted in support of the application,
- c) the Screening for Appropriate Assessment and NIS and associated documentation submitted in support of the application,
- d) the planning authority reports, and the submissions received from the Observers and Prescribed Bodies, and
- e) the Inspector's report.

The Board considered that the environmental impact assessment report, supported by the documentation submitted by the applicant, adequately considers alternatives to the proposed development, and identifies and describes adequately the direct, indirect, residual and cumulative effects of the proposed development on the environment.

The Board agreed with the examination, set out in the Inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the applicant and submissions made in the course of the application.

The Board considered, and agreed with the Inspectors reasoned conclusions, that the main significant direct and indirect effects of the proposed development on the environment are and would be mitigated as follows:

- **Landscape and Visual Effects:** The introduction of the turbines will change the existing landscape. This will result in significant residual direct, indirect and

cumulative landscape character and visual effects in the immediate area of the proposed wind farm site up to 800m. Residual effects will remain.

- **Climate:** The proposed development would have a significant positive impact on climate due to the displacing of fossil fuel energy generation and the associated displacement of CO₂ and other greenhouse gas emissions. Over the proposed 35-year lifetime of the development, 1,417,934 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation, which is a significant positive, long-term impact on climate due to its contribution to renewable energy targets and the reduction of GHG emissions.
- **Traffic:** Negative impacts arise during the construction phase of the development. These impacts include additional traffic movements on the local road network, movement of abnormal loads resulting in delays and the provision of alternative routes. Traffic impacts will be short-term and temporary and will be adequately mitigated during construction by the implementation of measures set out in the EIAR, including the final CEMP, Construction Traffic Management Plan.
- **Population and Human Health:** Potential significant positive impacts on the socio-economic profile of the area due to community funding and investment.
- **Archaeology and Cultural Heritage:** The removal of peat and spoil during the construction phase has the potential to have a permanent, significant, negative effect on previously unrecorded sub-surface archaeological site and artefacts. With the implementation of mitigation measures outlined in Chapter 13 of the EIAR the potential for negative effects on unrecorded sites and artefacts during excavations, will be reduced.
- **Ornithology:** The introduction of the windfarm at this location will result in local level impacts that may be underestimated particularly for the local population of whooper swans and in terms of the current and future ornithological ecological value of the site. Mitigation measures proposed include the use of the Community Benefit Fund for local biodiversity projects and commitment to offering compensation to turbary rights holders. This would have a positive impact for the promotion and natural regeneration of the peatlands.

The Board completed an environmental impact assessment in relation to the proposed development and concluded that, subject to the implementation of the mitigation measures proposed, and subject to compliance with the conditions set out below, the effects of the proposed development on the environment, by itself and in combination with other plans and projects in the vicinity would be acceptable. In doing so, the Board adopted the report and conclusions of the Inspector.

28.4. Proper Planning and Sustainable Development

It is considered that, subject to compliance with the conditions set out below, the proposed development would be in accordance with the Climate Action and Low Carbon Development Act 2015 (as amended), the National Biodiversity Action Plan 2023-2030, the National Planning Framework, the Regional Spatial Economic Strategy for the Southern Region 2020-32 (RSES) and the provisions of the Tipperary County Development Plan 2022 – 2028 (the Plan).

It would comply with European, National, and Regional renewable energy policies and with the provisions of Local policy, would be consistent with the obligations of the Climate Action Plan 2024 and 2025, would not have an unacceptable impact on the character of the landscape, would not have a significant adverse impact on biodiversity, ecology or ornithology, would be acceptable in terms of traffic safety and would make a positive contribution to Ireland's renewable energy and security of energy supply requirements. The proposed development would therefore be in accordance with the proper planning and sustainable development of the area.

The Board noted that Objective TWIND 4.13 of the Tipperary County Development Plan 2022 refers to 'Areas Unsuitable for New Development', where new wind energy projects will not normally be considered in these areas. The proposed wind farm is located on lands deemed 'Unsuitable' for wind farm development. As such, the proposed development can be considered as being a material contravention given that it is not located on an Area Open for Consideration nor does it comply with policy TWIND 4.14, where wind farm development may be considered on a case-by-case basis, as set out in the statutory plan.

The Board noted the provisions of Section 37(2)(a) of the Planning and Development Act 2000, as amended, where the Board may *'decide to grant a permission even if the proposed development contravenes materially the Development Plan.'*

Subject to the provisions of Section 37(2)(b), the proposed wind farm development complies with these provisions based on the proposed Wind Farm development being of strategic and national importance, based on the Climate Plans and Policy Objectives, National and Regional Objectives and on achieving Europe and Irelands legally binding renewable energy targets including the 9 GW onshore wind target and achieving 80% of electricity demand from renewable sources by 2030.

The Board also noted that Tipperary County Council supports the development of renewable energy in the County, under Wind energy policy *'TWIND 1: It is the policy of the Council to support, in principle and in appropriate locations, the development of wind energy resources in county Tipperary. The Council recognises that there is a need to promote the development of 'green electricity' resources and to reduce fossil fuel dependency and greenhouse gas emissions in order to address the global issue of climate change, and to comply with European and International policies with regards to renewable and sustainable energy resources.'*

On the basis of the above, and noting the conclusions reached in the Inspectors report that the proposed development accords with the proper planning and sustainable development and that environmental effects would be acceptable, the Board was satisfied that, notwithstanding the provisions of TWIND 4.13, it is appropriate for the Board to grant permission, taking into account the wider support for wind energy set out in the Tipperary County Development Plan 2022-2028 as well as national and regional policy support for onshore wind energy, and the obligations placed on the Board under Section 15 of the Climate Action and Low Carbon Development Act 2015, as amended. In conclusion on this matter, the Board was satisfied that the proposed wind farm located in an 'Area Unsuitable for New Development' in County Tipperary is acceptable and in relation to the current proposal is in accordance with the proper planning and sustainable development for the area.

28.5. Recommended Conditions

1.	<p>The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, 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.</p> <p>Reason: In the interest of clarity.</p>
2.	<p>The period during which the development hereby permitted may be carried out shall be ten years from the date of this Order.</p> <p>Reason: Having regard to the nature and extent of the proposed development, the Board considered it appropriate to specify a period of validity of this permission in excess of five years.</p>
3.	<p>This permission shall not be construed as any form of consent or agreement to a connection to the national grid or to the routing or nature of any such connection.</p> <p>Reason: In the interest of clarity.</p>
4.	<p>(a) The permission shall be for a period of 35 years from the date of the first commissioning of the windfarm. All structures, including foundations, shall then be removed and the site reinstated unless, prior to the end of that period, planning permission shall have been granted for their retention for a further period.</p> <p>(b) Prior to the commencement of development, a detailed Site Restoration Plan providing for the removal of the turbines and all ancillary structures, and a timescale for its implementation, shall be submitted to and agreed in writing with the planning authority.</p> <p>(c) On full or partial decommissioning or if the wind farm ceases operation for a period of more than one year the windfarm, the turbines and all ancillary structures shall be dismantled and removed permanently from the site. The</p>

	<p>site shall be restored in accordance with the agreed Site Restoration Plan and all decommissioned structures shall be removed from the site within 12 months of decommissioning.</p> <p>Reason: To enable the planning authority to review the operation of the windfarm over the stated time period, having regard to the circumstances then prevailing, and in the interest of landscape restoration upon cessation of the project.</p>
5.	<p>The mitigation measures contained in the submitted Environmental Impact Assessment Report (EIAR) shall be implemented.</p> <p>Reason: To protect the environment.</p>
6.	<p>The mitigation measures contained in the submitted Natura Impact Statement (NIS) shall be implemented.</p> <p>Reason: To protect the environment and the integrity of European sites.</p>
7.	<p>Prior to commencement of development, the applicant shall submit to the planning authority a complete schedule of all mitigation measures. This shall identify who is responsible for the implementation of these measures and a timescale for implementation.</p> <p>Reason: To protect the environment and the integrity of European sites.</p>
8.	<p>The applicant shall appoint a Community Liaison Officer for all stages of the development who shall be the first point of contact for residents and be responsible for monitoring and reporting of complaints, maintaining a complaints register, addressing complaints and for discharging information in relation to the development to residents.</p> <p>Reason: In the interest of amenity and orderly development.</p>
9.	<p>The following design requirements shall be adhered to:</p> <p>(a) The wind turbines shall be designed as follows, in accordance with the turbine options assessed in the Environmental Impact Assessment Report and Natura Impact Statement, together with application documentation;</p>

	<ul style="list-style-type: none"> • Turbine Tip Height – Maximum Height 185m, Minimum Height 179.5m • Hub Height – Maximum height 110.5m, Minimum height 105m • Rotor Diameter – Maximum length 163m, Minimum length 149m <p>(b) The wind turbines, including masts and blades, shall be finished externally in a light grey colour to be agreed in writing with the planning authority prior to commencement of development.</p> <p>(c) Cables within the site shall be laid underground.</p> <p>(d) The wind turbines shall be geared to ensure that the blades rotate in the same direction.</p> <p>(e) Transformers associated with each individual turbine and mast shall be located either within the turbine mast structure or at ground level beside the mast.</p> <p>Reason: In the interest of visual amenity.</p>
10.	<p>Prior to the commencement of development, details of the following shall be submitted to the planning authority for written agreement:</p> <p>(a) Details of external finishes to substation buildings and structures, and for provision of CCTV to the sub-station compound.</p> <p>(b) Full details of turbines (including tip height, hub height and rotor diameter).</p> <p>Reason: In the interest of clarity and visual amenity.</p>
11.	<p>The Biodiversity Management and Enhancement Plan (BMEP) shall be implemented in accordance with the commitments outlined therein.</p> <p>Reason: In the interest of biodiversity.</p>
12.	<p>The developer shall retain the services of a suitably qualified and experienced bat and bird specialists to undertake appropriate bat and bird surveys of the site, in accordance with the mitigation and monitoring arrangements.</p>

	<p>Reason: To ensure appropriate monitoring of the impact of the development on the avifauna and bat species of the area.</p>
13.	<p>The developer shall retain the services of a suitably qualified and experienced Ecologist (to perform the role of Ecological Clerk of Works) to undertake pre-construction surveys at the various project elements, immediately prior to commencing work to check for the presence of protected species in the vicinity, and to oversee and ensure the implementation of all environmental mitigation and monitoring measures during construction and operation of the wind farm.</p> <p>Reason: To protect biodiversity.</p>
14.	<p>Noise levels generated by the windfarm following commissioning by itself or in combination with other existing or permitted wind energy development in the vicinity, when measured externally at noise sensitive location the windfarm following commissioning by itself or in combination with other existing or permitted wind energy development in the vicinity, when measured externally at noise sensitive locations, shall not exceed:</p> <ul style="list-style-type: none"> • For the daytime period 7am to 11pm, in quiet environments, where background noise is less than 30dB(A)_{L90 T10}, a maximum noise level of 40dB(A)_{L90 T10}, • For daytime periods, 7am to 11pm, where the background noise level exceeds 30dB(A)_{L90 T10}, the greater of 45dB(A)_{L90 T10}, or 5dB(A) above background levels, • For the nighttime period 11pm to 7am, for all noise environments, 43dB(A)_{L90 T10}. <p>Prior to the commissioning of the windfarm, the developer shall submit and agree in writing with the planning authority a Noise Compliance Monitoring Programme (NCMP) for the operational windfarm. The NCMP shall include a detailed methodology for all sound measurements, including frequency of monitoring and recording of results, which shall be made publicly available. The results of the initial noise compliance monitoring to be submitted to and agreed in writing with the planning authority within 12 months of</p>

	<p>commissioning of the wind farm. The NCMP shall be fully implemented during the operation of the windfarm.</p> <p>Reason: In order to protect the amenities of noise sensitive properties in the vicinity of the development.</p>
15.	<p>(a) Appropriate software shall be employed on each of the turbines to ensure that there will be no shadow flicker at any existing nearby dwelling. Turbine shutdown shall be undertaken by the wind energy developer or operator in order to eliminate the potential for shadow flicker.</p> <p>(b) A report shall be prepared by a suitably qualified person in accordance with the requirements of the planning authority indicating compliance with the above shadow flicker requirements at dwellings. Within 12 months of the commissioning of the wind farm, this report shall be prepared and submitted to, and agreed in writing with, the planning authority. The developer shall outline proposed measures to address any recorded non-compliances, controlling turbine rotation if necessary. A similar report may be requested by the planning authority at reasonable intervals thereafter.</p> <p>Reason: In the interest of residential amenity</p>
16.	<p>Prior to the commissioning of the windfarm, the developer shall submit for the written agreement of the planning authority details of actions to be taken by the developer in the event of the proposed development causing interference with telecommunication signals. Such actions shall be completed to minimise interference with telecommunication signals and shall be carried out to the written satisfaction of the planning authority at the developer's expense.</p> <p>Reason: In the interest of protecting telecommunication signals and residential amenity.</p>
17.	<p>The construction of the development shall be managed in accordance with a final Construction Management Plan, which shall be submitted to, and agreed in writing with, the planning authority prior to commencement of</p>

	<p>development. This plan shall provide details of intended construction practice for the development, including:</p> <ul style="list-style-type: none"> (a) Location of the site and materials compound(s) including area(s) identified for the storage of construction refuse; (b) Location of areas for construction site offices and staff facilities; (c) Details of site security fencing and hoardings; (d) Details of on-site car parking facilities for site workers during the course of construction; (e) Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site; (f) Measures to obviate queuing of construction traffic on the adjoining road network; (g) Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network; (h) Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works; (i) Details of a local community feedback mechanism, where feedback including complaints are received and acted upon by a designated Community Liaison Officer; (j) Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels; (k) Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater; (l) Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil;
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	<p>(m) Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains;</p> <p>(n) Works to be carried out in accordance with Inland Fisheries Ireland 'Guidelines on protection of fisheries during construction works in and adjacent to waters';</p> <p>(o) A record of daily checks that the works are being undertaken in accordance with the Construction Management Plan shall be available for inspection by the planning authority, with monitoring on a daily basis of all watercourses in or adjacent to works areas;</p> <p>(p) Measures to be implemented to minimise the potential for increased soil/peat stability and erosion of soils, with monitoring of the same.</p> <p>Reason: In the interest of amenities, public health and safety and environmental protection.</p>
18.	<p>Site development and building works shall be carried out between the hours of 07.00 to 19.00 Mondays to Fridays inclusive, between 08.00 to 14.00 on Saturdays and not at all on Sundays and public holidays. Deviation from these times shall only be allowed in exceptional circumstances where prior written agreement has been received from the planning authority and in accordance with measures outlined in the EIAR.</p> <p>Reason: To safeguard the amenity of property in the vicinity.</p>
19.	<p>Drainage arrangements including the attenuation and disposal of surface water, shall comply with the requirements of the relevant Section of the Council for such works and services.</p> <p>Reason: In the interest of public health and surface water management.</p>
20.	<p>The developer shall comply with the requirements of Uisce Éireann with regard to diversion of infrastructure within the site and connections to the public network.</p> <p>Reason: In the interest of public health and surface water management.</p>
21.	<p>The developer shall engage a suitably qualified (licensed eligible) archaeologist to monitor (licensed under the National Monuments Acts) all</p>

	<p>site clearance works, peat removal / topsoil stripping, groundworks, dredging, tree removal, and/or the implementation of agreed preservation in-situ measures associated with the development. Prior to the commencement of such works the archaeologist shall consult with and forward to the Local Authority archaeologist or the NMS as appropriate a method statement for written agreement. The use of appropriate tools and/or machinery to ensure the preservation and recording of any surviving archaeological remains shall be necessary. Should archaeological remains be identified during the course of archaeological monitoring, all works shall cease in the area of archaeological interest pending a decision of the planning authority, in consultation with the National Monuments Service, regarding appropriate mitigation [e.g. preservation in-situ or by record/excavation]. The developer shall facilitate the archaeologist in recording any remains identified. Any further archaeological mitigation requirements specified by the planning authority, following consultation with the National Monuments Service, shall be complied with by the developer. Following the completion of all archaeological work on site and any necessary post-excavation specialist analysis, the planning authority and the National Monuments Service shall be furnished with a final archaeological report describing the results of the monitoring, and any subsequent required archaeological investigative work/excavation required. All resulting and associated archaeological costs shall be borne by the developer.</p> <p>Reason: To ensure the continued preservation [either in situ or by record] of places, caves, sites, features or other objects of archaeological interest</p>
22.	<p>(a) Prior to commencement of development and following consultation with the Department of Defence and Irish Aviation Authority, the developer shall submit for written agreement of the planning authority, details of an obstacle warning light scheme which can be visible to night vision equipment.</p> <p>(b) The developer shall inform IAA of its intention to commence crane operations with a minimum of 30 days prior notification of their erection.</p>

	<p>(c) Prior to commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the co-ordinates of the as constructed positions of the turbines and the highest point of the turbines (to the top of the blade spin).</p> <p>Reason: In the interest of air traffic safety.</p>
23.	<p>Prior to the commencement of development, the following shall be submitted to the planning authority for written agreement:</p> <ul style="list-style-type: none"> a) Detailed design and location of the underground electricity cable within the road corridor, including joint bays, and details of cabling crossing culverts and streams, which shall be in accordance with the requirements of TII. b) A Level 1 Falling weight deflectometer survey and Level 2 analysis design in accordance with TII document Design Manual for Roads and Bridges of the public roads along the grid connection route. c) Details of pre-construction condition survey of proposed haul routes, bridges/structures along the route, weight of abnormal loads, and arrangements for maintenance of routes/structures during construction and repair of any damage. d) Details and programme for strengthening works, as necessary, required on the L-5040 Local Road. e) A survey of the entire L-5041 and resurveyed on a 6 month cycle during the construction phase. f) A revised detailed Construction Traffic Management Plan, to include arrangements for the management of construction traffic on the public road, arrangements for alternative routes, details of source and volume of aggregate material to be sourced on/off site, haul routes, phasing programme for construction works and means to keep the public road free of dirt and debris.

	<p>g) A Traffic and Transport Assessment carried out in accordance with TII document PE-PDV-02045 with regard to the traffic regime at the junction of the N52 / L-5040.</p> <p>Reason: In the interest of visual amenity and traffic safety.</p>
24.	<p>The delivery of large-scale turbine components for the construction of the wind farm shall be managed in accordance with a Construction Traffic Management Plan (CTMP), 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, detailed proposals for sightlines and detailed arrangements for the protection of bridges, culverts or other structures to be traversed, as may be required. The plan shall also contain details of how the developer intends to engage with relevant parties (County Councils, PPP companies etc.) and notify the local community in advance of the delivery of oversized loads. Any proposed works to the national road network to facilitate turbine delivery shall comply with the requirements of TII.</p> <p>Reason: In the interest of public safety and residential amenity.</p>
25.	<p>The Community Benefit scheme shall be adhered to for the life of the wind farm. The scheme shall be administered in accordance with the RESS Community Benefit Fund Good Practice Principles, 2021, prepared by the Department of the Environment, Climate and Communications.</p> <p>In the event that the developer does not utilise the government's Renewable Energy Support Scheme (RESS), prior to the commencement of development, a community gain proposal shall be submitted to the planning authority for written agreement. In default of agreement, the matter shall be referred to An Bord Pleanála for determination.</p> <p>Reason: To ensure that the community living in proximity to the wind farm, benefits from it.</p>
26.	<p>Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such</p>

	<p>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.</p> <p>Reason: In the interest of traffic safety and the proper planning and sustainable development of the area.</p>
27.	<p>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.</p> <p>Reason: To ensure satisfactory reinstatement of the site.</p>
28.	<p>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 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 An Bord Pleanála to determine the proper application of the terms of the Scheme.</p>

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 the permission.
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I confirm that this report represents my professional planning assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought to influence, directly or indirectly, the exercise of my professional judgement in an improper or inappropriate way.

Laura Finn
Senior Planning Inspector

22nd April 2025

29.0 Appendix 1 – AA Screening Determination (Stage 1)

Screening for Appropriate Assessment Screening Determination

Step 1: Description of the project

I have considered the proposed windfarm comprising of 7 no. wind turbines, substation and associated infrastructure and works in light of the requirements of S177U of the Planning and Development Act 2000 as amended.

The subject site is located c. 2 km west of the village of Carrig, Co. Tipperary, 5.7 kilometres to the southwest of Riverstown, Co Tipperary and 7 kilometres southwest of Birr, Co. Offaly.

The nearest European Protected Sites include the following;

Special Areas of Conservation (SAC)

1. Ballyduff/Clonfinane Bog SAC [000641] (110m);
2. Arragh More (Derrybreen) Bog SAC [002207] (450m);
3. Kilcarren-Firville Bog SAC [000647] (1.5km);
4. Ridge Road, SW of Rapemills SAC [000919] (1.7km);
5. Sharavogue Bog SAC [000585] (2.5km);
6. Liskeenan Fen SAC [001683] (2.6km);
7. All Saints Bog and Esker SAC [000566] (3.6km);
8. Lisduff Fen SAC [002147] (4km);
9. Island Fen SAC [002236] (7.1km);
10. Lough Derg, North-east Shore SAC [002241] (7.5km overland, 43km hydrological);
11. River Shannon Callows SAC [000216] (7.6km overland, 28km hydrological);
12. Scohaboy (Sopwell) Bog SAC [002206] (7.7km);
13. Redwood Bog SAC [002353] (8.2km);
14. Slieve Bloom Mountains SAC [000412] (14.6km);
15. Lower River Shannon SAC [002165] (35km overland, 83km hydrological).

Special Protection Areas (SPA)

1. Dovegrove Callows SPA [004137] (160m from EIAR site boundary including grid connection, 6.7km from wind farm site, 300m hydrological connection to grid route);
2. River Little Brosna Callows SPA [004086] (3km from EIAR site boundary including grid connection, 6.1km from wind farm site, 18km hydrological connection);
3. All Saints Bog SPA [004103] (3.6km);
4. Middle Shannon Callows SPA [004096] (7.6km from EIAR site boundary including grid connection, 9.8km from wind farm site, 28km hydrological connection);
5. Lough Derg (Shannon) SPA [004058] (7.9km from EIAR site boundary including grid connection and wind farm site, 43km hydrological connection);
6. Slieve Bloom Mountains SPA [004160] (12.7km).

This application is seeking a ten-year permission and 35-year operational life from the date of commissioning. Each wind turbine model will have an output of 6.2MW, with the proposed 7 no. wind turbines having a combined generating capacity of 43.4MW. The Proposed Development includes for an onsite 38kV electricity substation and underground grid connection cabling, connecting the Proposed Development to the national electricity grid via the existing Dallow 110kV electricity substation located in the townland of Clondallow, Co. Offaly. The cabling will be located within the public road corridor or existing tracks for its

entire length. The total length of the proposed underground grid connection route is approximately 13.7km

TCC reason for refusal No. 2 is based on Policy 11 – 1, Vol. 1 of the County Development Plan and states;

'Having regard to the proximity to a number of European Sites with conservation objective to maintain or restore the favourable conservation conditions of a number of bird species. Having regard to the EIAR and NIS submitted with the applications and submissions made on the applications, and notwithstanding mitigation measures proposed, the Planning Authority is not satisfied that the likelihood of significant effects on the environment can be excluded. The applicant has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network. The Planning Authority considers that the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species, and in this context, the proposed development would, therefore, be contrary to the proper planning and sustainable development of the area, development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive, which forms the basis of the classification of that site.'

Step 2: Potential impact mechanisms from the project [consider direct, indirect, temporary/permanent impacts that could occur during construction, operation and, if relevant, decommissioning]

Construction Impacts

A. Air Quality Impacts - The identified pathway for effect is via impacts on air quality associated with construction activities due to airborne nitrogen deposition as a result of dust deposition and vehicular emissions to the peatland habitats within the SAC. This pathway for adverse effect is via air quality impacts, by contributing to airborne nitrogen deposition levels beyond the critical load for ombrotrophic bogs of between 5 and 10kg N/ha/yr. A potential for significant effect to the SAC was identified via the potential for construction activities to contribute further to this load.

B. Impact on Groundwater Flowpaths – A potential for significant effect to the peatland habitats via alteration to groundwater flowpaths as a result of construction of the development was identified.

C. Impact on Surface Water Run-off - Taking a precautionary approach, the identified pathway for effect is via impacts on water quality as a result of construction activities. Such impacts include pollution as a result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in eutrophication of watercourses, resulting in increased plant/algal growth and deoxygenation of waters, alteration of pH, and toxicity effects as a result of hydrocarbons and cementitious materials resulting in fish kills, or clogging of fish gills due to siltation of watercourses.

D. Wildlife Disturbance - Taking a precautionary approach, a potential for disturbance effects associated with construction activities to the otter population associated with the SAC, which may commute along rivers outside of the SAC was identified.

E. Impact on Water Quality - a potential pathway for indirect effect via deterioration of water quality of SCI supporting habitats as a result of construction activities associated with the proposed development was identified. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in deterioration of water quality thus affecting potential foraging and roosting habitat for SCI species.

Operational Impacts

F. Impact on SCI Bird Species - A potential for indirect effect via disturbance, displacement and collision risk to SCI bird species as a result of operation of the Proposed Development.

Step 3: European Sites at risk

With reference to the potential impact mechanisms from the proposal, identify the European site(s) and qualifying features potentially at risk. Examine Site specific conservation objectives and relevant and supporting documents.

Table 1. European Sites at risk from impacts of the proposed project

Conservation objectives:

To maintain favourable conservation condition **M**

To restore favourable conservation condition **R**

To maintain or restore favourable conservation condition **M R**

1. Ballyduff/ Clonfinane Bog SAC [000641]

There will be no direct effects as the project footprint is located entirely outside the designated site. The SAC is located 110 metres to the north of the development site. The site is designated for peatland habitats. A potential for indirect significant effect was identified via contribution to airborne nitrogen deposition on the SAC as a result of construction activities and vehicular emissions associated with the Proposed Development. In addition, a potential for significant effect via groundwater impacts was identified.

[Ballyduff/Clonfinane Bog SAC | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (23 Nov 2015 – Version 1)

SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
A. Air Quality Impacts	The SAC is located c. 110 m to the north of the site	Active raised bogs (7110) R
B. Impact on Groundwater Flowpaths		Degraded raised bogs still capable of natural regeneration (7120) R Depressions on peat substrates of the Rhynchosporion (7150) R Bog woodland (91D0) – Currently under review

2. Arragh More (Derrybreen) Bog SAC [002207]

There will be no direct effects as the project footprint is located entirely outside the designated site. The SAC is located 450 metres to the west of the development site. The site is designated for peatland habitats. A potential for indirect significant effect was identified via contribution to airborne nitrogen deposition on the SAC as a result of construction activities and vehicular emissions associated with the Proposed Development. In addition, a potential for significant effect via groundwater impacts was identified.

[Arragh More \(Derrybreen\) Bog SAC | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (23 June 2023 – Version 1)

SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
A. Air Quality Impacts B. Impact on Groundwater Flowpaths	The SAC is located c. 450m to the west of the development site.	Degraded raised bogs still capable of natural regeneration (7120) R
3. Kilcarren-Firville Bog SAC [000647] There will be no direct effects as the project footprint is located entirely outside the designated site. The SAC is located 1.5km to the west of the development site. The site is designated for peatland habitats. A potential for indirect significant effect was identified via contribution to airborne nitrogen deposition on the SAC as a result of construction activities and vehicular emissions associated with the proposed development. In addition, a potential for significant effect via groundwater impacts was identified. Kilcarren-Firville Bog SAC National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (1 January 2016 – Version 1)		
SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
A. Air Quality Impacts B. Impact on Groundwater Flowpaths	The SAC is located c. 1.5km to the west of the development site.	Active raised bogs (7110) R Degraded raised bogs still capable of natural regeneration (7120) R Depressions on peat substrates of the Rhynchosporion (7150) R
4. Ridge Road, SW of Rapemills SAC [000919] There will be no direct effects as the project footprint is located entirely outside the designated site. The SAC is located 1.7km to the northeast of the development site. The site is designated for grassland habitats. Due to the distance between the proposed site and the SAC, and the terrestrial nature of the QI habitat, there is no potential for indirect effects on the SAC. Ridge Road, SW of Rapemills SAC National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (26 June 2018 – Version 1)		
SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE AND THE TERRESTRIAL NATURE OF THE QI HABITATS		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified	The SAC is located c. 1.7km to the northeast of the site.	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites (6210) R

5. Sharavogue Bog SAC [000585]

There will be no direct effects as the project footprint is located entirely outside the designated site. The SAC is located 2.5km to the southeast of the development site. The site is designated for peatland habitats. Due to the distance between the proposed site and the SAC, and the terrestrial nature of the QI habitats, there is no potential for indirect effects on the SAC.

[Sharavogue Bog SAC | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (1 November 2015 – Version 1)

SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE AND THE TERRESTRIAL NATURE OF THE QI HABITAT.

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified	The SAC is located 2.5km to the southeast of the development site.	Active raised bogs (7110) R Degraded raised bogs still capable of natural regeneration (7120) R Depressions on peat substrates of the Rhynchosporion (7150) R

6. Liskeenan Fen SAC [001683]

The site is designated for Caldicium Fens. There will be no direct effects as the project footprint is located entirely outside the designated site. This SAC is located within the 'Borrisokane' WFD groundwater body IE_SH_G_042. The proposed site is located within the 'Birr' WFD groundwater body IE_SH_G_041. Therefore, there is no potential for likely significant effect via groundwater quality deterioration to the SAC. Due to the intervening distance between the proposed site and the SAC, and the nature of the QI habitat, no other potential pathway for likely significant effect was identified.

[Liskeenan Fen SAC | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (1 May 2018 – Version 1)

SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE AND THE NATURE OF THE QI HABITAT.

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified	c. 2.6km from the development site.	Calcareous fens with Cladium mariscus and species of the Caricion davallianae (7210) M

7. All Saints Bog and Esker SAC [000566]

The site is designated for semi-natural dry grassland and peatlands habitats. There will be no direct effects as the project footprint is located entirely outside the designated site. Due to the intervening distance between the proposed site and the SAC, and the terrestrial nature of the QI habitats listed, no potential pathway for likely significant indirect effect was identified.

[All Saints Bog and Esker SAC | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (2 March 2016 – Version 1)

SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE AND THE TERRESTRIAL NATURE OF THE QI HABITATS

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified.	The SAC is located c. 3.6km from the development site.	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] R Active raised bogs [7110] R Degraded raised bogs still capable of natural regeneration [7120] R Depressions on peat substrates of the Rhynchosporion [7150] R Bog woodland [91D0] R
8. Lisduff Fen SAC [002147] The site is designated for Fen, Petrifying Springs and Geyers Whorl Snail. There will be no direct effects as the project footprint is located entirely outside the designated site. This SAC is located within the 'Shinrone' WFD groundwater body IE_SH_G_205. The proposed site is located within the 'Birr' WFD groundwater body IE_SH_G_041. Therefore, there is no potential for likely significant effect via groundwater quality deterioration to the groundwater dependent habitats and wetland-dependant species for which this SAC is designated. No other potential pathway for likely significant effect was identified. Lisduff Fen SAC National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (17 June 2019 – Version 1) SCREENED OUT – NO PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified.	The SAC is located c. 4km from the development site.	Petrifying springs with tufa formation (Cratoneurion) [7220] R Alkaline fens [7230] M Vertigo geyeri (Geyer's Whorl Snail) [1013] R
9. Island Fen SAC [002236] The site is designated for Alkaline fens. There will be no direct effects as the project footprint is located entirely outside the designated site. This SAC is located within the 'Shinrone' WFD groundwater body IE_SH_G_205. The proposed site is located within the 'Birr' WFD groundwater body IE_SH_G_041. Therefore, there is no potential for likely significant effect via groundwater quality deterioration to the groundwater dependent habitat, 'Alkaline fen'. Due to the terrestrial nature of habitat 5130, and the intervening distance between the Proposed Development and the SAC, there is no potential for likely significant effect on this QI. No other potential pathway for likely significant effect was identified. Island Fen SAC National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (18 October 2018 – Version 1) SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE AND THE TERRESTRIAL NATURE OF THE QI HABITAT 5130		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk

None – no pathway identified.	The SAC is located c. 7.1km from the development site.	Juniperus communis formations on heaths or calcareous grasslands [5130] M Alkaline fens [7230] M
10. Lough Derg, North-east Shore SAC [002241] The site is designated for Juniperus communis formations, fens, limestone pavements and forests. There will be no direct effects as the project footprint is located entirely outside the designated site. There is hydrological connectivity between this SAC and the proposed site via the Little Brosna River and River Shannon. Therefore, a potential for likely significant indirect effect on the SAC was identified. Lough Derg, North-east Shore SAC National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (24 April 2019 – Version 1)		
SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
C. Impact on Surface Water Run-off - Potential for deterioration of surface water quality.	The SAC is located an overland distance of c. 7.5km and a hydrological distance of c. 43km from the development site.	Juniperus communis formations on heaths or calcareous grasslands [5130] R Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] M Alkaline fens [7230] M Limestone pavements [8240] R Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] R Taxus baccata woods of the British Isles [91J0] M
11. River Shannon Callows SAC [000216] The site is designated for the otter, Molinia meadows, lowland hay meadows, alkaline fens, limestone pavements and alluvial forests. There will be no direct effects as the project footprint is located entirely outside the designated site. There is hydrological connectivity between this SAC and the Proposed Development site via the Little Brosna River. Therefore, a potential for likely significant indirect effect on the SAC was identified. In addition the otter is a QI of the habitat and there is potential for disturbance effects associated with construction activities to the otter population associated with the SAC which may commute along rivers outside the SAC. River Shannon Callows SAC National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (18 January 2022 – Version 1)		
SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
C. Impact on Surface Water Run-off - Potential for deterioration of	The SAC is located an overland distance of c. 7.6km and a hydrological distance c. 28km from the development site.	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] R

surface water quality.		Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510] R Alkaline fens [7230] M Limestone pavements [8240] M Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] M <i>Lutra lutra</i> (Otter) [1355] M
D. Wildlife Disturbance Effects – on otters commuting along rivers outside SAC		
12. Scohaboy (Sopwell) Bog SAC [002206]		
The site is designated for degraded raised bogs. There will be no direct effects as the project footprint is located entirely outside the designated site. Due to the intervening distance between the proposed site and the SAC, and the terrestrial nature of the QI habitat listed, no potential pathway for likely significant indirect effect was identified.		
Scohaboy (Sopwell) Bog SAC National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (19 July 2023 – Version 1)		
SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE AND THE TERRESTRIAL NATURE OF THE QI HABITAT LISTED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified.	The SAC is located 7.7km from the development site.	Degraded raised bogs still capable of natural regeneration [7120] R
13. Redwood Bog SAC [002353]		
The site is designated for peatlands habitats. There will be no direct effects as the project footprint is located entirely outside the designated site. Due to the intervening distance between the Proposed Development site and the SAC, and the terrestrial nature of the QI habitats listed, no potential pathway for likely significant indirect effect was identified.		
Redwood Bog SAC National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (17 December 2015 – Version 1)		
SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE AND THE TERRESTRIAL NATURE OF THE QI HABITATS LISTED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified.	The SAC is located 8.2km from the development site.	Active raised bogs [7110] R Degraded raised bogs still capable of natural regeneration [7120] R Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] R
14. Slieve Bloom Mountains SAC [000412]		
The site is designated for peatlands habitats and alluvial forests. There will be no direct effects as the project footprint is located entirely outside the designated site. The SAC is located within a separate hydrological sub catchment and is situated upgradient to the proposed site. There is therefore no potential for likely significant effect via downstream hydrological effects to the SAC. Due to the intervening distance between the SAC and the		

Proposed Development site, there is no potential for likely significant effect on the terrestrial habitats listed.

[Slieve Bloom Mountains SAC | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (1 March 2016 – Version 1)

SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified.	The SAC is located 14.6km from the development site.	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] R Blanket bogs (* if active bog) [7130] R Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] R

15. Lower River Shannon SAC [002165]

The site is designated for semi-natural dry grassland and peatlands habitats. There will be no direct effects as the project footprint is located entirely outside the designated site. There is hydrological connectivity between this SAC and the Proposed Development site via the Little Brosna River and River Shannon over a hydrological distance of c. 83km. Surface water connectivity between the proposed site and the SAC exists via the Little Brosna River and River Shannon. However, any potential pollutants would have to travel over 83km via the Little Brosna River and River Shannon and pass through Lough Derg which measures 118km² in surface area. Given the nature of the watercourses on the site, the attenuation effect of the intervening waterbodies as listed, and the distance to the European Site, in the absence of any mitigation there is no potential for the Proposed Development to result in any significant effect thereon.

[Lower River Shannon SAC | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (1 March 2016 – Version 1)

SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE FROM SITE

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified.	The SAC is located an overland distance of c. 35km and a hydrological distance of c. 83km downstream	Sandbanks slightly covered by seawater all the time (1110) M Estuaries (1130) M Mudflats and sandflats not covered by seawater at low tide (1140) M Coastal lagoons (1150) R Large shallow inlets and bays (1160) M Reefs (1170) M Perennial vegetation of stony banks (1220) M Vegetated sea cliffs of Atlantic and Baltic Coasts (1230) M Salicornia and annuals colonising mud & sand (1310) M Atlantic salt meadows (1330) R

		Mediterranean salt meadows (1410) R Water courses of plain to montane levels (3260) M Molinia meadows on calcareous, peaty or clayey-silt-laden soil (6410) M Alluvial forests (91E0) M Freshwater Pearl Mussel Margaritifera margaritifera (1029) R Sea Lamprey Petromyzon marinus (1095) R Brook Lamprey Lampetra planeri (1096) M River Lamprey Lampetra fluviatilis (1099) M Atlantic Salmon (fresh water) Salmo salar (1106) R Bottlenose Dolphin Tursiops truncatus (1349) M Otter Lutra lutra (1355) R
16. Dovegrove Callows SPA [004137] There will be no direct effects as the project footprint is located entirely outside the designated site. Hydrological connectivity between the Proposed Development and the SPA was identified via the proposed grid connection route. Therefore, a potential for likely significant indirect effect via deterioration of surface water quality was identified. Dovegrove Callows SPA National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (12 October 2022 – First Order Site-specific Conservation Objectives Version 1.0) SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
C. Impact on Surface Water Run-off - Potential for deterioration of surface water quality	The SPA is located c. 160m from EIAR site boundary including grid connection, c. 6.7km from proposed wind farm site, hydrological distance of c. 300m downstream of grid connection.	Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] M R
17. River Little Brosna Callows SPA [004086] There will be no direct effects as the project footprint is located entirely outside the designated site. The potential for significant effects on the SCI species in the form of disturbance, displacement and collision risk cannot be excluded and further assessment is required. The SPA is located approx. 18km downstream of the Proposed Development site, therefore there is a potential for deterioration in water quality to the SPA. River Little Brosna Callows SPA National Parks & Wildlife Service Special Conservation Objectives are set by the NPWS (31 Jan 2025 – Version 1)		

SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
<p>C. Impact on Surface Water Run-off - Potential for deterioration of surface water quality.</p> <p>E. Impact on Water Quality - Potential for deterioration of water quality affecting potential for foraging and roosting habitat for SCI species</p> <p>F. Impact on SCI Bird Species – operational impact on bird species from disturbance, displacement and collision risk</p>	<p>The SPA is located c. 3km from EIAR site boundary including grid connection, c. 6.1km from wind farm site and a c. 18km hydrological distance.</p>	<p>Whooper Swan (<i>Cygnus cygnus</i>) [A038] M</p> <p>Wigeon (<i>Anas penelope</i>) [A050] R</p> <p>Teal (<i>Anas crecca</i>) [A052] M</p> <p>Pintail (<i>Anas acuta</i>) [A054] M</p> <p>Shoveler (<i>Anas clypeata</i>) [A056] M</p> <p>Golden Plover (<i>Pluvialis apricaria</i>) [A140] M</p> <p>Lapwing (<i>Vanellus vanellus</i>) [A142] M</p> <p>Black-tailed Godwit (<i>Limosa limosa</i>) [A156] M</p> <p>Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] M</p> <p>Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] R</p> <p>Wetland and Waterbirds [A999] M</p>
<p>18. All Saints Bog SPA [004103]</p> <p>There will be no direct effects as the project footprint is located entirely outside the designated site. During bird surveys which were undertaken for the Proposed Development between September 2020 and March 2023, as described in Section 3.4.4 of the Applicants EIAR, there were no observations of Greenland white-fronted geese within 500m of the proposed site. The closest record of Greenland White-fronted Geese observed during the surveys was 7.8km away from the Proposed Development site. There is no connectivity between the SCI species of the SPA and the Proposed Development site. Therefore, the potential for direct and indirect effects on the populations of Greenland White-fronted Goose associated with the SPA can be discounted. No complete impact source-pathway receptor chain was identified between the Proposed Development and this SPA.</p> <p>All Saints Bog SPA National Parks & Wildlife Service</p> <p>Special Conservation Objectives are set by the NPWS (12 October 2022 – First Order Site-specific Conservation Objectives Version 1.0)</p>		
SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE		
Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified	The SPA is located c. 3.6km from the site.	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] M R

19. Middle Shannon Callows SPA [004096]

There will be no direct effects as the project footprint is located entirely outside the designated site. The potential for significant effects on the SCI species in the form of disturbance, displacement and collision risk cannot be excluded and further assessment is required. The SPA is located approx. 28km downstream of the site, therefore there is a potential for deterioration in water quality to the SPA.

[Middle Shannon Callows SPA | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (15 November 2022 – Version 1)

SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
C. Impact on Surface Water Run-off - Potential for deterioration of surface water quality.	The SPA is located c. 7.6km from EIAR site boundary including grid connection, c. 9.8km from wind farm site, c. 28km hydrological connection from the development site.	Whooper Swan (<i>Cygnus cygnus</i>) [A038] M Wigeon (<i>Anas penelope</i>) [A050] R Corncrake (<i>Crex crex</i>) [A122] Under Review Golden Plover (<i>Pluvialis apricaria</i>) [A140] M Lapwing (<i>Vanellus vanellus</i>) [A142] R Black-tailed Godwit (<i>Limosa limosa</i>) [A156] R Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] R Wetland and Waterbirds [A999] M

20. Lough Derg (Shannon) SPA [004058]

There will be no direct effects as the project footprint is located entirely outside the designated site. The potential for significant effects on the SCI species in the form of disturbance, displacement and collision risk cannot be excluded and further assessment is required. The SPA is located approx. 43km downstream of the Proposed Development site, therefore, taking a precautionary approach, there is a potential for deterioration in water quality to the SPA.

[Lough Derg \(Shannon\) SPA | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (27 August 2024 – Version 1)

SCREENED IN – PATHWAY FOR LIKELY SIGNIFICANT EFFECTS IDENTIFIED

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
C. Impact on Surface Water Run-off - Potential for deterioration of surface water quality.	The SPA is located c. 7.9km from EIAR site boundary including grid connection and wind farm site and a c. 43km hydrological distance from the development site.	Cormorant (<i>Phalacrocorax carbo</i>) [A017] R Tufted Duck (<i>Aythya fuligula</i>) [A061] M Goldeneye (<i>Bucephala clangula</i>) [A067] M Common Tern (<i>Sterna hirundo</i>) [A193] R Wetland and Waterbirds [A999] M

21. Slieve Bloom Mountains SPA [004160]

There will be no direct effects as the project footprint is located entirely outside the designated site. The proposed site is located 12.7km from the SPA. The Proposed Development site is outside the core foraging distance of hen harrier (Core range of 2km, with maximum range of 10km) as per Scottish Natural Heritage Guidelines (SNH, 2016). According to the Site-specific Conservation Objectives for this SPA, the core area used by breeding pairs is within 5km of nest sites. Therefore, it is highly unlikely that there is a potential for significant effect to breeding pairs. During the bird surveys which were undertaken for the Proposed Development between September 2020 and March 2023, as described in Section 3.4.4 of the applicants EIAR, Hen Harrier was only recorded within the wind farm site on one occasion over the three winters of bird surveys, comprising a single bird hunting. The Wind Farm Site is therefore not an important foraging habitat for hen harrier and there is no potential for construction works to result in ecologically significant habitat loss for hen harrier. The land lost to the development footprint is small (i.e. 6.02ha/2.5% of the Wind Farm Site) relative to the total area within the Wind Farm Site.

[Slieve Bloom Mountains SPA | National Parks & Wildlife Service](#)

Special Conservation Objectives are set by the NPWS (23 September 2022 – Version 1)

SCREENED OUT – NO LIKELY SIGNIFICANT EFFECTS DUE TO DISTANCE

Effect mechanism	Impact pathway/Zone of influence	Qualifying interest features at risk
None – no pathway identified	The SAC is located c. 12.7km from the development site.	Hen Harrier (<i>Circus cyaneus</i>) [A082] R

Of the 21 no. sites identified, 9 no. sites have been screened-in for further examination, as follows;

1. Ballyduff/Clonfinane Bog SAC [000641]
2. Arragh More (Derrybreen) Bog SAC [002207]
3. Kilcarren-Firville Bog SAC [000647]
4. Lough Derg, North-east Shore SAC [002241]
5. River Shannon Callows SAC [000216]
6. Dovegrove Callows SPA [004137]
7. River Little Brosna Callows SPA [004086]
8. Middle Shannon Callows SPA [004096]
9. Lough Derg (Shannon) SPA [004058]

Step 4: Likely significant effects on the European site(s) 'alone'

Table 2: Could the project undermine the conservation objectives 'alone'

European Site and qualifying feature	Conservation objectives:	Could the conservation objectives be undermined (Y/N)?	
		Effect A – Air Quality Impacts	Effect B – Impacts on Groundwater Flowpaths
Ballyduff/Clonfinane Bog SAC National Parks & Wildlife Service 1. Ballyduff/Clonfinane Bog SAC [000641] –	<ul style="list-style-type: none"> To maintain favourable conservation condition M To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 		
	Active raised bogs (7110) R	Y	Y
	Degraded raised bogs still capable of natural regeneration (7120) R	Y	Y

Located c. 110 m to the north of the site	Depressions on peat substrates of the Rhynchosporion (7150) R	Y	Y
	Bog woodland (91D0) – Currently under review	Y	Y
European Site and qualifying feature Arragh More (Derrybreen) Bog SAC National Parks & Wildlife Service	Conservation objectives: <ul style="list-style-type: none"> To maintain favourable conservation condition M To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 	Could the conservation objectives be undermined (Y/N)?	
		Effect A – Air Quality Impacts	Effect B – Impacts on Groundwater Flowpaths
2. Arragh More (Derrybreen) Bog SAC [002207] – Located c. 450m to the west of the site	Degraded raised bogs still capable of natural regeneration (7120) R	Y	Y
European Site and qualifying feature Kilcarren-Firville Bog SAC National Parks & Wildlife Service	Conservation objectives: <ul style="list-style-type: none"> To maintain favourable conservation condition M To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 	Could the conservation objectives be undermined (Y/N)?	
		Effect A – Air Quality Impacts	Effect B – Impacts on Groundwater Flowpaths
3. Kilcarren-Firville Bog SAC [000647] – Located c. 1.5km to the west of the development site.	Active raised bogs (7110) R	Y	Y
	Degraded raised bogs still capable of natural regeneration (7120) R	Y	Y
	Depressions on peat substrates of the Rhynchosporion (7150) R	Y	Y
European Site and qualifying feature Lough Derg, North-east Shore SAC National Parks & Wildlife Service	Conservation objectives: <ul style="list-style-type: none"> To maintain favourable conservation condition M To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 	Could the conservation objectives be undermined (Y/N)?	
		Effect C – Surface Water Run-off	
4. Lough Derg, North-east Shore SAC [002241] – Located an overland distance of c. 7.5km and a	Juniperus communis formations on heaths or calcareous grasslands [5130] R	N	
	Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] M	Y	
	Alkaline fens [7230] M	Y	
	Limestone pavements [8240] R	N	

hydrological distance of c. 43km from the development site.	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] R	Y
	Taxus baccata woods of the British Isles [91J0] M	N

European Site and qualifying feature River Shannon Callows SAC National Parks & Wildlife Service	Conservation objectives: <ul style="list-style-type: none"> To maintain favourable conservation condition M To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 	Could the conservation objectives be undermined (Y/N)?	
		Effect C - Impact of Surface Water Run-off	Effect D - Wildlife Disturbance Effects
5. River Shannon Callows SAC [000216] – Located an overland distance of c. 7.6km and a hydrological distance c. 28km from the development site.	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] R	N	N
	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] R	N	N
	Alkaline fens [7230] M	Y	N
	Limestone pavements [8240] M	N	N
	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] M	Y	N
	Lutra lutra (Otter) [1355] M	Y	Y

European Site and qualifying feature Dovegrove Callows SPA National Parks & Wildlife Service	Conservation objectives: <ul style="list-style-type: none"> To maintain favourable conservation condition M To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 	Could the conservation objectives be undermined (Y/N)?	
		Effect C - Impact on Surface Water Run-off	
6. Dovegrove Callows SPA [004137] – Located c. 160m from grid connection, c. 6.7km from site and hydrological distance of c. 300m downstream of grid connection.	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] M R	Y	

European Site and qualifying feature	Conservation objectives: <ul style="list-style-type: none"> To maintain favourable conservation condition M 	Could the conservation objectives be undermined (Y/N)?
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River Little Brosna Callows SPA National Parks & Wildlife Service	<ul style="list-style-type: none"> To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 	Effect E - Impact on Surface Water	Effect F - Impact on SCI Bird Species
7. River Little Brosna Callows SPA [004086] – Located c. 3km from EIAR site boundary including grid connection, c. 6.1km from wind farm site and a c. 18km hydrological distance.	Whooper Swan (Cygnus cygnus) [A038] M	Y	N
	Wigeon (Anas penelope) [A050] R	Y	N
	Teal (Anas crecca) [A052] M	Y	Y
	Pintail (Anas acuta) [A054] M	Y	N
	Shoveler (Anas clypeata) [A056] M	Y	N
	Golden Plover (Pluvialis apricaria) [A140] M	Y	Y
	Lapwing (Vanellus vanellus) [A142] M	Y	Y
	Black-tailed Godwit (Limosa limosa) [A156] M	Y	N
	Black-headed Gull (Chroicocephalus ridibundus) [A179] M	Y	Y
	Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] R	Y	N
	Wetland and Waterbirds [A999] M	Y	N
European Site and qualifying feature Middle Shannon Callows SPA National Parks & Wildlife Service	Conservation objectives: <ul style="list-style-type: none"> To maintain favourable conservation condition M To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 	Could the conservation objectives be undermined (Y/N)? Effect E - Impact on Surface Water Effect F - Impact on SCI Bird Species	
8. Middle Shannon Callows SPA [004096] – Located c. 7.6km from EIAR site boundary including grid connection, c. 9.8km from wind farm site, c. 28km hydrological connection from the development site.	Whooper Swan (Cygnus cygnus) [A038] M	Y	N
	Wigeon (Anas penelope) [A050] R	Y	N
	Corncrake (Crex crex) [A122] Under Review	Y	N
	Golden Plover (Pluvialis apricaria) [A140] M	Y	Y
	Lapwing (Vanellus vanellus) [A142] R	Y	Y
	Black-tailed Godwit (Limosa limosa) [A156] R	Y	N
	Black-headed Gull (Chroicocephalus ridibundus) [A179] R	Y	Y
	Wetland and Waterbirds [A999] M	Y	N
European Site and qualifying feature Lough Derg (Shannon) SPA 	Conservation objectives: <ul style="list-style-type: none"> To maintain favourable conservation condition M 	Could the conservation objectives be undermined (Y/N)?	

National Parks & Wildlife Service	<ul style="list-style-type: none"> To restore favourable conservation condition R To maintain or restore favourable conservation condition M R 	Effect E – Impact on Surface Water	Effect F – Impact on SCI Bird Species
9. Lough Derg (Shannon) SPA [004058] – Located c. 7.9km from EIAR site boundary including grid connection and wind farm site and a c. 43km hydrological distance from the development site.	Cormorant (<i>Phalacrocorax carbo</i>) [A017] R	Y	N
	Tufted Duck (<i>Aythya fuligula</i>) [A061] M	Y	N
	Goldeneye (<i>Bucephala clangula</i>) [A067] M	Y	N
	Common Tern (<i>Sterna hirundo</i>) [A193] R	Y	N
	Wetland and Waterbirds [A999] M	Y	N

I conclude that the proposed development would have a likely significant effect 'alone' on the qualifying interests of the following sites;

1. Ballyduff/Clonfinane Bog SAC [000641]
2. Arragh More (Derrybreen) Bog SAC [002207]
3. Kilcarren-Firville Bog SAC [000647]
4. Lough Derg, North-east Shore SAC [002241]
5. River Shannon Callows SAC [000216]
6. Dovegrove Callows SPA [004137]
7. River Little Brosna Callows SPA [004086]
8. Middle Shannon Callows SPA [004096]
9. Lough Derg (Shannon) SPA [004058]

Potential impacts include the following;

Construction Impacts

A. Air Quality Impacts - The identified pathway for effect is via impacts on air quality associated with construction activities due to airborne nitrogen deposition as a result of dust deposition and vehicular emissions to the peatland habitats within the SAC. This pathway for adverse effect is via air quality impacts, by contributing to airborne nitrogen deposition levels beyond the critical load for ombrotrophic bogs of between 5 and 10kg N/ha/yr. A potential for significant effect to the SAC was identified via the potential for construction activities to contribute further to this load.

B. Impact on Groundwater Flowpaths – A potential for significant effect to the peatland habitats via alteration to groundwater flowpaths as a result of construction of the development was identified.

C. Impact on Surface Water Run-off - Taking a precautionary approach, the identified pathway for effect is via impacts on water quality as a result of construction activities. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in eutrophication of watercourses, resulting in increased plant/algal growth and deoxygenation of waters, alteration of pH, and toxicity effects as a result of hydrocarbons and cementitious materials resulting in fish kills, or clogging of fish gills due to siltation of watercourses. In addition, a potential pathway for indirect effect via deterioration of water quality of SCI supporting habitats as a result of construction activities associated with the proposed development was identified. Such impacts include pollution as result of sedimentation, cementitious materials

and hydrocarbons. Such pollution events have the potential to result in deterioration of water quality thus affecting potential foraging and roosting habitat for SCI species.

D. Wildlife Disturbance - Taking a precautionary approach, a potential for disturbance effects associated with construction activities to the otter population associated with the SAC, which may commute along rivers outside of the SAC was identified.

E. Impact on Water Quality - Potential for deterioration of water quality during construction affecting potential for foraging and roosting habitat for SCI species.

Operational Impacts

F. Impact on SCI Bird Species – Operational impact on bird species from disturbance, displacement and collision risk.

Construction of the proposed wind farm in close proximity to peatlands and waterways has the potential to impact water quality and impact bird SCI as discussed above.

An appropriate assessment is required on the basis of the effects of the project 'alone'. Further assessment in-combination with other plans and projects is not required at this time.

Proceed to AA.

Step 5: Where relevant, likely significant effects on the European site(s) 'in-combination with other plans and projects'

There are no proposals within plans that could act in-combination with the Proposed Development.

Overall Conclusion- Screening Determination

In accordance with Section 177U(4) of the Planning and Development Act 2000 (as amended) and on the basis of objective information, I conclude that the proposed development is likely to have a significant effect on the protected birds and habitat of the following sites 'alone' in respect of effects associated with construction and disturbance on bird species within the nearby SACs/SPAs;

- Ballyduff/Clonfinane Bog SAC [000641],
- Arragh More (Derrybreen) Bog SAC [002207],
- Kilcarren-Firville Bog SAC [000647],
- Lough Derg, North-east Shore SAC [002241],
- River Shannon Callows SAC [000216],
- Dovegrove Callows SPA [004137],
- River Little Brosna Callows SPA [004086],
- Middle Shannon Callows SPA [004096]
- Lough Derg (Shannon) SPA [004058]

Having regard to the qualifying interests for which the sites were designated and in the absence of connections to and distance between the application site, the following European sites have been screened out for further consideration;

- Ridge Road, SW of Rapemills SAC [000919] (1.7km);
- Sharavogue Bog SAC [000585] (2.5km);
- Liskeenan Fen SAC [001683] (2.6km);
- All Saints Bog and Esker SAC [000566] (3.6km);
- Lisduff Fen SAC [002147] (4km);
- Island Fen SAC [002236] (7.1km);
- Scohaboy (Sopwell) Bog SAC [002206] (7.7km);
- Redwood Bog SAC [002353] (8.2km);
- Slieve Bloom Mountains SAC [000412] (14.6km);

- Lower River Shannon SAC [002165] (35km overland, 83km hydrological).
- All Saints Bog SPA [004103] (3.6km);
- Slieve Bloom Mountains SPA [004160] (12.7km).

It is therefore determined that Appropriate Assessment (stage 2) [under Section 177V of the Planning and Development Act 2000] is required on the basis of the effects of the project 'alone'.

This conclusion is based on:

- Objective information presented in the Screening Report
- Standard pollution controls that would be employed regardless of proximity to a European site and effectiveness of same
- Distance from European Sites,
- The absence of meaningful pathway to any European site
- Impacts predicted would not affect the conservation objectives.

No measures intended to avoid or reduce harmful effects on European sites were taken into account in reaching this conclusion.

30.0 Appendix 2 – Appropriate Assessment (Stage 2)

30.1. Introduction (Stage 2 Assessment)

The following is an Appropriate Assessment based on the conclusion of the AA Screening in Appendix 1 of this report, that the proposed development is likely to have a significant effect on 9 no. European Designated sites which contain protected birds, otter and habitats including Ballyduff/Clonfinane Bog SAC [000641], Arragh More (Derrybreen) Bog SAC [002207], Kilcarren-Firville Bog SAC [000647], Lough Derg, North-east Shore SAC [002241], River Shannon Callows SAC [000216], Dovegrove Callows SPA [004137], River Little Brosna Callows SPA [004086], Middle Shannon Callows SPA [004096] and Lough Derg (Shannon) SPA [004058] ‘alone’ in respect of effects associated with construction, specifically the risk of suspended solids being released into the watercourses, which are hydrologically linked to the European Sites, disturbance on otter and operational impacts in relation to disturbance on bird species within the nearby SPAs.

The following section provides a summary matrix for the 9 no. European Sites identified, providing details of location of SAC or SPA site in relation to the proposed development site, a description of the European Site from the site synopsis on the NPWS website, identification of the relevant qualifying features that could be impacted from each of the European Sites, the potential impacts on the qualifying interests and whether mitigation measures are required to protect the European Sites.

Summary Matrix for European Sites (Stage 2)
1. AA Summary Matrix for Ballyduff/Clonfinane Bog SAC [000641]
Ballyduff/Clonfinane Bog SAC [NPWS Site Code - 000641] – The SAC is located c. 110 m to the north of the site. Ballyduff/Clonfinane Bog SAC National Parks & Wildlife Service Description of Site: According to the Site Synopsis for this SAC, Clonfinane and Ballyduff bogs are two bogs separated by a small area of cutover bog. Clonfinane is a large, flat lowland raised bog bordered by drains and is wet and quaking. Ballyduff bog is smaller and domed, with a ridge on the north-eastern end. According to the site-specific conservation objectives, the total area of Active Raise Bog (ARB) habitat within this SAC has been mapped at 17.8ha, with areas of Degraded Raised Bog (DRB) on the high bog mapped as 37.8ha total area. It is predicted that there is only

about 30.1ha of restorable ARD by drain blocking within this SAC. The total estimable ARB within the high bog area is therefore 47.9ha.

According to the Article 17 Report (NPWS 2019), ARB vegetation communities are within two main bog vegetation groups; *Rhynchospora alba*-*Sphagnum cuspidatum* (BG1) and *Erica tetralix*-*Sphagnum capillifolium* (BG2). ARBs are characterised by the presence of an acrotelm, which is defined as the living, actively growing upper layer of a raised bog, the surface of which is composed mainly of living bog mosses (*Sphagnum* spp.). The presence of the acrotelm is vital to a raised bog as this is the peatforming layer and strongly influences the rate of water runoff. Raised bogs are more abundant in the lowlands of central and mid-west Ireland. In Ireland raised bogs are confined to areas with an annual rainfall below 1,250 mm (Hammond, 1984).

Active raised bog is found in the wet central areas of both Ballyduff and Clonfinane bogs. Here there are well developed pool and hummock systems, with excellent bog growth patterns. A range of vascular plants typical of midland raised bogs is found, including Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Bog-rosemary (*Andromeda polifolia*), Common Cottongrass (*Eriophorum angustifolium*) and White Beak-sedge. It is in the wet, active areas that *Rhynchosporion* vegetation is best represented. The extensive pool complexes (mostly linear in shape) contain the bog mosses *S. cuspidatum*, *S. auriculatum* and *S. papillosum*, along with White Beak-sedge, Great Sundew (*D. anglica*), Bogbean (*Menyanthes trifoliata*) and cottongrasses. *Sphagnum*-rich lawns also occur in these wet central areas and some of this corresponds to *Rhynchosporion* vegetation. The rare Brown Beak-sedge has been recorded at this site.

Both Ballyduff and Clonfinane bogs contain substantial areas of degraded raised bog and these areas are typically located along the edges of the high bog. In these areas the peat is driest and the vegetation tends to be dominated by Heather, Hare's-tail Cottongrass (*E. vaginatum*), Deergrass, the mosses *Sphagnum capillifolium* and *Hypnum cupressiforme* and the lichen *Cladonia portentosa*. Along the northern margins of Clonfinane bog this dry edge vegetation is characterised by an abundance of Common Reed (*Phragmites australis*) which suggests that the peat is locally shallow and subject to groundwater infiltration. In the wetter areas of degraded raised bog higher up on the high bog surface Bog Asphodel is particularly prominent, forming extensive flats in places. The south-east margin of Ballyduff is wet, with quaking areas and flushes marked by Purple Moor-grass (*Molinia caerulea*), Soft Rush (*Juncus effusus*) and Bulbous Rush (*J. bulbosus*).

An area of bog woodland occurs on the high bog at Clonfinane where it is associated with an area of rather shallow peat which overlies a mineral ridge. This woodland is dominated by Scots Pine (up to 10 m tall), with an understorey of Downy Birch (*Betula pubescens*). The ground layer is dominated by Heather and Scots Pine seedlings and saplings, along with species such as Crowberry (*Empetrum nigrum*), Cranberry (*Vaccinium oxycoccos*) and Ivy (*Hedera helix*). This area of woodland is at the drier end of the bog woodland spectrum, pool areas are absent and *Sphagnum* species other than *S. capillifolium* are rare.

The nationally rare shrub Alder Buckthorn (*Frangula alnus*) grows in tall birch woodland along the northern margins of Clonfinane.

There are a number of areas on the high bog surface of both bogs which have been drained in the past decade and this drainage has led to the degradation of the habitat locally. At Clonfinane these drains have been subsequently dammed with peat dams, an action which should arrest the decline in habitat quality. On both bog areas there are relatively high levels of pine regeneration on the surface, which suggests that the surface is drying out. Burning poses a significant threat to the bog surface and especially to the area of bog woodland due to its rather dry nature.

Ballyduff/Clonfinane bog is of high conservation value as it contains good examples of the Annex I habitats active raised bog, degraded raised bog, depressions on peat substrates (*Rhynchosporion*) and bog woodland. Both active raised bog and bog Version date: 10.09.2013 3 of 3 000641_Rev13.Doc woodland are listed on the Annex with priority status.

Although parts of the site have been drained in the past there has been significant restoration of the high bog areas in the Clonfinane portion of the site.

The overall conservation status for this habitat is 'Bad' and the overall trend in the conservation status is 'deteriorating.'

Summary of Appropriate Assessment

Conservation Objectives, Attributes & Targets (Summary)

Conservation Objectives:

To restore the favourable conservation condition of;

- [7110] Raised Bog (Active)* (R)
- [7120] Degraded Raised Bog (R)
- [7150] Rhynchosporion Vegetation (R)
- [91D0] Bog Woodland* (currently under review) (R)

Qualifying Interest Feature: [7110] Active raised bogs (R)

Conservation Objective: To restore the favourable conservation condition of Active raised bogs in Ballyduff/Clonfinane Bog SAC

Attributes & Targets:

Habitat area – Restore area of raised bog to 48.9ha, subject to natural processes.

Habitat distribution – Restore the distribution and variability of active raised bog across the SAC.

High bog area – No decline in extent of high bog necessary to support the development and maintenance of active raised bog.

Hydrological regime: water levels – Restore appropriate water levels throughout the site.

Hydrological regime: flow patterns – Restore, where possible, appropriate high bog topography, flow directions and slopes.

Transitional areas between high bog and adjacent mineral soils (including cutover areas) – Restore adequate transitional areas to support/protect active raised bog and the services it provides.

Vegetation quality: central ecotope, active flush, soaks, bog woodland – Restore 24.5ha of central ecotope/active flush/soaks/bog woodland as appropriate.

Vegetative quality: microtopographical features – Maintain and restore adequate cover of high quality microtopographical features.

Vegetation quality: bog moss (Sphagnum) species – Restore adequate cover to bog moss (Sphagnum) species to ensure peat forming capacity.

Typical ARB species: flora – Restore, where appropriate, typical active raised bog flora.

Typical ARB species: fauna - Restore, where appropriate, typical active raised bog fauna

Elements of local distinctiveness - Maintain features of local distinctiveness, subject to natural processes

Negative physical indicators - Negative physical features absent or insignificant.

Vegetation composition: native negative indicator species - Native negative indicator species at insignificant levels.

Vegetation composition: nonnative invasive species - Non-native invasive species at insignificant levels and not more than 1% cover.

Air quality: nitrogen deposition - Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr.

Water quality - Water quality on the high bog and in transitional areas close to natural reference conditions.

Qualifying Interest Feature: [7120] Degraded Raised Bog (R)

Conservation Objective: The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Ballyduff/Clonfinane Bog SAC.

Qualifying Interest Feature: [7150] Rhynchosporion Vegetation (R)	
Conservation Objective: Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Ballyduff/Clonfinane Bog SAC.	
Qualifying Interest Feature: Bog Woodland*(currently under review) (R)	
Conservation Objective: The status of Bog woodland as a qualifying Annex I habitat for Ballyduff/Clonfinane Bog SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this habitat.	
Potential for Impact / Mitigation Measures	
<ul style="list-style-type: none"> • Potential for Impact - The identified pathway for effect is via impacts on air quality associated with construction activities due to airborne nitrogen deposition as a result of dust deposition and vehicular emissions to the peatland habitats within the SAC. This may occur as a result of construction activities associated with wind farm infrastructure, in the absence of mitigation. The critical load for ombrotrophic bogs is 5 and 10kg N/ha/yr. According to the Site-specific Conservation Objectives, the latest N deposition figures for the area around Ballyduff/Clonfinane Bog (2014) suggests that locally the current level is approximately 12.7kg N/ha/yr. A potential for significant effect to the SAC was identified via the potential for construction activities to contribute further to this load. In addition, a potential for significant effect to the peatland habitats via alteration to groundwater flowpaths as a result of construction of the development was identified. • The SAC is located approx. 110m northeast of the EIAR site boundary. The SAC boundary is located approx. 300m away from the proposed infrastructure at its closest point (i.e. proposed road between Turbine 2 and Turbine 3). In the absence of mitigation, a potential for adverse effect to the QI habitat 'Active raised bogs', and the intrinsically linked raised bog habitats • 'Degraded raised bogs still capable of natural regeneration', 'Depressions on peat substrates of the Rhynchosporion', and 'Bog woodland', was identified as a result of construction activities associated with the Proposed Development. This pathway for adverse effect is via air quality impacts, by contributing to airborne nitrogen deposition levels beyond the critical load for ombrotrophic bogs of between 5 and 10kg N/ha/yr. In addition, a potential for significant effect to the peatland habitats via alteration to groundwater flowpaths as a result of construction of the development was identified. • Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to the outside pressure of 'mechanical removal of peat'. • Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed further in this assessment. 	
Qualifying Interest (QI) Feature	Potential for Adverse Effects and Requirement for Mitigation (Summary)
Qualifying Interests (QI): Habitats [7110] Raised Bog (Active)* (R) [7120] Degraded Raised Bog (R) [7150] Rhynchosporion Vegetation (R) [91D0] Bog Woodland* (currently under review) (R)	The risk to peatland habitat QI's applies from impacts relating to construction phase air quality impacts and impacts via groundwater flow paths. <u>Mitigation Required</u>
2. AA Summary Matrix for Arragh More (Derrybreen) Bog SAC [002207]	
Arragh More (Derrybreen) SAC [NPWS Site Code - 002207] – The SAC is located c. 450m to the west of the EIAR site boundary.	

Description of Site: According to the Site Synopsis for this SAC, Arragh More (Derrybreen) Bog SAC occurs within the larger raised bog system that is designated as Arragh More Bog NHA (000640). It is situated 9.5 km north-east of Borrisokane in County Tipperary. It lies within the townlands of Arraghmore and Derrybreen. Degraded Raised Bog corresponds to those areas of high bog where the hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration to Active Raised Bog (ARB) within 30 years.

According to the site-specific conservation objectives, Arragh More (Derrybreen) Bog SAC comprises 90.58 ha of raised bog (57.9 ha of high bog and 32.68 ha cutover) which occupies the north-western section of Arragh More Bog NHA (000640). Arragh More Bog NHA developed originally in at least 3 basins, aligned in a north–south direction, which were initially separated by low ridges of relatively impermeable glacial till overlying limestone bedrock. As these bogs grew they eventually coalesced over these low ridges to form one bog with a very complex shape. The SAC occupies the western parts of the 2 most northerly basins. The surface of the high bog in the central basin is lower than that to the east and south and receives significant amounts of runoff from them resulting in the development of an internal flush system. The SAC is bordered by forest plantations on cutaway to the north, raised bog and cutover to the east and south and agricultural grassland to the east.

The SAC was mostly afforested in the 1970s, with just over 12 ha (13%) of high bog in the north-east and south of the site being left unplanted. The remaining areas of intact high bog have been affected by drying out but still have vegetation typical of a Midland Raised Bog, consisting of Heather (*Calluna vulgaris*), Cottongrasses (*Eriophorum vaginatum* and *E. angustifolium*), Bog Asphodel (*Narthecium ossifragum*) and White Beak-sedge (*Rhynchospora alba*). Typical characteristic species for Midland Raised Bogs such as Bog Rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*) are present. In addition to the more common hummock-forming bog mosses (*Sphagnum capillifolium*, *S. papillosum* and *S. subnitens*) which are widespread, some hummocks of the relatively scarce *S. austinii* and *S. fuscum* have been recorded. In the small remnants of the flush system at the extreme east of the site, Bog-myrtle (*Myrica gale*), Bilberry (*Vaccinium myrtillus*), Purple Moor-grass (*Molinia caerulea*), Soft Rush (*Juncus effusus*) and the bog moss *Sphagnum recurvum* become more common. The most strongly flushed areas, which partly lie within the site, are dominated by wet woodland with Birch (*Betula pubescens*), Alder (*Alnus glutinosa*), Willow (*Salix* spp.) and Rowan (*Sorbus aucuparia*) with a ground layer of grasses and the bog species listed above. This area grades eastwards into a Common Reed (*Phragmites australis*) swamp which is within the NHA but outside the SAC.

The remainder of the site was covered by conifer plantations, which were mostly felled by 2013. All the intensive drainage systems associated with the plantation were blocked by 2014 as part of an EU-funded Coillte LIFE Project Demonstrating Best Practice in Raised Bog Restoration in Ireland so as to raise the water table and restore Active Raised Bog (ARB) on the site. Prior to the felling, there were relatively few bog species present in the plantations except along fire breaks. With the clear-felling of conifers and blocking of drains, the high bog is re-wetting, water-levels in some areas now remain high throughout the year and limited areas of wet flats and hollows are developing. As a consequence, raised bog vegetation has returned, with Heather and Hare's tail Cotton-grass (*Eriophorum vaginatum*) dominating, while Common Cotton-grass (*Eriophorum angustifolium*), Bog Asphodel and White Beaksedge are locally common and small amounts of Bilberry and Cross-leaved Heath (*Erica tetralix*) are widespread. Bog mosses that are regenerating include *Sphagnum papillosum*, *S. capillifolium*, *S. palustre* and *S. subnitens*, with *S. recurvum* in drains. In the more flushed areas considerable amounts of Purple Moor-grass and Soft Rush are also present.

Two areas in the eastern section of the SAC are showing significant indications of recovery and represent Degraded Raised Bog (DRB) habitat. These areas are on two major water flow paths across the bog and now have standing surface water in the hollows and pools for most of the year and considerable areas of regenerating Sphagnum species. The larger and most easterly of these flow paths comes from areas of mineral soil and cutover bog to the east of the SAC. The areas fed by this flow path are likely to support vegetation characteristic of flushes and soaks and develop into areas of both Active Raised Bog (ARB) and possibly Bog Woodland. The other main flow path derives from the high bog and cutover to the south and will supply mainly bog water and therefore support a more standard ARB habitat. It is considered both areas will support some areas of ARB within 10–20 years and that these will continue to develop and spread over the following decades. It is expected that some of the area will develop further into Bog Woodland as the birch woodland develops on the more flushed areas of the site. There is a small area of Bog Woodland to the east but just outside the site. It contains the characteristic species for that habitat. In addition, it is estimated that restoration works carried out on this site may benefit the conservation of 3 ha of ARB in the adjacent area of Arragh More Bog NHA. Arragh More (Derrybreen) Bog SAC is a site of considerable conservation significance, comprising as it does, a raised bog, a rare habitat in the E.U. and one that is becoming increasingly scarce and under threat in Ireland. Ireland has a high proportion of the total E.U. resource of Atlantic Raised Bog (over 50%) and so has a special responsibility for its conservation at an international level. The large area of Degraded Raised Bog habitat present is of significant conservation value as it considered to be progressing to Active Raised Bog, which is a priority habitat in the E.U. and one that is scarce and under threat in Ireland and severely endangered in the EU. Some of the DRB in the more flushed parts of the bog may eventually develop into the very rare priority EU-Annexed habitat Bog Woodland (91D0), which would add further to the scientific interest of the site. The site is, and will continue to be, actively managed for conservation as part of the Coillte EU LIFE Project.

The overall Conservation Status for this habitat is 'Bad' and the overall Conservation Trend is 'deteriorating'.

Summary of Appropriate Assessment

Conservation Objectives, Attributes & Targets (Summary)

Qualifying Interest Feature: [7120] Degraded raised bogs (R)

Conservation Objective: To restore the favourable conservation condition of Degraded raised bogs still capable of natural regeneration in Arragh More (Derrybreen) Bog SAC

Attributes & Targets:

Habitat distribution – Restore the distribution and variability of active raised bog across the SAC

Habitat area – Restore area of active raised bog to 11.8ha, subject to natural processes.

High bog area – No decline in extent of high bog, necessary to support the development and maintenance of active raised bog.

Hydrological regime: water levels – Restore appropriate water levels throughout the site.

Hydrological regime: flow patterns – Restore, where possible, appropriate high bog topography, flow directions and slopes.

Transitional areas between high bog and adjacent mineral soils (including cutover areas) – Restore adequate transitional areas to support/protect active raised bog and the services it provides.

Vegetation quality: central ecotope, active flush, soaks, bog woodland – Restore 5.9ha of central ecotope central ecotope/active flush/soaks/bog woodland as appropriate.

Vegetative quality: microtopographical features – Maintain and restore adequate cover of high quality microtopographical features.

Vegetation quality: bog moss (Sphagnum) species – Restore adequate cover to bog moss (Sphagnum) species to ensure peat forming capacity.

Typical species: flora – Restore, where appropriate, typical active raised bog flora.

Typical species: fauna - Restore, where appropriate, typical active raised bog fauna.

Elements of local distinctiveness - Maintain features of local distinctiveness, subject to natural processes.

Negative physical indicators - Negative physical features absent or insignificant.

Vegetation composition: native negative indicator species - Native negative indicator species at insignificant levels.

Vegetation composition: non-native invasive species - Non-native invasive species at insignificant levels and not more than 1% cover.

Air quality: nitrogen deposition - Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr.

Water quality - Water quality on the high bog and in transitional areas close to natural reference conditions.

Potential for Impact / Mitigation Measures

- **Potential for Impact** - The identified pathway for effect is via impacts on air quality associated with construction activities due to airborne nitrogen deposition as a result of dust deposition and vehicular emissions to the peatland habitats within the SAC. This may occur as a result of construction activities associated with wind farm infrastructure, in the absence of mitigation. The critical load for ombrotrophic bogs is 5 and 10kg N/ha/yr. According to the Site-specific Conservation Objectives, the latest N deposition figures for the area around Arragh More (Derrybreen) Bog (2014) suggests that locally the current level is approximately 12.7kg N/ha/yr. A potential for significant effect to the SAC was identified via the potential for construction activities to contribute further to this load. In addition, a potential for significant effect to the peatland habitats via alteration to groundwater flowpaths as a result of construction of the development was identified.
- The SAC is located 450 metres to the west of the EIAR site boundary. The SAC boundary is located approx. 870m away from the proposed infrastructure at its closest point (i.e Turbine 5). In the absence of mitigation, a potential for adverse effect to the QI habitat 'Degraded raised bogs still capable of natural regeneration', was identified as a result of construction activities associated with the Proposed Development. This pathway for adverse effect is via air quality impacts, by contributing to airborne nitrogen deposition levels beyond the critical load for ombrotrophic bogs of between 5 and 10kg N/ha/yr. In addition, a potential for significant effect to the peatland habitats via alteration to groundwater flowpaths as a result of construction of the development was identified.
- Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to the outside pressure of 'mechanical removal of peat' and 'other human induced changes in hydraulic conditions'.
- Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed in further in this assessment.

Qualifying Interest (QI) Feature	Potential for Adverse Effects and Requirement for Mitigation (Summary)
Qualifying Interests: Habitats [7120] Degraded raised bogs (R)	The risk to the degraded raised bog habitat from adverse impacts relating to construction phase air quality impacts and impacts via groundwater flow paths. <u>Mitigation Required</u>

3. AA Summary Matrix for Kilcarren-Firville Bog SAC [000647]

Kilcarren-Firville Bog SAC [000647] – The SAC is located 1.5km overland to the west of the development site.

[Kilcarren-Firville Bog SAC | National Parks & Wildlife Service](#)

Description of Site: According to the Site Synopsis for this SAC, Kilcarren-Firville Bog is situated approximately 2 km east of the village of Carrigahorig in north Co. Tipperary. It is a lowland raised bog complex which extends about 4.5 km from east to west and is bisected by a road. It contains a large area of uncut high bog.

Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

According to the Site Synopsis, the site contains substantial areas of active raised bog, which are largely confined to the wetter, more central areas of high bog. The vegetation here is typical of midland raised bogs, with Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Common Cottongrass (*Eriophorum angustifolium*), Deergrass, Carnation Sedge, Bog Asphodel and bog mosses all being common. The active bog, and to a lesser extent the degraded areas, support occasional pool areas and quaking lawns dominated by Rhynchosporion vegetation. Typical species of the habitat are the bog moss *S. cuspidatum*, Bogbean (*Menyanthes trifoliata*), White Beak-sedge, Common Cottongrass, and Great Sundew (*Drosera anglica*). The cover of *Sphagnum cuspidatum* typically exceeds 50% in these areas.

The degraded raised bog tends to occur along the high bog margins where the peat has been subject to drying out. Degraded surfaces are usually dominated by a rather species-poor flora in which Heather, Bog Asphodel, Cottongrasses (*E. vaginatum* and *E. angustifolium*), Deergrass and Cross-leaved Heath are typically frequent. *Sphagnum* cover is low and permanent pool areas are rare. Localised flushes support Downy Birch (*Betula pubescens*) and Scots Pine (*Pinus sylvestris*). The uncut high bog is surrounded by a large cutover area which is still subject to varying degrees of peat-cutting. The cutover bog is frequently dominated by Purple Moor-grass (*Molinia caerulea*), and Bog-myrtle (*Myrica gale*) is locally abundant. Birch woodland with some Holly (*Ilex aquifolium*) and willow (*Salix* spp.) is widespread in most cutover areas, and Scots Pine is common in a few locations. These scrub areas provide habitat for a population of the nationally rare shrub Alder Buckthorn (*Frangula alnus*). Some of the cutover has been reclaimed for grassland. Peripheral areas at Kilcarren-Firville Bog have been extensively damaged by peat cutting, drainage and land reclamation. The structure of the high bog has been detrimentally affected by drainage effects over a long period of time through a lowering of the water table. This can lead to the decline in abundance of plant species of wet bog conditions. Without restoration works, further drying out of the bog surface is likely to occur and further peat cutting remains a threat. Kilcarren-Firville Bog is of high conservation importance as it contains good examples of the priority Annex I habitat active raised bog and the non-priority habitats degraded raised bog and depressions on peat substrates (Rhynchosporion). The quality of these habitats is good, although the overall system has been detrimentally affected by drainage effects over a long period of time.

Summary of Appropriate Assessment

Conservation Objectives, Attributes & Targets (Summary)
<p>Conservation Objectives: To restore the favourable conservation condition of;</p> <ul style="list-style-type: none"> • [7110] Raised Bog (Active) (R) • [7120] Degraded Raised Bog (R) • [7150] Rhynchosporion Vegetation (R)
Qualifying Interest Feature: [7110] Active raised bogs (R)
<p>Conservation Objective: To restore the favourable conservation condition of Active raised bogs in Ballyduff/Clonfinane Bog SAC</p> <p>Attributes & Targets: Habitat area – Restore area of active raised bog to 92.4ha, subject to natural processes. Habitat distribution – Restore the distribution and variability of active raised bog across the SAC. High bog area – No decline in extent of high bog necessary to support the development and maintenance of active raised bog. Hydrological regime: water levels – Restore appropriate water levels throughout the site. Hydrological regime: flow patterns – Restore, where possible, appropriate high bog topography, flow directions and slopes. Transitional areas between high bog and adjacent mineral soils (including cutover areas) – Restore adequate transitional areas to support/protect active raised bog and the services it provides. Vegetation quality: central ecotope, active flush, soaks, bog woodland – Restore 46.2ha of central ecotope/active flush/soaks/bog woodland as appropriate. Vegetative quality: microtopographical features – Restore adequate cover of high quality microtopographical features. Vegetation quality: bog moss (Sphagnum) species – Restore adequate cover to bog moss (Sphagnum) species to ensure peat forming capacity. Typical ARB species: flora – Restore, where appropriate, typical active raised bog flora. Typical ARB species: fauna - Restore, where appropriate, typical active raised bog fauna Elements of local distinctiveness - Maintain features of local distinctiveness, subject to natural processes Negative physical indicators - Negative physical features absent or insignificant. Vegetation composition: native negative indicator species - Native negative indicator species at insignificant levels. Vegetation composition: non-native invasive species - Non-native invasive species at insignificant levels and not more than 1% cover. Air quality: nitrogen deposition - Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr. Water quality - Water quality on the high bog and in transitional areas close to natural reference conditions.</p>
Qualifying Interest Feature: [7150] Rhynchosporion Vegetation R
<p>Conservation Objective: The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Ballyduff/Clonfinane Bog SAC.</p>
Qualifying Interest Feature: [7150] Rhynchosporion Vegetation R
<p>Conservation Objective: Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Ballyduff/Clonfinane Bog SAC.</p>
Potential for Impact / Mitigation Measures
<ul style="list-style-type: none"> • Potential for Impact - The SAC is located c. 1.5km overland to the west of the development site. The identified pathway for effect is via impacts on air quality associated with construction activities due to airborne nitrogen deposition as a result of dust deposition and vehicular emissions to the peatland habitats within the SAC.

<p>This may occur as a result of construction activities associated with wind farm infrastructure, in the absence of mitigation. The critical load for ombrotrophic bogs is 5 and 10kg N/ha/yr. According to the site-specific conservation objectives, the latest N deposition figures for the area around Kilcarren-Firville Bog suggests that locally the current level is approximately 12.6kg N/ha/yr. In addition, a potential for significant effect via alteration of groundwater flowpaths was identified.</p> <ul style="list-style-type: none"> • Potential for adverse effects were identified via the contribution of airborne nitrogen and dust deposition on the SAC from the proposed construction. Additionally, there is potential for the Proposed Development to create significant effects via alteration of groundwater Flowpaths for [7110] Raised Bog (Active), [7120] Degraded Raised Bog and [7150] Rhynchosporion Vegetation. • No potential pathways for effect with regard to site-specific threats, pressures and activities have been identified with regard to the Proposed Development. • Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed in further in this assessment. 	
Qualifying Interest Feature	Potential for Adverse Effects and Requirement for Mitigation (Summary)
<p>Qualifying Interests (QI): Habitats</p> <ul style="list-style-type: none"> • [7110] Raised Bog (Active) (R) • [7120] Degraded Raised Bog (R) • [7150] Rhynchosporion Vegetation (R) 	<p>The risk to peatland habitat QI's applies from adverse impacts relating to construction phase air quality impacts and impacts via groundwater flow paths.</p> <p><u>Mitigation Required</u></p>
<p>4. AA Summary Matrix for Lough Derg, North-east Shore SAC [002241]</p>	
<p>Lough Derg, North-east Shore SAC [002241] –The SAC is located c. 7.5km over-land and c. 43km hydrologically downstream of the proposed development site.</p> <p>Lough Derg, North-east Shore SAC National Parks & Wildlife Service</p> <p>Description of Site: According to the Site Synopsis for this SAC, Lough Derg, the lowest order lake on the River Shannon, is one of the largest bodies of freshwater in Ireland. This SAC, however, only includes the northern shore of the lake from the mouth of the Cappagh River in the north-west to just below Black Lough at the north-eastern shore. The greater part of this site lies on Carboniferous limestone, although there is Old Red Sandstone on the southern shores of the eastern section.</p> <p>The geology of the lake shore is principally limestone and in places this protrudes at the surface in the form of boulders and rubble, and can be classified as limestone pavement. These are often bryophyte-rich surfaces or else support a calcareous grassland or heath flora, as well as some woody species, such as Yew (<i>Taxus baccata</i>) and Juniper (<i>Juniperus communis</i>). Examples occur at Cornalack, Kilenamelly and Portumna. The last two named areas were partly afforested but are proposed for restoration under a Coillte E.U. LIFE Programme. The geographical location of these examples of limestone pavement within the country is notable. A second priority Annex I habitat, Cladium fen, occurs occasionally along the lake margins, mainly in association with alkaline fens, Common Reed (<i>Phragmites australis</i>) and other swamp vegetation. Typically, Great Fen-sedge (<i>Cladium mariscus</i>), which can be up to 2 m in height, forms dense stands. Associated species include Common Reed, Black Bog-rush (<i>Schoenus nigricans</i>), Water Horsetail (<i>Equisetum fluviatile</i>), Bottle Sedge (<i>Carex rostrata</i>) and occasional Slender Sedge (<i>Carex lasiocarpa</i>). This community generally merges with alkaline fen dominated by Black Bog-rush, with Purple Moor-grass (<i>Molinia caerulea</i>), Marsh Horsetail (<i>E. palustre</i>), Meadowsweet (<i>Filipendula ulmaria</i>) and scattered tussocks of Greater Tussock-sedge (<i>Carex paniculata</i>).</p>	

Yew woods in Ireland are mostly confined to the west of the country. However, a substantial area of Yew is located on limestone at Cornalack, where Yew forms a scrub woodland along the east shore of Lough Derg. Here, Yew is found in association with small amounts of Juniper, which forms protection against grazing for the young Yew. Other notable species present include Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*), Small-leaved Cotoneaster (*Cotoneaster microphyllus*), along with occasional Ivy (*Hedera helix*), Wild Strawberry (*Fragaria vesca*), Bramble (*Rubus fruticosus* agg.) and Wood-sorrel (*Oxalis acetosella*). Elsewhere, small stands of Yew up to 5 m high occur with Spindle (*Euonymus europaeus*), Blackthorn (*Prunus spinosa*), Gorse (*Ulex europaeus*) and Ash (*Fraxinus excelsior*). Due to shading, and in places cattle trampling, the ground flora supports few herbs. However, the bryophyte layer is well developed with many moss covered rocks present.

Juniper occurs throughout this site in a range of habitats, associated with calcareous grasslands, heath and limestone outcrops. Some of the finest examples of Juniper formations in Ireland occur along the lake edge where upright, bushy Juniper shrubs up to 3 m tall are found. Typically, Juniper forms dense hedges with Ash, Hawthorn, Gorse, Hazel and Bramble, and occasional Yew. These tall Juniper shrubs are a unique feature in Ireland, where it is more typically found growing in prostrate form. In places along the lake shore Juniper forms a mosaic with Black Bog-rush and Great Fen-sedge fen. The best examples are seen at the north and north-east of the site. On drier ground above the flood level, Juniper occurs in association with species-rich calcareous grassland with Mouse-ear Hawkweed (*Hieracium pilosella*), Daisy (*Bellis perennis*), Lady's Bedstraw (*Galium verum*), Wild Thyme (*Thymus praecox*) and Blue Moor-grass (*Sesleria albicans*). An extensive area of this vegetation is seen north of Kilgarvan Quay. Many of the islands also support significant Juniper cover. This is particularly evident on Bounla Island. Juniper generally occurs as fringing vegetation around the islands, which typically have wooded centres. At Cornalack, along the eastern shore of Lough Derg, tall Juniper is found in association with loose limestone rubble with a significant cover of Yew. Deciduous woodlands are also a notable feature of the site, dominated by oak (*Quercus* spp.), as at Bellevue, and Hazel/Ash at many of the examples along the north-eastern shore. Typically, the ground layer includes Early-purple Orchid (*Orchis mascula*), violets (*Viola* spp.), Ivy, Lesser Celandine (*Ranunculus ficaria*), Bluebell (*Hyacinthoides non-scripta*), Wood Anemone (*Anemone nemorosa*), Wood-sorrel, Primrose (*Primula vulgaris*), Bramble, Ground Ivy (*Glechoma hederacea*), Pignut (*Conopodium majus*) and Honeysuckle (*Lonicera periclymenum*). Wet woodland is frequent along the lake shore, and in some areas this conforms well with the E.U. Annex I habitat, alluvial woodland. At Kyleneamelly wood, where some planting of commercial forestry has occurred, there are extensive areas of alluvial woodland which are subject to flooding. These woods are dominated by willows (*Salix* spp.) and Alder (*Alnus glutinosa*), with Downy Birch (*Betula pubescens*) and Ash also present. The ground flora of the undisturbed alluvial sites is often dominated by Yellow Iris (*Iris pseudacorus*), with a range of other species commonly present, including Bogbean (*Menyanthes trifoliata*), Marsh-marigold (*Caltha palustris*), Yew woods in Ireland are mostly confined to the west of the country. However, a substantial area of Yew is located on limestone at Cornalack, where Yew forms a scrub woodland along the east shore of Lough Derg. Here, Yew is found in association with small amounts of Juniper, which forms protection against grazing for the young Yew. Other notable species present include Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*), Small-leaved Cotoneaster (*Cotoneaster microphyllus*), along with occasional Ivy (*Hedera helix*), Wild Strawberry (*Fragaria vesca*), Bramble (*Rubus fruticosus* agg.) and Wood-sorrel (*Oxalis acetosella*). Elsewhere, small stands of Yew up to 5 m high occur with Spindle (*Euonymus europaeus*), Blackthorn (*Prunus spinosa*), Gorse (*Ulex europaeus*) and Ash (*Fraxinus excelsior*). Due to shading, and in places cattle trampling, the ground flora supports few herbs. However, the bryophyte layer is well developed with many moss covered rocks present. Juniper occurs throughout this site in a range of habitats, associated with calcareous

grasslands, heath and limestone outcrops. Some of the finest examples of Juniper formations in Ireland occur along the lake edge where upright, bushy Juniper shrubs up to 3 m tall are found. Typically, Juniper forms dense hedges with Ash, Hawthorn, Gorse, Hazel and Bramble, and occasional Yew. These tall Juniper shrubs are a unique feature in Ireland, where it is more typically found growing in prostrate form. In places along the lake shore Juniper forms a mosaic with Black Bog-rush and Great Fen-sedge fen. The best examples are seen at the north and north-east of the site. On drier ground above the flood level, Juniper occurs in association with species-rich calcareous grassland with Mouse-ear Hawkweed (*Hieracium pilosella*), Daisy (*Bellis perennis*), Lady's Bedstraw (*Galium verum*), Wild Thyme (*Thymus praecox*) and Blue Moor-grass (*Sesleria albicans*). An extensive area of this vegetation is seen north of Kilgarvan Quay. Many of the islands also support significant Juniper cover. This is particularly evident on Bounla Island. Juniper generally occurs as fringing vegetation around the islands, which typically have wooded centres. At Cornalack, along the eastern shore of Lough Derg, tall Juniper is found in association with loose limestone rubble with a significant cover of Yew.

Deciduous woodlands are also a notable feature of the site, dominated by oak (*Quercus* spp.), as at Bellevue, and Hazel/Ash at many of the examples along the north-eastern shore. Typically the ground layer includes Early-purple Orchid (*Orchis mascula*), violets (*Viola* spp.), Ivy, Lesser Celandine (*Ranunculus ficaria*), Bluebell (*Hyacinthoides non-scripta*), Wood Anemone (*Anemone nemorosa*), Wood-sorrel, Primrose (*Primula vulgaris*), Bramble, Ground Ivy (*Glechoma hederacea*), Pignut (*Conopodium majus*) and Honeysuckle (*Lonicera periclymenum*). Wet woodland is frequent along the lake shore, and in some areas this conforms well with the E.U. Annex I habitat, alluvial woodland. At Kyleneamelly wood, where some planting of commercial forestry has occurred, there are extensive areas of alluvial woodland which are subject to flooding. These woods are dominated by willows (*Salix* spp.) and Alder (*Alnus glutinosa*), with Downy Birch (*Betula pubescens*) and Ash also present. The ground flora of the undisturbed alluvial sites is often dominated by Yellow Iris (*Iris pseudacorus*), with a range of other species commonly present, including Bogbean (*Menyanthes trifoliata*), Marsh-marigold (*Caltha palustris*), Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), horsetails (*Equisetum* spp.), Wild Angelica (*Angelica sylvestris*), Greater Tussock-sedge and Remote Sedge (*Carex remota*). Further examples of alluvial woodland occur at Portumna. Beech (*Fagus sylvatica*) and Scots Pine (*Pinus sylvestris*) are often present at the lake edge along areas which were once parts of estates. Some areas of coniferous forestry have been included within the site.

The only known site in the country for the Red Data Book plant Irish Fleabane (*Inula salicina*) occurs along the lake shore. This plant is legally protected under the Flora (Protection) Order, 1999. Other Red Data Book species present within this site are Marsh Pea (*Lathyrus palustris*) and Ivy Broomrape (*Orobanche hederaceae*). The Red Data Book stonewort *Chara tomentosa* has its stronghold in Lough Derg.

The lake is rated as nationally important for waterfowl. The entire lake, including all of the islands, is a designated SPA (Special Protection Area). Counts from 1995/96 carried out at seven locations on the lake indicate that the lake holds nationally important numbers for Mute Swan, Cormorant, Mallard, Teal, Tufted Duck and Goldeneye. The lake also supports a number of Greenland White-fronted Goose, a bird species listed on Annex I of the E.U. Birds Directive. There is a Wildlife Sanctuary at the northwestern edge of the lake.

Lough Derg is of conservation interest also for its fish and freshwater invertebrates. Lampreys, listed under Annex II of the E.U. Habitats Directive, are known to occur and the lake contains an apparently self-sustaining landlocked population of Sea Lamprey (*Petromyzon marinus*). A landlocked population, where the fish are feeding and not completing a seaward migration, is unique in an Irish context, though there are several such

populations in the U.S. and one is known from Loch Lomond in Scotland. Brook Lamprey (*Lampetra planeri*) is known to be common in the lower Shannon catchment where all three lamprey species breed.

The endangered fish species Pollan (*Coregonus autumnalis pollan*) is recorded from Lough Derg, one of only three sites in Ireland and in western Europe. The Pollan is a landlocked species of Coregonid or 'White Fish', thought to have colonised Irish waters after the last Ice Age. Its nearest relative, the Arctic Cisco, is found as far away as Alaska, Northern Canada and Siberia. Although it is anadromous throughout most of its northern range, the Irish population are all non-migratory and purely freshwater. Lough Derg is also a well-known fishing lake with a good Trout (*Salmo trutta*) fishery. Atlantic Salmon (*Salmo salar*) also use the lake as a spawning ground. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the E.U. Habitats Directive.

Otter and Badger have been recorded within the site. Both of these species are listed in the Irish Red Data Book and are legally protected by the Wildlife Act, 1976.

Land use within the site is mainly of a recreational nature with many boat hire companies, holiday home schemes and angling clubs located at the lake edge. Recreational disturbance may pose a threat to the wintering wildfowl populations, though tourism is scaled down during the winter. The water body is surrounded mainly by improved pastoral farmland to the south and east, with areas of bog to the south-west and west. Coniferous plantations are present along the west and northwest shore and small areas of these are included within the site. If these areas are felled no further planting should take place as afforestation damages the wetland habitats between the plantation and lake edge.

The main threats to the quality of the site are water polluting activities resulting from intensification of agricultural activities around the lake shore, uncontrolled discharge of sewage, which is causing eutrophication of the lake, and housing and boating development which has resulted in the destruction of lakeshore habitats. There is also significant fishing and shooting pressure on and around the lake. Forestry can result in the loss of some areas of wetland habitat. The spread of Zebra Mussel (*Dreissena polymorpha*) in Lough Derg also poses a threat the ecology of the lake.

This is a site of significant ecological interest, with six habitats listed on Annex I of the E.U. Habitats Directive. Four of these are priority habitats - Cladium fen, alluvial woodland, limestone pavement and Yew woodland. Other annexed habitats present include alkaline fen and Juniper scrub formations on heath and calcareous grasslands. In addition, the lake itself is an SPA that supports important numbers of wintering wildfowl, Greenland White-fronted Goose, Common Tern and Cormorant, a number of which are listed under Annex I of the E.U. Birds Directive.

Summary of Appropriate Assessment

Conservation Objectives, Attributes & Targets (Summary)

Conservation Objectives:

To restore (R) or maintain (M) the favourable conservation condition of;

- [5130] Juniper Scrub (R)
- [7210] Cladium Fens* (M)
- [7230] Alkaline Fens (M)
- [8240] Limestone Pavement* (R)
- [91E0] Alluvial Forests* (R)
- [91J0] Yew Woodlands* (M)

Qualifying Interest Feature: [5130] Juniper Scrub (R)

Conservation Objective: To restore the favourable conservation condition of *Juniperus communis* formations on heaths or calcareous grasslands in Lough Derg, North-east Shore SAC

Attributes & Targets:

Habitat area – Area stable or increasing, subject to natural processes.

Habitat distribution – No decline, subject to natural processes.

Juniper Formation Size – At least 50 juniper plants present with each plant separated by no more than 20m.

Vegetation structure: female fruiting plants – Fruiting females comprise at least 10% of juniper plants rooted in plot in at least 50% of stops or in an ad hoc count of 50 plants.

Vegetation structure: seedling recruitment – At least one seedling recorded in at least one monitoring stop.

Vegetation structure: live juniper) – At least 90% of juniper plants rooted in plot alive in at least 75% of stops or across the site as a whole.

Vegetation composition: negative indicator species – Total cover of negative indicator species to be less than 10% in at least 50% of stops.

Physical structure: germination niches – At least 5% bare soil and/or at least 5% bare rock in at least 50% of stops.

Formation structure: browning/die-back of plants – Browning or dead juniper branches (excluding fully dead plants) comprise no more than 20% of total juniper cover in plot in at least 75% of stops.

Formation structure: evidence of browsing and bark stripping – Recent browsing of juniper plants and bark stripping and trampling due to browsers evident in no more than 50% of stops.

Indicators of local distinctiveness - No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.

Qualifying Interest Feature: [7210] Cladium Fens* (M)

Conservation Objective: To maintain the favourable conservation condition of Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** in Lough Derg, North-east Shore SAC

Attributes & Targets:

Habitat area – Area stable or increasing, subject to natural processes.

Habitat distribution – No decline, subject to natural processes.

Ecosystem function: peat formation – Maintain active peat formation, where appropriate.

Ecosystem function: hydrology - groundwater levels – Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat.

Ecosystem function: hydrology - surface water flow – Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions.

Ecosystem function: water quality – Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat.

Vegetation composition: typical species – Maintain adequate cover of typical species, including brown mosses and vascular plants.

Vegetation composition: native negative indicator species – Cover of native negative indicator species at insignificant levels.

Vegetation composition: non-native species – Cover of non-native species less than 1%.

Vegetation composition: trees and shrubs – Cover of scattered native trees and shrubs less than 10%.

Physical structure: disturbed bare ground - Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1%.

Indicators of local distinctiveness - No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes.

Qualifying Interest Feature: [7230] Alkaline Fens (M)
Conservation Objective: To maintain the favourable conservation condition of Alkaline fens in Lough Derg, Northeast Shore SAC.
<p>Attributes & Targets:</p> <p>Habitat area – Area stable or increasing, subject to natural processes.</p> <p>Habitat distribution – No decline, subject to natural processes.</p> <p>Ecosystem function: soil nutrients – Maintain soil pH and nutrient status within natural ranges</p> <p>Ecosystem function: peat formation – Maintain active peat formation, where appropriate</p> <p>Ecosystem function: hydrology - groundwater levels – Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat.</p> <p>Ecosystem function: hydrology - surface water flow – Maintain, or where necessary restore, as close as possible to natural or semi-natural drainage conditions.</p> <p>Ecosystem function: water quality – Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat.</p> <p>Community diversity – Maintain variety of vegetation communities, subject to natural processes.</p> <p>Vegetation composition: brown mosses – Maintain adequate cover of typical brown moss species.</p> <p>Vegetation composition: typical vascular plants – Maintain adequate cover of typical vascular plant species.</p> <p>Vegetation composition: native negative indicator species - Cover of native negative indicator species at insignificant levels.</p> <p>Vegetation composition: non-native species - Cover of non-native species less than 1%.</p> <p>Vegetation composition: native trees and shrubs – Cover of scattered native trees and shrubs less than 10%.</p> <p>Vegetation composition: soft rush and common reed cover – Total cover of soft rush (<i>Juncus effusus</i>) and common reed (<i>Phragmites australis</i>) less than 10%.</p> <p>Vegetation structure: litter – Total cover of litter not more than 25%.</p> <p>Physical structure: disturbed bare ground – Cover of disturbed bare ground not more than 10%.</p> <p>Physical structure: tufa formations – Disturbed proportion of vegetation cover where tufa is present is less than 1%</p> <p>Indicators of local distinctiveness – No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes.</p>
Qualifying Interest Feature: [8240] Limestone Pavement* (R)
Conservation Objective: To restore the favourable conservation condition of Limestone pavements* in Lough Derg, North-east Shore SAC
<p>Attributes & Targets:</p> <p>Habitat area – Area stable or increasing, subject to natural processes.</p> <p>Habitat distribution – No decline.</p> <p>Vegetation composition: positive indicator species – At least seven positive indicator species present.</p> <p>Vegetation composition: bryophyte layer – Bryophyte cover at least 50% on wooded pavement.</p> <p>Vegetation composition: negative indicator species – Collective cover of negative indicator species on exposed pavement not more than 1%.</p> <p>Vegetation composition: non-native species – Cover of non-native species not more than 1% on exposed pavement; on wooded pavement not more than 10% with no regeneration.</p> <p>Vegetation composition: scrub – Scrub cover no more than 25% of exposed pavement.</p>

Vegetation composition: bracken cover – Bracken (*Pteridium aquilinum*) cover no more than 10% on exposed pavement.
Vegetation structure: woodland canopy – Canopy cover on wooded pavement at least 30%
Vegetation structure: dead wood – No evidence of grazing pressure on wooded pavement.
Indicators of local distinctiveness - Indicators of local distinctiveness are maintained.

Qualifying Interest Feature: [91E0] Alluvial Forests* (R)

Conservation Objective: To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)* in Lough Derg, North-east Shore SAC

Attributes & Targets:

Habitat area – Area stable or increasing, subject to natural processes.

Habitat distribution – No decline.

Woodland Size – Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size.

Woodland structure: cover and height – Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%.

Woodland structure: community diversity and extent – Maintain diversity and extent of community types.

Woodland structure: natural regeneration – Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy.

Hydrological regime: flooding depth/height of water table – Appropriate hydrological regime necessary for maintenance of alluvial vegetation.

Woodland structure: dead wood – At least 19 stems/ha of dead wood at least 20cm diameter.

Woodland structure: veteran trees – No decline.

Woodland structure: indicators of local distinctiveness – No decline.

Woodland structure: indicators of overgrazing - All five indicators of overgrazing absent.

Vegetation composition: native tree cover - No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy.

Vegetation composition: typical species - At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present.

Vegetation composition: negative indicator species - Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent.

Vegetation composition: problematic native species - Cover of common nettle (*Urtica dioica*) less than 75%.

Qualifying Interest Feature: [91J0] Yew Woodlands* (M)

Conservation Objective: To maintain the favourable conservation condition of *Taxus baccata* woods of the British Isles* in Lough Derg, North-east Shore SAC

Attributes & Targets:

Habitat area – Area stable or increasing, subject to natural processes.

Habitat distribution – No decline.

Woodland Size – Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size.

Woodland structure: cover and height – Total canopy cover at least 30%; median canopy height at least 10m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%.

Woodland structure: community diversity and extent – Maintain diversity and extent of community types.

Woodland structure: natural regeneration – Seedlings, saplings and pole age-classes of yew (*Taxus baccata*) and other native tree species occur in adequate proportions to ensure survival of woodland canopy.

Woodland structure: dead wood – At least 19 stems/ha of dead wood at least 20cm diameter

Woodland structure: veteran trees – No decline.

Woodland structure: indicators of local distinctiveness – No decline.

Woodland structure: indicators of overgrazing - All four indicators of overgrazing absent.

Vegetation composition: native tree cover - No decline. Native tree cover at least 90% of canopy; yew (*Taxus baccata*) cover at least 50% of canopy.

Vegetation composition: typical species - Yew (*Taxus baccata*) present; at least 6 positive indicator species for 91J0* woodlands present.

Vegetation composition: negative indicator species - Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent.

Potential for Impact / Mitigation Measures

- **Potential for Impact** - The SAC is located c. 7.5km overland from the development site and is hydrologically connected to the development site via Little Brosna River and River Shannon over a hydrological distance of c. 43km. Taking a precautionary approach, the identified pathway for effect is via impacts on water quality as a result of construction activities. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in eutrophication of watercourses, resulting in increased plant/algal growth and deoxygenation of waters, alteration of pH, and toxicity effects as a result of hydrocarbons and cementitious materials resulting in fish kills, or clogging of fish gills due to siltation of watercourses.
- **[5130] Juniper Scrub, [8240] Limestone Pavement and [91J0] Yew Woodlands** - The SAC is located c. 7.5km over-land from the development site. Due to the terrestrial nature of this QI habitat, and there intervening distance between the SAC and the Proposed Development site, there is no source-pathway-receptor chain for adverse effect on the QI habitat.
- **[7210] Cladium Fens, [7230] Alkaline Fens and [91E0] Alluvial Forests** - The SAC is c. 43km hydrologically downstream of the Proposed Development site. Taking a precautionary approach, there is potential for impacts to this QI habitat where it occurs in the SAC, which is dependant on aquatic inputs, as a result of construction activities associated with the Proposed Development. A potential for adverse effect was identified.
- Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to potential for 'Pollution to surface waters (limnic, terrestrial, marine & brackish)'.
- Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed in further in this assessment.

Qualifying Interest Feature (QI)	Potential for Adverse Effects and Requirement for Mitigation (Summary)
Qualifying Interests (QI): Habitats <ul style="list-style-type: none"> • [5130] Juniper Scrub (R) • [7210] Cladium Fens (M) • [7230] Alkaline Fens (M) • [8240] Limestone Pavement (R) • [91E0] Alluvial Forests (R) • [91J0] Yew Woodlands (M) 	[5130] Juniper Scrub, [8240] Limestone Pavement* and [91J0] Yew Woodlands* screened out from likely impacts due to the terrestrial nature of the QI habitat and the distance from the subject site to be affected. Significant Likely Impacts for these QIs screened out at Stage 1 (See Appendix 1 of this report) <u>No Mitigation Required</u>

	<p>The Risk to QI's applies to hydrologically linked interest features due to adverse impacts from construction activities to [7210] Cladium Fens*, [7230] Alkaline Fens and [91E0] Alluvial Forests*. Mitigation Required</p>
<p>5. AA Summary Matrix for River Shannon Callows SAC [000216]</p>	
<p>River Shannon Callows SAC [000216] – The SAC is located an overland distance of c. 7.6km and a hydrological distance c. 28km from the development site. River Shannon Callows SAC National Parks & Wildlife Service</p> <p>Description of Site: According to the Site Synopsis for this SAC, the River Shannon Callows is a long and diverse site which consists of seasonally flooded, semi-natural, lowland wet grassland, along and beside the river between the towns of Athlone and Portumna. It is approximately 50 km long and averages about 0.75 km wide (reaching 1.5 km wide in places). Along much of its length the site is bordered by raised bogs (many, but not all, of which are subject to large-scale harvesting), esker ridges and limestone-bedrock hills. The soils grade from siltyalluvial to peat. This site has a common boundary, and is closely associated, with two other sites with similar habitats, River Suck Callows and Little Brosna Callows.</p> <p>The River Shannon Callows is mainly composed of lowland wet grassland. Different plant communities occur, depending on elevation, and therefore flooding patterns. Two habitats listed on Annex I of the E.U. Habitats Directive are well-represented within the site – Molinia meadows and lowland hay meadows. The former is characterised by the presence of the Meadow Thistle (<i>Cirsium dissectum</i>) and Purple Moor-grass (<i>Molinia caerulea</i>), while typical species in the latter include Meadow Fescue (<i>Festuca pratensis</i>), Rough Meadow-grass (<i>Poa trivialis</i>), Downy Oat-grass (<i>Avenula pubescens</i>), Common Knapweed (<i>Centaurea nigra</i>), Ribwort Plantain (<i>Plantago lanceolata</i>) and Common Sorrel (<i>Rumex acetosa</i>). In places these two habitats grade into one another.</p> <p>Low-lying areas of the callows with more prolonged flooding are characterised by Floating Sweet-grass (<i>Glyceria fluitans</i>), Marsh Foxtail (<i>Alopecurus geniculatus</i>) and wetland herbs such as Yellow-cress (<i>Rorippa</i> spp.), Water Forget-me-not (<i>Myosotis scorpioides</i>) and Common Spike-rush (<i>Eleocharis palustris</i>). Most of the callows consist of a plant community characterised by Creeping Bent (<i>Agrostis stolonifera</i>), Brown Sedge (<i>Carex disticha</i>), Common Sedge (<i>Carex nigra</i>), and herbs such as Marshmarigold (<i>Caltha palustris</i>) and Marsh Bedstraw (<i>Galium palustre</i>), while the more elevated and peaty areas are characterised by low-growing sedges, particularly Yellow Sedge (<i>Carex flava</i> agg.) and Star Sedge (<i>Carex echinata</i>). All these communities are very diverse in their total number of plant species, and include the scarce species Meadow-rue (<i>Thalictrum flavum</i>), Summer Snowflake (<i>Leucojum aestivum</i>) and Marsh Stitchwort (<i>Stellaria palustris</i>).</p> <p>A further two Annex I habitats, both listed with priority status, have a minor though important presence within the site. Alluvial forest occurs on a series of alluvial islands just below the ESB weir near Meelick. Several of the islands are dominated by well-grown woodland consisting mainly of Ash (<i>Fraxinus excelsior</i>) and Willows (<i>Salix</i> spp.). The islands are prone to regular flooding from the river.</p> <p>At Clorhane, an area of limestone pavement represents the only known example in Co. Offaly. It is predominantly colonised by mature Hazel (<i>Corylus avellana</i>) woodland, with</p>	

areas of open limestone and calcareous grassland interspersed. The open limestone pavement comprises bare or moss -covered rock, or rock with a very thin calcareous soil cover supporting a short grassy turf. The most notable plant in the grassy area is a substantial population of Green-winged Orchid (*Orchis morio*), which occurs with such species as Sweet Vernal-grass (*Anthoxanthum odoratum*), Quaking-grass (*Briza media*), sedges (*Carex caryophyllea*, *C. flacca*), Common Bird's foot-trefoil (*Lotus corniculatus*), Common Knapweed (*Centaurea nigra*), and Ribwort Plantain (*Plantago lanceolata*). Ferns associated with the cracks in the pavement include *Asplenium trichomanes*, *A. ruta-muraria*, *A. adiantum-nigrum* and *Polypodium australe*. Bryophytes include *Grimmia apocarpa* and *Orthotrichum cf. anomalum*. Anthills are common within the open grassland. The Hazel wood is well-developed and has herbaceous species such as Primrose (*Primula vulgaris*), Common Dog-violet (*Viola riviniana*), Wood-sorrel (*Oxalis acetosella*) and Herb-Robert (*Geranium robertianum*). The wood is noted for its luxuriant growth of epiphytic mosses and liverworts, with such species as *Neckera crispa* and *Hylocomium brevirostre*. Yew (*Taxus baccata*) occurs in one area.

Other habitats of smaller area but also of importance within the site are lowland dry grassland, drainage ditches, freshwater marshes and reedbeds. The dry grassland areas, especially where they exist within hay meadows, are species-rich, and of two main types: calcareous grassland on glacial material, and dry grassland on levees of river alluvium. The former can contain many orchid species, Cowslip (*Primula veris*), abundant Adder's-tongue (*Ophioglossum vulgatum*) and Spring-sedge (*Carex caryophyllea*), and both contain an unusually wide variety of grasses, including False Oatgrass (*Arrhenatherum elatius*), Yellow Oat-grass (*Trisetum flavescens*), Meadow Foxtail (*Alopecurus pratense*), and Meadow Brome (*Bromus commutatus*). In places Summer Snowflake also occurs.

Good quality habitats on the edge of the callows included in the site are wet broadleaved semi-natural woodland dominated by both Downy Birch (*Betula pubescens*) and Alder (*Alnus glutinosa*), and dry broadleaved woodland dominated by Hazel. There are also areas of raised bog, fen on old cut-away bog with Black Bogrush (*Schoenus nigricans*), and a 'petrifying stream' with associated species-rich calcareous flush which supports Yellow Sedge (*Carex lepidocarpa*), Blunt-flowered Rush (*Juncus subnodulosus*) and Stoneworts (*Chara* spp.)

Immediately south of Portumna Bridge and southeast of the town of Portumna the area of low-lying terrestrial land west of the river comprises a large area of the Annex I habitat alkaline fen. The fen comprises a complex of rich-fen plant communities. Sedges (*Carex lasiocarpa*, *Carex acutiformis*) and Bogbean (*Menyanthes trifoliata*) dominate parts of the fens while other small sedges are common throughout. The orchids Early Marsh Orchid (*Dactylorhiza incarnata*), Western Marsh Orchid (*D. majalis*) and Marsh Helleborine (*Epipactis palustris*) and the red-listed plant species Marsh Pea (*Lathyrus palustris*) have been recorded within the fen.

Two species which are legally protected under the Flora (Protection) Order, 2015, occur in the site - Opposite-leaved Pondweed (*Groenlandia densa*) in drainage ditches, and Meadow Barley (*Hordeum secalinum*) on dry alluvial grassland. This is one of only two known inland sites for Meadow Barley in Ireland. The Red Data Book plant Green-winged Orchid is known from dry calcareous grasslands within the site.

The site is of international importance for wintering waterfowl as numbers regularly exceed the 20,000 threshold (mean of 34,985 for five winters 1994/94-1998/99). Of particular note is an internationally important population of Whooper Swans (287). A further five species have populations of national importance (all figures are means for five winters 1995/96-1999/00): Mute Swan (349), Wigeon (2972), Golden Plover (4254), Lapwing (11578) and Black-tailed

Godwit (388). Species which occur in numbers of regional or local importance include Bewick's Swan, Tufted Duck, Dunlin, Curlew and Redshank. The population of Dunlin is notable as it is one of the few regular inland flocks in Ireland. Small flocks of Greenland White-fronted Goose use the Shannon Callows; these are generally associated with larger flocks which occur on the adjacent Little Brosna Callows and River Suck Callows.

Shoveler (an estimated 12 pairs in 1987) and Black-tailed Godwit (Icelandic race) (one or two pairs in 1987) breed within this site. These species are listed in the Red Data Book as being threatened in Ireland. The scarce bird Quail is also known to breed within the area. The callows has at times held over 40% of the Irish population of the globally endangered Corncrake, although numbers have declined in recent years. A total of 66 calling birds were recorded in 1999, but numbers have dropped significantly since then. The total population of breeding waders (Lapwing, Redshank, Snipe and Curlew) in 1987 was one of three major concentrations in Ireland and Britain. The population of breeding Redshank in the site was estimated to be 10% of the Irish population, making it nationally significant. Also, the Annex I species Merlin and Hen Harrier are regularly reported hunting over the callows during the breeding season and in autumn and winter.

This site holds a population of Otter, a species listed on Annex II of the E.U. Habitats Directive, while the Irish Hare, which is listed in the Irish Red Data Book, is a common sight on the callows.

The Shannon Callows are used for summer dry-stock grazing (mostly cattle, with some sheep and a few horses), and permanent hay meadow. About 30 ha is a nature reserve owned by voluntary conservation bodies. The River Shannon is used increasingly for recreational purposes with coarse angling and boating accounting for much of the visitor numbers. Intermittent and scattered damage to the habitats has occurred due to over-deepening of drains and peat silt deposition, water-skiing, ploughing and neglect of hay meadow (or reversion to pasture). However, none of these damaging activities can yet be said to be having a serious impact. Threats to the quality of the site may come from the siting of boating marinas in areas away from centres of population, fertilising of botanically rich fields, the use of herbicides, reversion of hay meadow to pasture, neglect of pasture and hay meadow, disturbance of birds by boaters, anglers, birdwatchers and the general tourist. The maintenance of generally high-water levels in winter and spring benefits all aspects of the flora and fauna, but in this regard, summer flooding is a threat to breeding birds and may cause neglect of farming.

The Shannon Callows has by far the largest area of lowland semi-natural grassland and associated aquatic habitats in Ireland, and one in which there is least disturbance of natural wetland processes. Botanically, it is extremely diverse with two legally protected species of plants and many scarce species. Excellent examples of two habitats listed on Annex I of the E.U. Habitats Directive occur within the site – Molinia meadows and lowland hay meadows with good examples of a further three Annex habitats (two with priority status). In winter the site is internationally important for numbers and species of waterfowl. In spring it feeds large numbers of birds on migration, and in summer it holds very large numbers of breeding waders, rare breeding birds and the endangered Corncrake, as well as a very wide variety of more common grassland and wetland birds. The presence of Otter, an Annex II species, adds further importance to the site.

Summary of Appropriate Assessment

Conservation Objectives, Attributes & Targets (Summary)

Conservation Objectives:

To restore **(R)** or maintain **(M)** the favourable conservation condition of;

- [6410] Molinia Meadows **(R)**

<ul style="list-style-type: none"> • [6510] Lowland Hay Meadows (R) • [7230] Alkaline Fens (M) • [8240] Limestone Pavement* (M) • [91E0] Alluvial Forests* (M) • [1355] Otter (<i>Lutra lutra</i>) (M)
Qualifying Interest Feature: [6410] Molinia Meadows (R)
Conservation Objective: To restore the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) in River Shannon Callows SAC.
Attributes & Targets: Habitat area – Area stable or increasing, subject to natural processes. Habitat distribution – No decline, subject to natural processes. Juniper Formation Size – At least 50 juniper plants present with each plant separated by no more than 20m. Vegetation structure: female fruiting plants – Fruiting females comprise at least 10% of juniper plants rooted in plot in at least 50% of stops or in an ad hoc count of 50 plants. Vegetation structure: seedling recruitment – At least one seedling recorded in at least one monitoring stop. Vegetation structure: live juniper – At least 90% of juniper plants rooted in plot alive in at least 75% of stops or across the site as a whole. Vegetation composition: negative indicator species – Total cover of negative indicator species to be less than 10% in at least 50% of stops. Physical structure: germination niches – At least 5% bare soil and/or at least 5% bare rock in at least 50% of stops. Formation structure: browning/die-back of plants – Browning or dead juniper branches (excluding fully dead plants) comprise no more than 20% of total juniper cover in plot in at least 75% of stops. Formation structure: evidence of browsing and bark stripping – Recent browsing of juniper plants and bark stripping and trampling due to browsers evident in no more than 50% of stops. Indicators of local distinctiveness - No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.
Qualifying Interest Feature: [6510] Lowland Hay Meadows (R)
Conservation Objective: To restore the favourable conservation condition of Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) in River Shannon Callows SAC.
Attributes & Targets: Habitat area – Area stable or increasing, subject to natural processes. Habitat distribution – No decline, subject to natural processes. Vegetation composition: positive indicator species – At least 7 positive indicator species present in monitoring stop or, if 5–6 present in stop, additional species within 20m of stop; this includes at least one 'high quality' positive indicator species present in stop or within 20m of stop. Vegetation composition: negative indicator species – Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10% Vegetation composition: non-native species – Cover of non-native species not more than 1% Vegetation composition: woody species and bracken – Cover of woody species and bracken (<i>Pteridium aquilinum</i>) not more than 5%. Vegetation structure: broadleaf herb:grass ratio – Broadleaf herb component of vegetation between 40% and 90%. Vegetation structure: sward height – At least 50% of sward between 10cm and 50cm tall. Vegetation structure: litter – Litter cover not more than 25%. Physical structure: bare soil – Not more than 5% bare soil.

Physical structure: disturbance - Area of the habitat showing signs of serious grazing or other disturbance less than 20m².

Qualifying Interest Feature: [7230] Alkaline Fens (M)

Conservation Objective: To maintain the favourable conservation condition of Alkaline fens in River Shannon Callows SAC.

Attributes & Targets:

Habitat area – Area stable or increasing, subject to natural processes.

Habitat distribution – No decline, subject to natural processes.

Ecosystem function: soil nutrients – Maintain soil pH and nutrient status within natural ranges.

Ecosystem function: peat formation – Maintain active peat formation, where appropriate.

Ecosystem function: hydrology - groundwater levels – Maintain, or restore where necessary, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat.

Ecosystem function: hydrology - surface water flow – Maintain, or restore where necessary, as close as possible to natural or semi-natural drainage conditions.

Ecosystem function: water quality – Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat.

Vegetation composition: community diversity – Maintain variety of vegetation communities, subject to natural processes.

Vegetation composition: typical brown mosses – Maintain adequate cover of typical brown moss species.

Vegetation composition: typical vascular plants – Maintain adequate cover of typical vascular plant species.

Vegetation composition: native negative indicator species - Cover of native negative indicator species at insignificant levels.

Vegetation composition: non-native species - Cover of non-native species less than 1%.

Vegetation composition: native trees and shrubs – Cover of scattered native trees and shrubs less than 10%.

Vegetation composition: algal cover - Cover of algae less than 2%.

Vegetation structure: vegetation height - At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type.

Physical structure: disturbed bare ground – Cover of disturbed bare ground not more than 10%.

Physical structure: tufa formations – Disturbed proportion of vegetation cover where tufa is present is less than 1%.

Indicators of local distinctiveness – No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes.

Transitional areas between fen and adjacent habitats - Maintain adequate transitional areas to support/protect the alkaline fen habitat and the services it provides.

Qualifying Interest Feature: [8240] Limestone Pavement* (M)

Conservation Objective: To maintain the favourable conservation condition of Limestone pavements* in River Shannon Callows SAC.

Attributes & Targets:

Habitat area – Area stable or increasing, subject to natural processes.

Habitat distribution – No decline.

Vegetation composition: positive indicator species – At least seven positive indicator species present.

Vegetation composition: bryophyte layer – Bryophyte cover at least 50% on wooded pavement.

Vegetation composition: negative indicator species – Collective cover of negative indicator species on exposed pavement not more than 1%.

Vegetation composition: non-native species – Cover of non-native species not more than 1% on exposed pavement; on wooded pavement not more than 10% with no regeneration.

Vegetation composition: scrub - Scrub cover no more than 25% of exposed pavement.

Vegetation composition: bracken cover - Bracken (*Pteridium aquilinum*) cover no more than 10% on exposed pavement.

Vegetation structure: woodland canopy - Canopy cover on wooded pavement at least 30%.

Vegetation structure: dead wood - Sufficient quantity of dead wood on wooded pavement to provide habitat for saproxylic organisms.

Physical structure: disturbance - No evidence of grazing pressure on wooded pavement.

Indicators of local distinctiveness - No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes.

Qualifying Interest Feature: [91E0] Alluvial Forests* (M)

Conservation Objective: To maintain the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)* in River Shannon Callows SAC.

Attributes & Targets:

Habitat area – Area stable or increasing, subject to natural processes.

Habitat distribution – No decline, subject to natural processes.

Woodland Size – Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size.

Woodland structure: cover and height – Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%.

Woodland structure: community diversity and extent – Maintain diversity and extent of community types.

Woodland structure: natural regeneration – Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy.

Hydrological regime: flooding depth/height of water table - Appropriate hydrological regime necessary for maintenance of alluvial vegetation.

Woodland structure: dead wood – At least 19 stems/ha of dead wood at least 20cm diameter

Woodland structure: veteran trees – No decline.

Woodland structure: indicators of local distinctiveness – No decline in distribution and, in the case of red listed and other rare or localised species, population size.

Woodland structure: indicators of overgrazing - All five indicators of overgrazing absent.

Vegetation composition: native tree cover - No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy.

Vegetation composition: typical species - At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present.

Vegetation composition: negative indicator species - Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent.

Vegetation composition: problematic native species - Cover of common nettle (*Urtica dioica*) less than 75%.

Qualifying Interest Feature: [1355] Otter (*Lutra lutra*) (M)

Conservation Objective: To maintain the favourable conservation condition of Otter (*Lutra lutra*) in River Shannon Callows SAC.

Attributes & Targets:**Distribution** – No significant decline.**Extent of terrestrial habitat** – No significant decline. Area mapped and calculated as 282.1ha**Extent of freshwater (river) habitat** – No significant decline. Length mapped and calculated as 146.7km**Couching sites and holts** – No significant decline.**Fish biomass available** – No significant decline.**Barriers to connectivity** – No significant increase.**Potential for Impact / Mitigation Measures**

- **Potential for Impact** - The SAC is located c. 7.6km overland from the development site and is hydrologically connected to the development site via Little Brosna River and River Shannon over a hydrological distance of approx. 28km. Taking a precautionary approach, the identified pathway for effect is via impacts on water quality as a result of construction activities. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in eutrophication of watercourses, resulting in increased plant/algal growth and deoxygenation of waters, alteration of pH, and toxicity effects as a result of hydrocarbons and cementitious materials resulting in fish kills, or clogging of fish gills due to siltation of watercourses
- **[6410] Molinia Meadows, [6510] Lowland Hay Meadows and [8240] Limestone Pavement*** - The SAC is located c.7.6km over-land from the development site. Due to the terrestrial nature of this QI habitat, and there intervening distance between the SAC and the Proposed Development site, there is no source-pathway-receptor chain for adverse effect on the QI habitat.
- **[7230] Alkaline Fens and [91E0] Alluvial Forests*** - The SAC is c. 28km hydrologically downstream of the Proposed Development site. Taking a precautionary approach, there is potential for impacts to this QI habitat where it occurs in the SAC, which is dependent on aquatic inputs, as a result of construction activities associated with the Proposed Development. A potential for adverse effect was identified.
- **[1355] Otter (*Lutra lutra*)** - The SAC is c. 28km hydrologically downstream of the Proposed Development site. Taking a precautionary approach, there is potential for impacts to this QI species via water quality deterioration associated with construction activities, thus potentially affecting fish biomass availability. A potential for disturbance effects associated with construction activities to the otter population associated with the SAC which may commute along rivers outside of the SAC was also identified.
- No potential pathways for effect with regard to site-specific threats, pressures and activities have been identified with regard to the Proposed Development.
- Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed in further in this assessment.

Qualifying Interest Feature**Potential for Adverse Effects and Requirement for Mitigation (Summary)****Qualifying Interests: Habitats**

- [6410] Molinia Meadows (R)
- [6510] Lowland Hay Meadows (R)
- [7230] Alkaline Fens (M)
- [8240] Limestone Pavement* (M)
- [91E0] Alluvial Forests* (M)

Qualifying Interests: Species

[6410] Molinia Meadows, [6510] Lowland Hay Meadows and [8240] Limestone Pavement* screened out from likely impacts due to the terrestrial nature of the QI habitat and the distance from the subject site to be affected. Significant Likely Impacts for these QIs screened out at Stage 1 (See Appendix 1 of this report)

<ul style="list-style-type: none"> • [1355] Otter (<i>Lutra lutra</i>) (M) 	<p><u>No Mitigation Required</u></p> <p>The Risk to QI's applies to hydrologically linked interest features due to adverse impacts from construction activities to [7230] Alkaline Fens and [91E0] Alluvial Forests*</p> <p>The risk to the [1355] Otter (<i>Lutra lutra</i>) applies based on the hydrological link and water quality deterioration from construction activities potentially affecting fish stocks. The risk of disturbance effects on otters associated with construction activities applies.</p> <p><u>Mitigation Required</u></p>
6. AA Summary Matrix for Dovegrove Callows SPA [004137]	
<p>Dovegrove Callows SPA [004137] – The SPA is located c. 160m from EIAR site boundary including grid connection, c. 6.7km from proposed wind farm site, hydrological distance of c. 300m downstream of grid connection.</p> <p>Dovegrove Callows SPA National Parks & Wildlife Service</p> <p>Description of Site: According to the Site Synopsis for this SPA, Dovegrove Callows is an area of callowland beside the Little Brosna River 2 km downstream from Birr, Co. Offaly and 5 km upstream from the start of the main area of River Little Brosna callows. The main habitat is wet grassland which floods. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Greenland White-fronted Goose. The site is an important feeding area for the internationally important Little Brosna Greenland White-fronted Goose flock (527 individuals - 5 year mean peak for the period 1994/95 to 1998/99) and is used on an occasional basis when other feeding sites along the middle Shannon and Little Brosna callows are flooded. It is of particular importance as it can support the entire Little Brosna flock. For this reason the site is a key part of this flock's winter range and important for its protection. Dovegrove Callows SPA is of major conservation significance as a feeding site for an internationally important flock of Greenland White-fronted Goose, a species that is listed on Annex I of the E.U. Birds Directive.</p>	
<p align="center">Summary of Appropriate Assessment</p>	
<p align="center">Conservation Objectives (Summary)</p>	
<p>Conservation Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:</p> <ul style="list-style-type: none"> • [A395] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) (R) (M) 	
<p>Conservation Objectives for Dovegrove Callows SPA [004137]:</p> <p>The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.</p> <p>European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation</p>	

condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

Potential for Impact / Mitigation Measures

- **Potential for Impact** - Hydrological connectivity between the Proposed Development and the SPA was identified via the proposed grid connection route. The SPA is located 6.7km from the proposed wind farm site and approx. 110m overland from the proposed grid connection route. An identified pathway for effect is via impacts on water quality as a result of construction activities associated with the grid connection route. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in deterioration of water quality of Little Brosna River where it occurs within the SPA, thus affecting potential foraging and roosting habitat for Greenland White-fronted Goose.
- **[A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*)** - The SPA is located 6.7km from the proposed wind farm site. There were no observations of Greenland white-fronted geese within 500m of the Wind Farm Site during ornithological surveys undertaken between September 2020 and March 2023. There is no connectivity between the SCI species of the SPA and the Wind Farm Site. Consequently, the potential for direct and indirect effects on populations of SCI species associated with the SPA as a result of displacement or collision risk due to the proposed wind farm can be discounted.
Due to the short-term duration of the proposed grid connection route/cable installation works into the road in the vicinity of this SPA, which is at its closest point 110m from the boundary of the SPA, and due to the availability of foraging and roosting habitat within the boundary of the SPA, there is no potential for adverse effect as a result of disturbance of Greenland White-fronted Goose during construction of the grid connection route. The noise/disturbance levels from the cable installation in the existing road will be similar to that of existing levels of farm machinery disturbance and other farm activities within the agricultural lands of the SPA boundary and these works are not likely to cause adverse effects to the population of the SPA.
The SPA is located approx. 110m overland from the proposed grid connection route and approximately 300m hydrologically downstream of the proposed grid connection route. An identified pathway for indirect effect is via impacts on water quality due to hydrological connectivity as a result of construction activities associated with the grid connection route. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in deterioration of water quality of Little Brosna River where it occurs within the

<p>SPA, thus affecting potential foraging and roosting habitat for Greenland White-fronted Goose.</p> <p>No potential pathways for effect with regard to site-specific threats, pressures and activities have been identified for this SPA.</p> <ul style="list-style-type: none"> • Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed in further in this assessment.

Qualifying Interest Feature	Potential for Adverse Effects and Requirement for Mitigation (Summary)
<p>Qualifying Interests: Species [A395] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) (R) (M)</p>	<p>The risk to the [A395] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) relates to the hydrological link to the proposed grid connection route and the potential impacts on water quality due to construction activities.</p> <p><u>Mitigation Required</u></p>

7. AA Summary Matrix for River Little Brosna Callows SPA [004086]

River Little Brosna Callows SPA [004086] – The SPA is located c. 3km from EIAR site boundary including grid connection, c. 6.1km from wind farm site and a c. 18km hydrological distance.

[River Little Brosna Callows SPA | National Parks & Wildlife Service](#)

Description of Site: According to the Site Synopsis for this SPA, The River Little Brosna Callows SPA follows the River Brosna from its confluence with the River Shannon for approximately 9 km south-eastwards to just beyond New Bridge on the R438 road. The site extends along both sides of the river within counties Offaly and Tipperary. The main habitat present is the extensive area of low-lying callow grassland along the floodplain of the river. These grasslands are subject to prolonged flooding in winter, early spring and occasionally in summer.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Greenland Whitefronted Goose, Wigeon, Teal, Pintail, Shoveler, Golden Plover, Lapwing, BlackTailed Godwit and Black-Headed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds.

The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. The River Little Brosna Callows is an internationally important site for wintering waterfowl, being notable both for numbers and diversity of species. Of particular note is the internationally important Greenland White-fronted Goose flock (527) that is based along the Brosna - mean peak count for the five winters 1994/95 to 1998/99. The populations of Golden Plover (10,577 – 3 year mean peak from aerial surveys between 1995/96 and 1999/2000) and Black-tailed Godwit (2,900 - 4 year mean peak between 1995/96 and 1999/2000) are also of international importance. The River Little Brosna Callows is an important spring passage site and the Black-tailed Godwit flock, which is the largest in the country, exceeds over 4,000 birds on some occasions. A further seven species have populations of national importance, i.e. Whooper Swan (122), Wigeon (8,116), Teal (2,683), Pintail (130), Shoveler (164), Lapwing (6,552) and Black-headed Gull (1,939) – all figures are 4 year mean peaks between 1995/96 and 1999/2000 except Lapwing (3 year mean peak from aerial surveys between 1995/96 and 1999/2000) and Black-headed Gull (2 year mean peak for 1999/2000).

and 2000/01). The populations of Wigeon, Teal and Golden Plover are consistently among the largest in the country. Other species which occur include Mute Swan (79), Mallard (334), Pochard (38), Dunlin (434) and Curlew (194); the population of Dunlin is of particular note as it comprises the largest inland population in the country.

The Callows are also of importance for breeding waders, and such species as Redshank (65 pairs in 1987 and 22 pairs in 2002), Snipe (35 pairs in 1987 and 23 pairs in 2002) and Lapwing (41 pairs in 1987) have been recorded breeding here. Corncrake formerly bred on the Brosna callows (2 calling birds recorded in 1993) and may still breed occasionally.

The River Little Brosna Callows SPA is one of the top sites in the country for wintering waterfowl and part of the site is a Wildfowl Sanctuary. It is of international importance on account of the total numbers of birds that use it, as well as for its Greenland White-fronted Goose, Golden Plover and Black-tailed Godwit populations. In addition, there are a further seven species with nationally important populations, several of which are the largest in the country. Also of note is that three of the species which occur regularly, i.e. Whooper Swan, Greenland White-fronted Goose and Golden Plover, are listed on Annex I of the E.U. Birds Directive.

Summary of Appropriate Assessment

Conservation Objectives (Summary)

Conservation Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA;

To restore **(R)** or maintain **(M)** the favourable conservation condition of;

- [A038] Whooper Swan (*Cygnus cygnus*) **(M)**
- [A050] Wigeon (*Anas penelope*) **(R)**
- [A052] Teal (*Anas crecca*) **(M)**
- [A054] Pintail (*Anas acuta*) **(M)**
- [A056] Shoveler (*Anas clypeata*) **(M)**
- [A140] Golden Plover (*Pluvialis apricaria*) **(M)**
- [A142] Lapwing (*Vanellus vanellus*) **(M)**
- [A156] Black-tailed Godwit (*Limosa limosa*) **(M)**
- [A179] Black-headed Gull (*Chroicocephalus ridibundus*) **(M)**
- [A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*) **(R)**
- [A999] Wetland and Waterbirds **(M)**

Conservation objectives for River Little Brosna Callows SPA [004086]

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site. The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

To acknowledge the importance of Ireland's wetlands to wintering waterbirds, Wetland and Waterbird may be included as a Special Conservation Interest for some SPAs that have been designated for wintering waterbirds and that contain a wetland site of significant importance to one or more of the species of Special Conservation Interest. Thus, a second objective is included as follows:

Conservation Objective: To maintain the wetland habitats at the River Little Brosna Callows SPA as a resource for the regularly occurring migratory waterbirds that utilise these areas.

Potential for Impact / Mitigation Measures

- **Potential for Impact** - The SPA is located 3km overland from the EIAR site boundary including the grid connection route. The SPA is 6.1km from the wind farm site and is located 18km hydrologically downstream of the Proposed Development site. A potential pathway for indirect effect via deterioration of water quality of SCI supporting habitats as a result of construction activities associated with the Proposed Development was identified. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in deterioration of water quality thus affecting potential foraging and roosting habitat for SCI species. In addition, a potential for indirect effect via disturbance, displacement and collision risk to SCI bird species as a result of operation of the Proposed Development was identified.
- **[A038] Whooper Swan (*Cygnus cygnus*)** - During ornithological surveys undertaken between September 2020 and March 2023, the following SCI species were recorded within the Wind Farm Site and/or within 500m of the Wind Farm Site: whooper swan, teal, pintail, golden plover, lapwing and black-headed gull. The distance between the SPA and the Wind Farm Site is greater than the core foraging range of whooper swan (<5km, NatureScot, 2016) and no regular or patterned flight activity of this species was recorded during surveys carried out by the applicant such as would suggest connectivity between the Wind Farm Site and the SPA (see Section 3.4.4 of Applicants NIS for outline of field survey results). Furthermore, in relation to whooper swan, a regularly used roost site was identified within 500m of the Wind Farm Site. Flock sizes recorded in the vicinity of the Wind Farm Site were broadly in-line with numbers observed at the roost site, and therefore the birds recorded in the vicinity of the Wind Farm Site are considered to be associated with this roost site, and not the SPA. Therefore, based on published core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the Wind Farm Site for whooper swan. Therefore, there is no potential for adverse effect via ex-situ collision risk or disturbance/displacement.

- **[A050] Wigeon (*Anas Penelope*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, no records of Wigeon within 1km of the Proposed Development were observed. The closest record was 1.6km away from the Proposed Development site. Therefore, there is no potential for adverse effect via disturbance, displacement or collision risk.
- **[A052] Teal (*Anas crecca*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, Teal was recorded during winter and passage seasons within 500m of the Proposed Development site. The core foraging ranges of teal (8.4km) are greater than the distance between the SPA and the Wind Farm Site (Johnson et al., 2014; Thaxter et al., 2017). As such, there is potential connectivity between the Wind Farm Site and the SCI population of Teal of the SPA. A potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement was identified.
- **[A054] Pintail (*Anas acuta*)** - During ornithological surveys undertaken between September 2020 and March 2023, Pintail were recorded within the Wind Farm Site and/or within 500m of the Wind Farm Site. The distance between the SPA and the Wind Farm Site is greater than the core foraging range of pintail (1.3km) (Johnson et al., 2014) and no regular or patterned flight activity of this species was recorded during surveys such as would suggest connectivity between the Wind Farm Site and the SPA (see Section 3.4.4 for outline of field survey results). Therefore, based on published core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the Wind Farm Site for Pintail. Therefore, there is no potential for adverse effect via ex-situ collision risk or disturbance/displacement.
- **[A056] Shoveler (*Anas clypeata*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, there was just one observation of shoveler within 500m of the Wind Farm Site, comprising 28 birds foraging on agricultural grassland 100m north of the Wind Farm Site in February 2022. All remaining observations were beyond 500m of the Wind Farm Site, ranging from between 2.2km – 10.5km distant. Shoveler have a core foraging range of 2-3km (Johnson et al. 2014). The proposed wind farm site is 6.1km from the SPA. Therefore, there is no potential for adverse effect via ex-situ collision risk, disturbance or displacement on the SCI population of Shoveler associated with the SPA.
- **[A140] Golden Plover (*Pluvialis apricaria*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, Golden Plover were observed within 500m of the Proposed Development site during winter and passage seasons. There is no widely recognised foraging range for wintering Golden Plover. As such, there is potential connectivity between the Wind Farm Site and the SCI population of Golden Plover of the SPA. A potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement was identified.
- **[A142] Lapwing (*Vanellus vanellus*)** – During bird surveys undertaken by the applicant between September 2020 and March 2023, Lapwing were observed within 500m of the Proposed Development site during winter, passage and breeding seasons. There is no documented foraging range for lapwing. As such, there is potential connectivity between the Wind Farm Site and the SCI population of lapwing of the SPA. A potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement was identified.
- **[A156] Black-tailed Godwit (*Limosa limosa*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, no records of Black-tailed Godwit within 1km of the Proposed Development were observed. The closest record was 2.5km away from the Proposed Development site. Therefore, there is no potential for adverse effect via disturbance, displacement or collision risk.
- **[A179] Black-headed Gull (*Chroicocephalus ridibundus*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, Black-

<p>headed Gull were observed within 500m of the Proposed Development site during winter, passage and breeding seasons. The core foraging range of black-headed gull (11.4km) is greater than the distance between the SPA and the Wind Farm Site (Johnson et al., 2014; Thaxter et al., 2017). As such, there is potential connectivity between the Wind Farm Site and the SCI population of black-headed gull of the SPA. A potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement was identified.</p> <ul style="list-style-type: none"> • [A395] Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> - During bird surveys undertaken between September 2020 and March 2023, no records of Greenland White-fronted Goose within 1km of the Proposed Development were observed. The closest record was 7.8km away from the Proposed Development site. Therefore, there is no potential for adverse effect via disturbance, displacement or collision risk. • [A999] Wetland and Waterbirds - The SPA is located c. 18km hydrologically downstream of the Proposed Development site. A potential for indirect adverse effect via deterioration in water quality as a result of construction activities thus affecting SCI supporting habitats was identified. • No potential pathways for effect with regard to site-specific threats, pressures and activities have been identified with regard to the Proposed Development. • Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed in further in this assessment. 	
Qualifying Interest Feature	Potential for Adverse Effects and Requirement for Mitigation (Summary)
<p>Qualifying Interests: Habitats [A999] Wetland and Waterbirds</p> <p>Qualifying Interests: Species [A038] Whooper Swan (<i>Cygnus cygnus</i>) [A050] Wigeon (<i>Anas penelope</i>) [A052] Teal (<i>Anas crecca</i>) [A054] Pintail (<i>Anas acuta</i>) [A056] Shoveler (<i>Anas clypeata</i>) [A140] Golden Plover (<i>Pluvialis apricaria</i>) [A142] Lapwing (<i>Vanellus vanellus</i>) [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A395] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)</p>	<p>There is a potential risk for indirect adverse effect via deterioration in water quality from construction activities thus affecting all of the indicated QI's (habitat & bird species) due to the SPA being located c. 18km hydrologically downstream of the proposed development site.</p> <p><u>Mitigation Required</u></p> <p>The SPA is located c. 6.1km from the proposed wind farm site. Based on core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the Wind Farm Site for Whooper Swan, Wigeon, Shoveler, Black-tailed Godwit and Greenland White-fronted Goose and these QI's have been screened-out for adverse effects via disturbance, displacement or ex-situ collision risk. Significant Likely Impacts for these QIs screened out at Stage 1 (See Appendix 1 of this report)</p> <p><u>No Mitigation Required</u></p> <p>The core foraging ranges of teal (8.4km) are greater than the distance between the SPA and the Wind Farm Site.</p>

	<p>The core foraging range of black-headed gull (11.4km) is greater than the distance between the SPA.</p> <p>There is no widely recognised foraging range for Golden Plover and Lapwing.</p> <p>As such, a potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement was identified.</p> <p><u>Mitigation Required</u></p>
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8. AA Summary Matrix for Middle Shannon Callows SPA [004096]

Middle Shannon Callows SPA [004096] – The SPA is located c. 7.6km from EIAR site boundary including grid connection, c. 9.8km from wind farm site, c. 28km hydrological connection from the development site.

[Middle Shannon Callows SPA | National Parks & Wildlife Service](#)

Description of Site: According to the Site Synopsis for this SPA, the Middle Shannon Callows SPA is a long and diverse site which extends for approximately 50 km from the town of Athlone to the town of Portumna; it lies within Counties Galway, Roscommon, Westmeath, Offaly and Tipperary. The site averages about 0.75 km in width though in places is up to 1.5 km wide. Water levels on the site are greatly influenced by the very small fall between Athlone and Portumna and by the weir at Meelick. The site has extensive areas of callow, or seasonally flooded, semi-natural, lowland wet grassland, along both sides of the river. The callows are mainly too soft for intensive farming but are used for hay or silage or for summer grazing. Other habitats of smaller area which occur alongside the river include lowland dry grassland, freshwater marshes, reedbeds and wet woodland. The diversity of semi-natural habitats present and the sheer size of the site attract an excellent diversity of bird species, including significant populations of several.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Wigeon, Corncrake, Golden Plover, Lapwing, Black-tailed Godwit and Black-Headed Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The Middle Shannon Callows qualifies as a site of international importance as it regularly supports in excess of 20,000 wintering waterbirds (23,656 – four year mean peak for four of the winters between 1995/96 and 1999/2000). The site also supports internationally important populations of Whooper Swan (305 – five year mean peak for the period 1995/96 to 1999/2000) and Black-tailed Godwit (485 – four year mean peak for four of the winters between 1995/96 and 1999/2000). Four further species of wintering waterbird occur in numbers of national importance, i.e. Wigeon (3,059), Golden Plover (4,133), Lapwing (13,240) and Black-headed Gull (1,209) – all figures are four year mean peaks for four of the winters between 1995/96 and 1999/2000.

The Shannon Callows is the largest site monitored as part of I-WeBS and many parts of it are inaccessible on the ground. Annual monitoring of the wintering waterbirds of the Shannon Callows is undertaken by aerial surveys in January/February with some areas also covered by ground counts. The importance of the site for some species may have been

underestimated if count coverage missed the brief spring peaks for these species, e.g. peak counts of Lapwing (23,409) and Black-tailed Godwit (1,096) recorded in the baseline period (1995/96 to 1999/2000) have been considerably higher than the four year means. A wide range of other species occurs within the site, including Mute Swan (407), Teal (88), Tufted Duck (41), Dunlin (335), Curlew (162) and Redshank (39). Small numbers of Greenland White-fronted Goose use the Shannon Callows (peak 55 in 1998/99) and these are generally associated with larger flocks which occur on the adjacent Little Brosna Callows and River Suck Callows. The callow grasslands provide optimum feeding grounds for these various species of waterfowl, while many of the birds also roost or rest within the site.

The Shannon Callows is also an important site for breeding waders with the total population on the Shannon and Little Brosna Callows being one of three major concentrations in Ireland and Britain in 1987. Numbers of some species have declined since then but a survey of the Shannon Callows in 2002 recorded the following breeding waders - Lapwing (63 pairs), Redshank (116 pairs), Snipe (139 drumming birds) and Curlew (8 pairs). Black-tailed Godwit, a very rare breeding species in Ireland, nests or attempts to nest in small numbers each year within the site. A further scarce breeding species, Shoveler, also nests in small numbers each year (an estimated 12 pairs in 1987).

The Middle Shannon Callows SPA supports a breeding population of Corncrake (19 pairs - five year mean peak between 2003 and 2007, based on records of calling males).

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

Quail, a related, scarce species, is also known to breed within the callow grasslands.

A good variety of other bird species are attracted to the site. Birds of prey, including scarce species such as Merlin and wintering Hen Harrier have been recorded hunting over the callows. A range of passerine species associated with grassland and swamp vegetation breed, including Sedge Warbler, Grasshopper Warbler, Skylark and Reed Bunting. Kingfisher is also known to occur within the site. Whinchat, an uncommon breeding species, occurs in small numbers.

The Middle Shannon Callows SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of two species - Whooper Swan and Black-tailed Godwit. In addition, there are four species that have wintering populations of national importance. The site also supports a nationally important breeding population of Corncrake. Of particular note is that several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Corncrake and Golden Plover.

Summary of Appropriate Assessment

Conservation Objectives, Attributes & Targets (Summary)

Conservation Objectives:

<p>To restore (R) or maintain (M) the favourable conservation condition of;</p> <ul style="list-style-type: none"> • [A038] Whooper Swan (<i>Cygnus cygnus</i>) (M) • [A050] Wigeon (<i>Anas penelope</i>) (R) • [A122] Corncrake (<i>Crex crex</i>) Currently under Review • [A140] Golden Plover (<i>Pluvialis apricaria</i>) (M) • [A142] Lapwing (<i>Vanellus vanellus</i>) (R) • [A156] Black-tailed Godwit (<i>Limosa limosa</i>) (R) • [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) (R) • [A999] Wetlands (M)
Qualifying Interest Feature: [A038] Whooper Swan (<i>Cygnus cygnus</i>) (M)
Conservation Objective: To maintain the favourable conservation condition of whooper swan in Middle Shannon Callows SPA.
Qualifying Interest Feature: [A050] Wigeon (<i>Anas penelope</i>) (R)
Conservation Objective: To restore the favourable conservation condition of wigeon in Middle Shannon Callows SPA.
Qualifying Interest Feature: [A122] Corncrake (<i>Crex crex</i>) Currently under Review
Conservation Objective: The status of corncrake as a Species of Conservation Interest for the Middle Shannon Callows SPA is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species.
Attributes & Targets: Currently Under Review - Awaiting outcome of Review.
Qualifying Interest Feature: [A140] Golden Plover (<i>Pluvialis apricaria</i>) (M)
Conservation Objective: To maintain the favourable conservation condition of golden plover in Middle Shannon Callows SPA.
Qualifying Interest Feature: [A142] Lapwing (<i>Vanellus vanellus</i>) (R)
Conservation Objective: To restore the favourable conservation condition of lapwing in Middle Shannon Callows SPA.
Qualifying Interest Feature: [A156] Black-tailed Godwit (<i>Limosa limosa</i>) (R)
Conservation Objective: To restore the favourable conservation condition of Black-tailed godwit in Middle Shannon Callows SPA.
Qualifying Interest Feature: Black-headed Gull (<i>Chroicocephalus ridibundus</i>) (R)
Conservation Objective: To restore the favourable conservation condition of black-headed gull in Middle Shannon Callows SPA.
<p>Attributes & Targets for:</p> <ul style="list-style-type: none"> • [A038] Whooper Swan (<i>Cygnus cygnus</i>) (M) • [A050] Wigeon (<i>Anas penelope</i>) (R) • [A140] Golden Plover (<i>Pluvialis apricaria</i>) (M) • [A142] Lapwing (<i>Vanellus vanellus</i>) (R) • [A156] Black-tailed Godwit (<i>Limosa limosa</i>) (R) • [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) (R) <p>Winter population trend – Long term winter population trend is stable or increasing.</p> <p>Winter spatial distribution – Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target.</p> <p>Disturbance at wintering site – The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution.</p>

Barriers to connectivity and site use – The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA.

Forage spatial distribution, extent and abundance – Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target.

Roost spatial distribution and extent – Sufficient number of locations, area and availability of suitable roosting habitat to support the population target.

Supporting habitat: area and quality – Sufficient area of utilisable habitat available in ecologically important sites outside the SPA.

Qualifying Interest Feature: [A999] Wetlands (M)

Conservation Objective: To maintain the favourable conservation condition of wetlands in Middle Shannon Callows SPA.

Wetland habitat area – No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation.

Wetland habitat quality and functioning – No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation.

Potential for Impact / Mitigation Measures

- Potential for Impact** - The SPA is located 7.6km overland from the EIAR study boundary, including grid connection route, is located c. 9.8km from the proposed wind farm site and is located c. 28km hydrologically downstream of the proposed development site.

A potential pathway for indirect effect via deterioration of water quality of SCI supporting habitats as a result of construction activities associated with the Proposed Development was identified. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in deterioration of water quality thus affecting potential foraging and roosting habitat for SCI species.

In addition, a potential for indirect effect via disturbance, displacement and collision risk to SCI bird species as a result of operation of the Proposed Development was identified.
- [A038] Whooper Swan (*Cygnus cygnus*)** - During ornithological surveys undertaken by the applicant between September 2020 and March 2023, the following SCI species were recorded within the Wind Farm Site and/or within 500m of the Wind Farm Site: whooper swan, teal, pintail, golden plover, lapwing and black-headed gull. The distance between the SPA and the Wind Farm Site is greater than the core foraging range of whooper swan (species was recorded during surveys such as would suggest connectivity between the Wind Farm Site and the SPA (see Section 3.4.4 of the applicants NIS for outline of field survey results).

In relation to whooper swan, a regularly used roost site was identified within 500m of the Wind Farm Site. Flock sizes recorded in the vicinity of the Wind Farm Site were broadly in-line with numbers observed at the roost site, and therefore the birds recorded in the vicinity of the Wind Farm Site are considered to be associated with this roost site, and not the SPA. Therefore, based on published core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the Wind Farm Site for whooper swan. Therefore, there is no potential for adverse effect via ex-situ collision risk or disturbance/displacement.
- [A050] Wigeon (*Anas Penelope*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, no records of Wigeon within 1km of the Proposed Development were observed. The closest record was 1.6km away from the Proposed Development site. Therefore, there is no potential for adverse effect via disturbance, displacement or collision risk.

- **[A122] Corncrake (*Crex crex*)** - During bird surveys undertaken between September 2020 and March 2023, no records of Corncrake were observed. Therefore, there is no potential for adverse effect via disturbance, displacement or collision risk. Corncrake are a summer visitor to Ireland and are known to feed on insects, slugs, snails and earthworms and plant material including seeds of grasses and sedges. Corncrake breed in hay fields and are not significantly dependant on waterbodies. Therefore, no potential for adverse effect due to hydrological pathways were identified.
- **[A140] Golden Plover (*Pluvialis apricaria*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, Golden Plover were observed within 500m of the Proposed Development site during winter and passage seasons. There is no widely recognised foraging range for wintering Golden Plover. As such, there is potential connectivity between the Wind Farm Site and the SCI population of Golden Plover of the SPA, and further assessment is required. A potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement were identified and further assessment is required.
- **[A142] Lapwing (*Vanellus vanellus*)** - During bird surveys undertaken by the applicant between September 2020 and March 2023, Lapwing were observed within 500m of the Proposed Development site during winter, passage and breeding seasons. There is no documented foraging range for lapwing. As such, there is potential connectivity between the Wind Farm Site and the SCI population of lapwing of the SPA, and further assessment is required. A potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement were identified and further assessment is required.
- **[A156] Black-tailed Godwit (*Limosa limosa*)** - During bird surveys undertaken between September 2020 and March 2023, no records of Black-tailed Godwit within 1km of the Proposed Development were observed. The closest record was 2.5km away from the Proposed Development site. Therefore, there is no potential for adverse effect via disturbance, displacement or collision risk.
- **[A179] Black-headed Gull (*Chroicocephalus ridibundu*)** - During bird surveys undertaken between September 2020 and March 2023, Black-headed Gull were observed within 500m of the Proposed Development site during winter, passage and breeding seasons. The core foraging range of black-headed gull (11.4km) is greater than the distance between the SPA and the Wind Farm Site (Johnson et al., 2014; Thaxter et al., 2017). As such, there is potential connectivity between the Wind Farm Site and the SCI population of black-headed gull of the SPA, and further assessment is required. A potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement were identified and further assessment is required.
- **[A999] Wetland and Waterbirds** - The SPA is located c. 28km hydrologically downstream of the Proposed Development site. A potential for indirect adverse effect via deterioration in water quality as a result of construction activities thus affecting SCI supporting habitats was identified.
- No potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to the Proposed Development.
- Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed in further in this assessment.

Qualifying Interest Feature	Potential for Adverse Effects and Requirement for Mitigation (Summary)
Qualifying Interests: Habitats [A999] Wetlands (M)	There is a potential risk for indirect adverse effect via deterioration in water quality from construction activities thus

<p>Qualifying Interests: Species</p> <p>[A038] Whooper Swan (<i>Cygnus cygnus</i>) (M)</p> <p>[A050] Wigeon (<i>Anas penelope</i>) (R)</p> <p>[A122] Corncrake (<i>Crex crex</i>) Currently under Review</p> <p>[A140] Golden Plover (<i>Pluvialis apricaria</i>) (M)</p> <p>[A142] Lapwing (<i>Vanellus vanellus</i>) (R)</p> <p>[A156] Black-tailed Godwit (<i>Limosa limosa</i>) (R)</p> <p>[A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) (R)</p>	<p>affecting all of the indicated QI's (habitat & bird species) due to the SPA being located c. 28km hydrologically downstream of the proposed development site.</p> <p><u>Mitigation Required</u></p> <p>The SPA is located c. 9.8km from the proposed wind farm site. Based on core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the Wind Farm Site for Whooper Swan, Wigeon, Corncrake and Black-tailed Godwit and these QI's have been screened-out for adverse effects via disturbance, displacement or ex-situ collision risk. Significant Likely Impacts for these QIs screened out at Stage 1 (See Appendix 1 of this report).</p> <p><u>No Mitigation Required</u></p> <p>The core foraging range of black-headed gull (11.4km) is greater than the distance between the SPA.</p> <p>There is no widely recognised foraging range for Golden Plover and Lapwing.</p> <p>As such, a potential for direct adverse effect via collision risk and indirect adverse effects via ex-situ disturbance, displacement.</p> <p><u>Mitigation Required</u></p>
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9. AA Summary Matrix for a Lough Derg (Shannon) SPA [004058]

Lough Derg (Shannon) SPA [004058] – The SPA is located c. 7.9km from EIAR site boundary including grid connection and wind farm site and a c. 43km hydrological distance from the development site.

[Lough Derg \(Shannon\) SPA | National Parks & Wildlife Service](#)

Description of Site: According to the Site Synopsis for this SPA, Lough Derg lies within counties Tipperary, Galway and Clare and is the largest of the River Shannon Lakes, being some 40 km long. Its maximum breadth across the Scarriff Bay -Youghal Bay transect is 13 km but for most of its length it is less than 5 km wide. The lake is relatively shallow at the northern end being mostly 6 m in depth but in the middle region it has an axial trench and descends to over 25 m in places. The narrow southern end of the lake has the greatest average depth, with a maximum of 34 m. The greater part of the lake lies on Carboniferous limestone but the narrow southern section is underlain by Silurian strata. Most of the lower part of the lake is enclosed by hills on both sides, the Slieve Aughty Mountains to the west and the Arra Mountains to the east. The northern end is bordered by relatively flat, agricultural country. The lake shows the high hardness levels and alkaline pH to be expected from its mainly limestone catchment basin, and it has most recently been classified as a mesotrophic system. The lake has many small islands, especially on its western and northern sides. The shoreline is often fringed with swamp vegetation. Aquatic vegetation includes a range of charophyte species, including the Red Data Book species, *Chara tomentosa*. The shoreline

is often fringed by swamp vegetation, comprised of such species as Common Reed (*Phragmites australis*), Great Fen-sedge (*Cladium mariscus*) and Bottle Sedge (*Carex rostrata*).

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Tufted Duck, Goldeneye and Common Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Lough Derg is of importance for both breeding and wintering birds. The site supports a nationally important breeding colony of Common Tern (55 pairs recorded in 1995). Management of one of the islands used for nesting has increased the area of suitable habitat available and prevented nests being destroyed by fluctuating water levels. Large numbers of Black-headed Gull have traditionally bred on the many islands (2,176 pairs in 1985) but the recent status of this species is not known. The islands in the lake also support a nationally important Cormorant colony - 167 pairs were recorded in 1995; a partial survey of the lake in 2010 recorded 113 pairs. Lough Derg is also a noted breeding site for Great Crested Grebe (47 pairs in 1995) and Tufted Duck (169 pairs in May 1995).

In winter, the lake is important for a range of waterfowl species, including nationally important populations of Tufted Duck (776) and Goldeneye (157) – all figures are mean peaks for 4 of the 5 seasons between 1995/96 and 1999/2000. Other species which occur in winter include Mute Swan (164), Whooper Swan (18), Wigeon (249), Teal (301), Mallard (376), Little Grebe (14), Cormorant (90), Coot (173), Lapwing (922), Curlew (66) and Black-headed Gull (732). Areas to north and south west of Lough Derg have been utilised in the past by small numbers of Greenland Whitefronted Goose – 19 geese were recorded on callowland near Portumna in 1996/97. A relatively small flock based in the Lough Derg-Lough Graney area and possibly further afield have been recorded in the Scarriff Bay area – 20 geese recorded in 2004. Few sightings, at either location have been made in recent years. Hen Harrier are also known to roost in the reedbeds on the margins of the site during the winter. Lough Derg (Shannon) SPA is of high ornithological importance as it supports nationally important breeding populations of Cormorant and Common Tern. In winter, it has nationally important populations of Tufted Duck and Goldeneye, as well as a range of other species including Whooper Swan. The presence of Whooper Swan, Greenland White-fronted Goose, Hen Harrier and Common Tern is of particular note as these are listed on Annex I of the E.U. Birds Directive. Parts of Lough Derg (Shannon) SPA are a Wildfowl Sanctuary.

Summary of Appropriate Assessment

Conservation Objectives (Summary)

Conservation Objectives:

To restore **(R)** or maintain **(M)** the favourable conservation condition of;

- [A017] Cormorant (*Phalacrocorax carbo*) **(R)**
- [A061] Tufted Duck (*Aythya fuligula*) **(M)**
- [A067] Goldeneye (*Bucephala clangula*) **(M)**
- [A193] Common Tern (*Sterna Hirundo*) **(R)**
- [A999] Wetlands **(M)**

Qualifying Interest Feature: [A017] Cormorant (*Phalacrocorax carbo*) **(R)**

Conservation Objective: To restore the Favourable conservation condition of Cormorant in Lough Derg (Shannon) SPA.

Attributes & Targets:

Breeding population size – Long term SPA population trend is stable or increasing.

Productivity rate – Sufficient to maintain a stable or increasing population.

Distribution: extent of available nesting options within the SPA – Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population.

Forage spatial distribution, extent, abundance and availability – Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target.

Disturbance at the breeding site – Disturbance occurs at levels that do not significantly impact on birds at the breeding site.

Disturbance at areas ecologically connected to the colony – Disturbance occurs at levels that do not significantly impact on breeding population.

Barriers to connectivity – No significant increase.

Qualifying Interest Feature: [A061] Tufted Duck (*Aythya fuligula*) (M)

Conservation Objective: To maintain the Favourable conservation condition of Tufted Duck at Lough Derg (Shannon) SPA.

Attributes & Targets:

Winter population trend – Long term winter population trend is stable or increasing.

Winter spatial distribution – Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target.

Disturbance at wintering site – The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution.

Barriers to connectivity and site use – The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA.

Forage spatial distribution, extent and abundance – Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target.

Roost spatial distribution and extent – Sufficient number of locations, area and availability of suitable roosting habitat to support the population target.

Supporting habitat: area and quality – Sufficient area of utilisable habitat available in ecologically important sites outside the SPA.

Qualifying Interest Feature: [A067] Goldeneye (*Bucephala clangula*) (M)

Conservation Objective: To maintain the Favourable conservation condition of Goldeneye at Lough Derg (Shannon) SPA.

Attributes & Targets:

Winter population trend – Long term winter population trend is stable or increasing.

Winter spatial distribution – Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target.

Disturbance at wintering site – Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution.

Barriers to connectivity and site use – Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA.

Forage spatial distribution, extent and abundance – Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target.

Roost spatial distribution and extent – Sufficient number of locations, area and availability of suitable roosting habitat to support the population target.

Qualifying Interest Feature: [A193] Common Tern (*Sterna Hirundo*) (R)

Conservation Objective: To restore the Favourable conservation condition of Common Tern in Lough Derg (Shannon) SPA.

Attributes & Targets:

Breeding population size – Long term SPA population trend is stable or increasing.

Productivity rate – Sufficient to maintain a stable or increasing population.

Distribution: extent of available nesting options within the SPA – Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population.

Forage spatial distribution, extent, abundance and availability – Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target.

Disturbance at the breeding site – Disturbance occurs at levels that do not significantly impact on birds at the breeding site.

Disturbance at areas ecologically connected to the colony – Disturbance occurs at levels that do not significantly impact on breeding population.

Barriers to connectivity – No significant increase.

Qualifying Interest Feature: [A999] Wetlands (M)

Conservation Objective: To maintain the favourable conservation condition of Wetland habitats in Lough Derg (Shannon) SPA as a resource for the regularly-occurring migratory waterbirds that utilise these areas.

Attributes & Targets:

Wetland habitat area – No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation.

Wetland habitat quality and functioning – No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation.

Potential for Impact / Mitigation Measures

- **Potential for Impact** - The SPA is located c. 7.9km overland and is located c. 43km hydrologically downstream from the proposed development site. A potential pathway for indirect effect via deterioration of water quality of SCI supporting habitats as a result of construction activities associated with the Proposed Development was identified. Such impacts include pollution as result of sedimentation, cementitious materials and hydrocarbons. Such pollution events have the potential to result in deterioration of water quality thus affecting potential foraging and roosting habitat for SCI species. In addition, a potential for indirect effect via disturbance, displacement and collision risk to SCI bird species as a result of operation of the Proposed Development was identified.
- **[A017] Cormorant (*Phalacrocorax carbo*)** - Of the four SCI species of the SPA, only cormorant was recorded within the wind farm site and/or within 500m of the wind farm site during ornithological surveys undertaken by the applicant between September 2020 and March 2023. The distance between the SPA and the Wind Farm Site is greater than the core foraging range of cormorant (Thaxter et al., 2017). There is no connectivity between the SCI species of the SPA and the Wind Farm Site. Consequently, the potential for adverse effect on the SCI population of Cormorant associated with the SPA via ex-situ collision risk, disturbance or displacement can be discounted.
- **[A061] Tufted Duck (*Aythya fuligula*)** - There were no records of Tufted Duck within the wind farm site and/or within 500m of the wind farm site during ornithological surveys undertaken by the applicant between September 2020 and March 2023. There is no connectivity between the SCI species of the SPA and the Wind Farm Site. Consequently, the potential for adverse effect on the SCI population of Tufted Duck associated with the SPA via ex-situ collision risk, disturbance or displacement can be discounted.
- **[A067] Goldeneye (*Bucephala clangula*)** - There were no records of Goldeneye within the wind farm site and/or within 500m of the wind farm site during ornithological surveys undertaken by the applicant between September 2020 and March 2023. There is no connectivity between the SCI species of the SPA and the Wind Farm Site. Consequently, the potential for adverse effect on the SCI population of Goldeneye

<p>associated with the SPA via ex-situ collision risk, disturbance or displacement can be discounted.</p> <ul style="list-style-type: none"> • [A193] Common Tern (<i>Sterna Hirundo</i>) - During bird surveys undertaken by the applicant between September 2020 and March 2023, no records of Common Tern were observed. Therefore, there is no potential for adverse effect via disturbance, displacement or collision risk. • [A999] Wetland and Waterbirds - The SPA is located c. 43km hydrologically downstream of the Proposed Development site. Taking a precautionary approach, a potential for indirect adverse effect via deterioration in water quality as a result of construction activities thus affecting SCI supporting habitats was identified. • No potential pathways for effect with regard to site-specific threats, pressures and activities have been identified with regard to the Proposed Development. • Mitigation Measures are proposed in Chapter 6.0 of the applicants NIS. These will be discussed in further in this assessment. 	
Qualifying Interest Feature	Potential for Adverse Effects and Requirement for Mitigation (Summary)
<p>Qualifying Interests: Habitats [A999] Wetlands (M)</p> <p>Qualifying Interests: Species [A017] Cormorant (<i>Phalacrocorax carbo</i>) (R) [A061] Tufted Duck (<i>Aythya fuligula</i>) (M) [A067] Goldeneye (<i>Bucephala clangula</i>) (M) [A193] Common Tern (<i>Sterna Hirundo</i>) (R)</p>	<p>There is a potential risk for indirect adverse effect via deterioration in water quality from construction activities thus affecting all of the indicated QI's (habitat & bird species) due to the SPA being located c. 43km hydrologically downstream of the proposed development site.</p> <p><u>Mitigation Required</u></p> <p>The SPA is located c. 7.9km from the proposed wind farm site. Based on core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the Wind Farm Site for Cormorant, Tufted Duck, Goldeneye and Common Tern and these QI's have been screened-out for adverse effects via disturbance, displacement or ex-situ collision risk. Significant Likely Impacts for these QIs screened out at Stage 1 (See Appendix 1 of this report)</p> <p><u>No Mitigation Required</u></p>

30.2. Potential Impacts

In this section, I will consider the potential impacts and schedule of mitigation, which are contained in Chapter 6.0 of the Applicants NIS.

The applicant notes that the proposed development is located completely outside of any European Site. However, a potential for collision risk with wind turbines, displacement and barrier effect during operational phase was identified for the River

Little Brosna Callows SPA for the following SCI bird species – [A052] Teal, [A142] Lapwing, [A179] Black-headed gull and [A140] Golden Plover and for the Middle Shannon Callows SPA for the following SCI bird species - [A142] Lapwing, [A179] Black-headed Gull, and [A140] Golden Plover.

The following table provides a summary of operational impacts in relation to the risk of displacement and collision for the SCI bird species listed above. It concludes that there are no adverse effects via displacement or barrier effects and that collision risk for European bird species at the proposed wind farm are not likely to adversely affect the species or are considered of negligible magnitude.

Table Summarising Operational Impacts (Refer to Section 6.1.1 of Applicants NIS) Displacement and Barrier Effect and Collision Risk on SCI Species			
SCI Species	Displacement and Barrier Effect	Collision Risk	Potential Impact (Summary)
Teal (wintering)	Surveys found low-rate occurrence of Teal at wind farm site and a lack of dependence on the habitat. Flocks regularly recorded at Little Brosna Callows.	Teal not recorded flying at potential collision height during surveys, hence collision related mortality not likely to adversely affect this species.	No adverse effects via displacement or barrier effect. Collision related mortality is not likely to adversely affect this species.
Lapwing (wintering)	Surveys found species not using wind farm site for roosting or foraging. All records of lapwing comprised birds commuting, with no regular flight path identified.	Collision risk 2.941 collisions per year, which would increase the annual mortality of the county population (i.e. 2,627 birds) by 0.38%. Considered negligible.	No adverse effects via displacement or barrier effect. Collision risk at the proposed wind farm site considered negligible magnitude.
Black-headed Gull (wintering)	Surveys found species not using wind farm site for roosting or foraging. All records of gulls comprised birds commuting, with no regular flight path identified. Availability of similar habitat in the area limits displacement effects.	Collision risk 1.296 collisions per year, which would increase the annual mortality of the county population (i.e. 956 birds) by 1.36%. Considered negligible.	No adverse effects via displacement or barrier effect. Collision risk at the proposed wind farm site considered negligible magnitude.
Black-headed Gull (breeding)	Surveys found species not using wind farm site for roosting or foraging during breeding season. All records of gulls comprised birds commuting, with no regular flight path identified. Availability of similar habitat in the area limits displacement effects.	Collision risk 0.194 collisions per year, which would increase the annual mortality of the county population (i.e. 1000 birds) by 0.13%. Considered negligible.	No adverse effects via displacement or barrier effect. Collision risk at the proposed wind farm site considered negligible magnitude.
Golden Plover (Wintering)	Surveys found species not using wind farm site for roosting or foraging during breeding season. All records of gulls comprised birds	Golden plover has a very high avoidance rate of 99.6 to 99.8% based on UK studies. Hence, collision risk 2.345	No adverse effects via displacement or barrier effect. Collision risk at the proposed wind farm site

	commuting, with no regular flight path identified. Availability of similar habitat in the area limits displacement effects.	collisions per year, which would increase the annual mortality of the local population (i.e. 3,765 birds) by 0.23%. Considered negligible.	considered negligible magnitude.
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The applicant further notes that a potential for ex-situ disturbance/habitat loss during construction phase was identified for the River Little Brosna Callows SPA for the Teal, Lapwing, Black-headed gull and Golden Plover and for the Middle Shannon Callows SPA for the Lapwing, Black-headed Gull, and Golden Plover. During site surveys, the applicant notes that although no otter holts were found within the site boundary or within 150m of works areas within or downstream of the site, as a precautionary approach disturbance effects were identified for otter which may commute along rivers outside the SAC. The following table below provides a summary of construction impacts in relation to direct habitat loss and disturbance for the SCI bird species listed above and the otter. The summary table concludes that no adverse effects via habitat loss, nor adverse disturbance effects are anticipated for any SCI species.

Table Summarising Construction Phase Impacts (Refer to Section 6.2.1 of Applicants NIS)			
Direct Habitat Loss and Disturbance to SCI Species			
SCI Species	Direct Habitat Loss	Disturbance	Potential Impact (Summary)
Teal (wintering)	Teal only recorded once over 3 no. winter surveys. The land lost to the development footprint is small (i.e. 6.02ha/2.5% of the Wind Farm Site). Suitable habitat is abundant in the wider surroundings for teal.	Teal only recorded once over 3 no. winter surveys and 8 observations within 500m of the Wind Farm Site. The areas recorded utilised by teal are situated greater than 200m from the nearest proposed construction works, and birds utilising these habitat are therefore unlikely to be impacted by construction activity due to the significant separation distance.	No adverse effects via habitat loss. Adverse disturbance effects not anticipated.
Lapwing (wintering)	Surveys found that Lapwing not recorded on the site roosting or foraging.	Lapwing was not recorded utilising habitats within the Wind Farm Site for roosting or foraging. Availability of similar habitat in the area limits disturbance effects.	No adverse effects via habitat loss. Adverse disturbance effects not anticipated.
Black-headed Gull (wintering)	Surveys found that black-headed gull not recorded utilising the site.	Surveys found that black-headed gull not recorded utilising the site and species within 500m were birds commuting. Flights unlikely to be impacted by construction works. Availability of similar habitat in the area limits disturbance effects.	No adverse effects via habitat loss. Adverse disturbance effects not anticipated.
Black-headed	Surveys found that black-headed gull not	Black-headed gull was not recorded utilising habitats within the Wind	No adverse effects via habitat loss.

Gull (breeding)	recorded utilising the site.	Farm Site for roosting or foraging during the breeding season and there was no evidence of breeding recorded.	Adverse disturbance effects not anticipated.
Golden Plover (Wintering)	Surveys found that Golden Plover not recorded utilising the site.	Golden plover was not recorded utilising habitats within the Wind Farm Site for roosting or foraging. Availability of similar habitat in the area limits disturbance effects.	No adverse effects via habitat loss. Adverse disturbance effects not anticipated.
Otter	Surveys found that no otter holts were found within the development site boundary or within 150m of works areas. No instream works are necessary for construction of the water crossing structures or for the grid connection route.	The construction of new watercourse crossings and the construction/ installation of the proposed grid connection route, for which Horizontal Directional Drilling (HDD) is proposed may also have the potential for disturbance/displacement due to noise where works to bridges are to take place. Otters are active during twilight, dawn and dusk. Works will take place during daytime minimising potential impact.	No adverse effects via habitat loss. Adverse disturbance effects not anticipated and no residual effects following mitigation. (See Mitigation Measures below)

I consider a robust assessment of the potential impacts has been undertaken and am satisfied that no significant adverse impacts are identified for any European species.

30.2.1. Air Quality Impacts

The applicant has identified a potential for air quality impacts during construction phase for Ballyduff/Clonfinane Bog SAC [000641], Arragh More (Derrybreen) Bog SAC [002207] and Kilcarren-Firville Bog SAC [000647]. This relates to the impacts to peatland habitats via increased nitrogen deposition as a result of construction works resulting from dust production and wind blow during construction and excavation activities as well as transport of materials. Air quality effects could also occur from vehicle and plant exhaust emissions.

30.2.2. Surface Water Impacts (Construction Phase)

The proposed development site is located hydrologically upstream of the following European Sites; Lough Derg, North-east Shore SAC [002241], River Shannon Callows SAC [000216], Dovegrove Callows SPA [004137], River Little Brosna Callows SPA [004086], Middle Shannon Callows SPA [004096], Lough Derg (Shannon) SPA [004058]. There is potential for the construction activity to result in the run-off of silt, nutrients and other pollutants such as hydrocarbons and cementitious material into

these watercourses. These effects have the potential to affect the water quality and fish stocks of downstream water bodies. This represents a potential for indirect adverse effect on downstream European Sites via water quality deterioration. In addition, potential effects on all watercourses downstream of the proposed tree felling areas could be adverse if not mitigated.

30.2.3. Surface Water Impacts (Operational Phase)

The increase in the amount of hard standing associated with the proposed infrastructure has the potential to result in faster water runoff from the site to the surrounding watercourses. This may have the indirect effect of causing erosion, which could lead to deterioration of surface water and supporting habitat quality of downstream European Sites. Additionally, there is the potential for the faster run off of any pollutants that may be associated with vehicular usage on the site.

30.2.4. Groundwater Related Impacts

A potential pathway via groundwater-related impacts was identified to Ballyduff/Clonfinane Bog SAC [000641] Arragh More (Derrybreen) Bog SAC [002207] Kilcarren-Firville Bog SAC [000647]. Adverse impacts may involve alteration to groundwater flow paths during construction potentially resulting in draw-down of groundwater from the nearby SAC designated peatland habitats. The NIS describes the potential impacts associated with piled foundations based on the possibility of deep peat and glacial tills at some of the turbine locations. Dewatering of deeper excavations (i.e. turbine bases) as well as turbine base piling have the potential to impact on local groundwater levels and flows. However, the effects are likely to be temporary for the construction phase and localised due to the relatively shallow excavation depths and the local hydrogeological regime with low to moderate permeability peat and glacial tills overlying the limestone bedrock. Water level impacts will be temporary and are unlikely to be significant beyond 50m from any excavation. Due to the shallow nature of the excavation trench along the grid route, no groundwater effects are likely to occur.

30.2.5. Decommissioning Phase

A Decommissioning Plan (Appendix 4.5 of the applicants EIAR) was submitted with the application which describes the process of decommissioning the wind farm. This will be updated prior to the end of the operational period and agreed with the competent authority. The grid connection underground cable and substation will remain in places under the ownership and control of ESB and Eirgrid. The potential for impacts on European sites will be similar in nature to those experienced for the construction phase but on a far lesser scale.

30.3. Recommended Mitigation Measures

30.3.1. Otters

Mitigation measures proposed to protect otters from disturbance during construction is described in Section 6.2.1.1.6 of the applicants NIS. They relate to measures to be undertaken to avoid disturbance/displacement and direct mortality of otters prior to construction of the proposed watercourse crossings. The applicant will conduct surveys, apply for derogation licence if necessary, all under the supervision of an ecologist. I consider the measures proposed will protect otters if discovery prior to construction phase.

30.3.2. Air Quality Protection

Mitigation measures in relation to the protection of air quality from Exhaust and Dust Emissions are described in Section 6.2.2.1.1 of the applicants NIS. Measures to prevent exhaust pollution include the proper maintenance of vehicles and plant, switching off machinery when not in use and using specified transport routes only. Measures to prevent dust emissions comprise standard construction practices and are largely capable of offsetting significant adverse effects identified in the NIS. Once the measures are implemented, I consider there will be no residual impacts to designated sites in relation to air quality impacts.

30.3.3. Surface Water Protection (Construction Phase)

Mitigation measures to protect designated European Sites from deterioration of water quality during the construction phase are detailed in the applicants accompanying

Surface Water Management Plan (SWMP) (Appendix 4-4 of the EIAR). Mitigation measures are also detailed in Section 6.2.3.1.1 of the applicants NIS and include standard and site-specific measures. Measures proposed include mitigation by avoidance, mitigation by design and mitigation against the release of suspended solids, hydrocarbons, cementitious materials, dewatering works controls, prevention of contamination from wastewater disposal and clear-felling mitigations. Tree felling activities will be the subject of a Felling Licence application as part of Forest Services policy, which will conform to current best practice to ensure minimal negative effects to the receiving environment. Four options have been proposed for crossing over existing culverts (Option A – D) depending on the site conditions. Mitigation measures proposed ensure that under all options, temporary drainage measures will protect watercourses against the release of suspended solids.

Mitigation measures are described for the wind farm, the grid route, pre-commencement temporary drainage works and pre-emptive site drainage management, management of runoff from spoil and peat repository areas, from the cable route and existing and proposed access roads. The key mitigation measure during the construction phase is the avoidance of sensitive aquatic areas where possible, by application of 50m buffer zones to main watercourses. Construction works will be carried out during periods of low rainfall minimising run-off and regular monitoring will occur with inspections of all installed drainage systems being undertaken.

I consider that following implementation of the mitigation measures described in the applicants NIS (Section 6.2.3.1.1) and the applicants SWMP, no likely significant effects on water quality from construction works are expected which would impact on downstream European Sites.

30.3.4. Surface Water Protection (Operational Phase)

Proposed mitigation measures by design are described in Section 6.2.3.2.1 of the applicants NIS. The proposed integration of the wind farm drainage with the existing forestry and bog drainage is a key component of the proposed drainage management within the development. There will be no alteration of the catchment size contributing to each of the main downstream watercourses. All wind farm drainage water captured within individual site sub-catchments will be attenuated and released within the same

sub-catchments that it was captured. I consider that following implementation of the measures described in the applicants NIS, no likely significant effects on water quality during the operational phase will occur which would impact on downstream European Sites.

30.3.5. Groundwater Protection (Construction Phase)

The proposed mitigation measures designed for the protection of downstream surface water quality and groundwater quality within the peat bog will be implemented at all construction work areas. Mitigation measures for sediment control, control of hydrocarbons and control of cement-based products are detailed in Section 6.2.3.1.1. of the applicants NIS. Proposed mitigation measures relative to piling works are described in the applicants NIS to prevent upward/downward movement of surface water/groundwater. The NIS notes that should piling works be required at any of the proposed turbine locations, they potentially pose a threat to groundwater quality in the underlying regional groundwater system, and also could potentially create a pathway for upward migration of alkaline groundwater to the peat surface. These potential effects will not arise at the proposed site due to a combination of the prevailing ground conditions, groundwater conditions, and proposed mitigation measures, outlined in the applicants NIS, that will ensure the potential pathways for interaction of shallow (acidic peat water) and deeper (alkaline) groundwater are prevented from occurring. In addition, due to the small footprint of proposed pile clusters, and the significant spacing between turbine bases where pile clusters are proposed, the potential for such pile clusters to block regional groundwater flow is imperceptible at that scale. The proposed piled foundations therefore have no potential to change the WFD status or impact the WFD objectives of the underlying Banagher and Birr GWBs.

I consider that following implementation of mitigation measures outlined in the NIS in Section 6.2.3.1.2, there is no potential for residual adverse effects to groundwater quality or to groundwater levels in nearby or downstream European sites.

30.3.6. Decommissioning Phase

The NIS notes that the same mitigation to prevent adverse effects on water quality, air quality, otter and avifauna during construction will be applicable to the decommissioning phase. I consider that following the implementation of mitigation

measures as described in the applicants NIS, there is no potential for the decommissioning of the Proposed Development to result in residual adverse effects on European Sites.

30.4. Cumulative Impacts

A review of planning applications in proximity to the site was completed as described in Section 8.0 of the applicants NIS. The NIS notes that following the detailed assessment provided in the NIS, it is concluded that, the Proposed Development will not result in any residual adverse effects on any of the European Sites, their integrity or their conservation objectives when considered on its own.

There is therefore no potential for the Proposed Development to contribute to any cumulative adverse effects on any European Site when considered in-combination with other plans and projects. It further notes that in the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Development. Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European Site.

I have reviewed the details of these projects, plans and policies which were identified in Chapter 8.0 of the Applicants NIS.

I consider that no cumulative impacts are likely to occur due to the mitigation included in those projects, the operational status of the various projects and distance of other projects/plans from the development site.

30.5. Residual Effects

Taking account of the mitigation measures outlined above, I consider that there is no potential for residual adverse effects on the Qualifying Interests of the Screened-in European Sites, as a result of the proposed wind farm development.

This conclusion has been based on a complete assessment of all implications of the project alone and in combination with other plans and projects.

30.6. **Appropriate Assessment Conclusion**

I consider the Applicant has provided a detailed description of the likely potential effects of the proposed development at all phases of development, which focuses on the impacts on Qualifying Features of European Sites which were screened in for all phases of development.

I am satisfied that the proposed development individually or in combination with other plans or projects would not adversely affect the integrity of any European sites in light of their conservation objectives (subject to the implementation of mitigation measures outlined above).

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the proposed development will not adversely affect the Qualifying Interests/Special Conservation Interests associated with the following European Sites:

- Ballyduff/Clonfinane Bog SAC [000641]
- Arragh More (Derrybreen) Bog SAC [002207]
- Kilcarren-Firville Bog SAC [000647]
- Lough Derg, North-east Shore SAC [002241]
- River Shannon Callows SAC [000216]
- Dovegrove Callows SPA [004137]
- River Little Brosna Callows SPA [004086]
- Middle Shannon Callows SPA [004096]
- Lough Derg (Shannon) SPA [004058]