An Bord Pleanála

Inspector's Report

ABP-308885-20

Development	10 year permission for the construction of up to 22 wind turbines and all related site works and ancillary development.
Location	Townlands of Glashaboy North, Coom (Hudson), Tooreen South, Killeagh, Coom (Fitzgerald), Knuttery, Mullenaboree, Knockacullata, Knoppoge, Carrig, Glannasack, Knockdoorty, Lackendarragh North, Glashaboy South, Toorgarrif, Castleblagh, County Cork.
Planning Authority	Cork County Council
Applicant(s)	Coom Green Energy Park Limited
Type of Application	Application under the provisions of Section 37E of the Planning and Development Act 2000, as amended
Prescribed Bodies	Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media (Development Applications Unit), Irish Water, Transport Infrastructure

	Ireland, Inland Fisheries Ireland, Irish Aviation Authority, An Taisce.
Observer(s)	396 submissions – names outlined in Appendix One
Date of Site Inspection	22/23 July 2021 & 6 December 2022
Inspector	Una Crosse

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1.0 Introduction

1.1. Pre-Application Consultation

Brookfield Renewable Ireland Limited and Coillte requested Pre-Application Consultations under Section 37B of the Planning and Development Act, 2000, as amended, on 24 December 2018 for the development of a wind farm of up to 27 wind turbines and 2 substation compounds with ancillary works and infrastructure (ABP-303322-18). Two Pre-Application Consultation meetings took place between An Bord Pleanála (the Board) and the prospective applicant on 5 June 2019 and 7 August 2019. The Board determined on 1 November 2019 that the proposed development falls within the scope of Sections 37(2)(a), (b) and (c) of the Planning and Development Act 2000 (as amended) and served a notice under Section 37B(4)(a) that the proposed development is strategic infrastructure development within the meaning of the Act and that a planning application should be made directly to the Board.

1.2. Original Submission of Application

The application was received by the Board on 10 November 2020. Submissions were received from six prescribed bodies which are summarised at Section 7 of this report. 396 observations have been received and these are summarised at Section 7. A report was received from Cork County Council dated 18th February 2021.

2.0 Site Location and Description

The proposed development is located to the south of the Nagle Mountains in North County Cork within the following townlands: Glashaboy North, Coom (Hudson), Tooreen South, Killeagh, Coom (Fitzgerald), Knuttery, Mullenaboree, Knockacullata, Knoppoge, Carrig, Glannasack, Knockdoorty, Lackendarragh North, Glashaboy South, Toorgarrif, Castleblagh, Ballyhooly South and Grange West. The proposal is within two clusters, The northernmost turbine cluster is situated on the upper southern slopes of Knocknaskagh Mountain in the eastern extents of the Nagle range, which is a distinctive upland ridgeline with the Nagle Mountains reaching a height of approximately 420m AOD. The other cluster is located south of the Nagle range on the more plateaued hilltop of Bottlehill.

The proposal is located approximately 12km south east of Mallow, 10km south-west of Fermoy and approximately 5km south west of Ballyhooly. The nearest settlements are Glenville, which is 4km to the southeast. The N20 is situated just under 4km to the west of the site at its nearest point with the N72 national secondary route to the north running in a general east-west direction just under 5km from the nearest turbine at its nearest point. The N73 national secondary route diverges from the N72 northeast of Mallow and is situated just under 10km from the site at its closest point.

The area within which this development is proposed is predominantly agricultural lands and forestry covering an area of approximately 443ha primarily comprising commercial forestry with small areas of agricultural pasture lands with elevations within the site ranging from 190m to 390m above sea level. The slopes of the southern portion of the proposed development site (Bottlehill) comprises typical elevations of between 270m to 290m AOD. The central portion of the site (Mullenaboree) also comprises elevated lands generally lower than those at the south with typical elevations of between 220m to 260m AOD. The northern portion of the proposed development (Knockdoorty) comprises elevated lands sloping steeply to the south. A ridge feature at the extreme northern boundary of the proposed development has an east-west axis and maximum elevations of between 424m and 428m AOD.

3.0 **Proposed Development**

3.1. **Development Description as Submitted**

The development comprises the construction of a wind farm and associated infrastructure of up to 22 wind turbines with a maximum tip height of 169 metres and a maximum rotor diameter of 138 metres and ancillary works including hardstanding areas. The total Maximum Export Capacity (MEC) of the proposal is stated to be approximately 105MW but it is outlined that the exact MEC will be dependent on the output power of the models available at procurement stage. This would produce c.303,500MWh of electricity which would supply approximately 76,262 households. As acknowledged in the EIAR, the exact rating and design of the proposed turbine and preferred battery energy storage system (BESS) unit will be subject to a competitive procurement process that will only commence if the project is approved. Chapter 3 of the EIAR provides a comprehensive description of the proposed

development save for the proposed Battery Energy Storage System and Borrow pits for which further information was sought and is outlined in Section 3.1.8 below. Section 3.6 of same provides project construction details which addresses the proposed Construction and Environmental Plan which is contained in Appendix 3.1 of Volume 3 of the EIAR.

3.1.1. **Turbines**

While it is qualified that the exact make and model of the turbine will be dictated by a competitive tender process a maximum site envelope for the turbines is provided as follows:

- Three bladed, tubular tower model with horizontal axis type turbine. The tower shown in Drawing P20-099-0300-0026 has a height of 100 metres.
- Maximum height envelope of 169m from top of foundation to blade tip height.
- Maximum motor diameter of up to 138m.
- Designed to ensure rotors of all turbines rotate in same direction at all times.

In relation to the blades it is stated that the blades of a modern turbine are made up of glass fibre reinforced polyester and turn at between 5 and 15 revolutions per minute depending on wind speed and make of turbine. A turbine begins generating electricity at a wind speed of 3 to 4m/s depending on turbine type, with rated power generation at wind speeds of approximately 12 to 14m/s and they usually shut down at wind speeds greater than 25m/s.

The tower of the turbine is a conical steel tube, with multiple painted finish manufactured in 4/5 sections with the first section bolted to the steel base, which is cast into the concrete foundation with the upper sections bolted to the lower ones in sequence. The base of the tower is around 4- 5m in diameter, tapering to approximately 2-3m, where it is attached to the nacelle.

The first floor of the tower is approximately 2-3m above ground level it is accessed by a galvanised steel staircase and a steel hatch door which will be kept locked except during maintenance.

The shape and size of the foundation can vary depending on the turbine manufacturer however it is stated to be approximately 22m in diameter and approximately 3m in depth.

It is stated that the turbine will have a transformer located within the tower with the turbine generating electricity at approximately 660volts, depending on the machine chosen.

The proposed colour of the turbines is off-white or light grey to blend into the sky background and minimise visual impact, as recommended by numerous guidelines on wind farm developments.

Numbering - It should be noted that the 22 turbines are numbered from T2 – T23. It is stated that this reflects the original assigned turbine numbering system in which several turbines were removed including T1.

The following table provides an overview of the key elements of each of the proposed turbines which I will address within the two Clusters (east and west)

Western Cluster - Bottlehill/Mullenaboree

Turbine	Ex. Land use	Slope (degrees)
T2	Mature Forestry	2
T3	Young forestry	4
T4	Mature Forestry	2
T5	Mature Forestry	3
T6	Mature Forestry	4
T7	Mature Forestry	2
T8	Grassland (Agriculture)	2.2
T9	Felled area of forestry	3.4
T10	Felled area of forestry	1.7
T11	Grassland (Agriculture)	1.7
T12	Mature Forestry	1.1
T13	Mature Forestry	2.2
T14	Mature Forestry	3.4
T15	Mature Forestry	3.4
T16	Mature Forestry	3.4

Eastern Cluster – Knockdoorty

Turbine	Ex. Land use	Slope (degrees)
T17	Mature Forestry	3/2
T18	Mature Forestry	4
T19	Mature Forestry	5
T20	Mature Forestry	10.2
T21	Mature Forestry	14.5
T22	Mature Forestry	10.2
T23	Mature Forestry	5

In response to the **further information** request further details and particulars were provided as follows:

Consent is sought for 22 turbines and not 'up to' 22 turbines as outlined in original documentation.

Turbine dimensions and a limited range for the turbines (the Turbine Range) which is as follows;

• Tip height range from 165m to 169m

• Hub height range from 96m to 103m

• Rotor diameter range from 132m to 138m

Specific dimensions for the foundations - 22m in diameter with a depth of 4 meters.

The lowest and highest MW output from the turbine range proposed equates to 92.4 MW to 121 MW with the potential to produce between 267,110 MWh and 349,787 MWh of electricity per year.

3.1.2. **Hardstanding for Each Turbine**

A turbine hardstanding area consists of a main crane pad hardstanding of approximately 40m x 75m with a number of additional smaller hardstanding that act as set down and assembly areas. This area accommodates a main crane and an

assist crane during the assembly of the turbine, as well as during occasional maintenance periods during the operation of the wind farm.

3.1.3. Site Entrances

It is proposed to serve the development by way of four site entrances with the entrances used for differing purposes.

Western Cluster - Bottlehill and Mullenaboree

It is stated that two entrances are required to the west to access the Bottlehill and Mullenaboree areas of the proposed development. One of the western (Bottlehill) access points is located at the Bottlehill Landfill site (off the L-1217 local road) and is already constructed to TII guidelines which it is proposed will accommodate access to the Bottlehill part of the site for standard construction vehicles with access to turbines T2 – T7 only. Access to the remaining turbines in the Bottlehill and Mullenaboree cluster (T8 to T16) for standard construction vehicles is proposed via the main site access off the L-1219-0 which is an existing Coillte forestry access located on the L-1219-0 which it is proposed to upgrade to facilitate oversize loads associated with wind turbine component deliveries as all oversize turbine delivery vehicles for the western cluster - Bottlehill and Mullenaboree areas of the site – are proposed to be delivered through this entrance. The existing forestry access from the L-1504 local road at Mullenaboree is not proposed to be used during the construction phase but shall remain as an access point for forestry operations and operational access to the proposed substation at Knockacullata.

Eastern Cluster – Knockdoorty & Lackendarragh North

Two site entrances will be required to the east, one is required for access to the turbines and associated infrastructure in the Knockdoorty area and the other is required for access to construct the substation at Lackendarragh North. The main Knockdoorty site entrance to the east comprises an existing Coillte forestry entrance which it is proposed to upgrade to facilitate the wind farm construction and operations in this area. This is proposed as a dedicated site entrance located along the L-1501 Ballyhooly to Chimneyfield road with the proposed design in accordance with TII guidelines which requires it is upgraded to achieve sightlines of 160m in both directions at a setback distance of 3m. It is proposed that a new entrance is located near the Knockdoorty site entrance to facilitate access for the construction of the proposed Lackendarragh North substation off the L-1501 local road with the new site

entrance to the proposed Lackendarragh North substation proposed to be constructed in line with Cork County Council requirements.It is proposed that a wheel wash facility is provided at site entrances.

3.1.4. Internal Access Tracks

It is outlined in the EIAR that an extensive network of agricultural and forestry access tracks exist within the site and the proposal seeks to utilise the existing network where possible. The proposal includes the upgrade of approximately 10km of existing internal access tracks and the maintenance or upgrade where required of existing drainage infrastructure. It is also proposed to construct approximately 15 km of new site tracks with the installation of associated drainage infrastructure adjacent to same. The internal network of both new and upgraded tracks are required for construction, maintenance during operation and the decommissioning of the development. The design proposes that the tracks – both new and upgraded – are 4.5-5 metres in width along the straight sections and wider at bends and finished with a well graded aggregate with minimum of 500mm hardcore, which it is proposed will be sourced from the onsite borrow pits, on geotextile membrane. It is also proposed that any surplus excavated material will be placed along the side of sections of the tracks and dressed to blend in with the surrounding landscaping.

3.1.5. Watercourse Crossings – Internal Access Tracks

It is stated that the development layout of the proposed internal access roads will necessitate the crossing of 9 streams (detailed in Table 3-2/Table 10-11 and Fig. 10-5). Five new crossings are required which it is proposed will be undertaken by a pre-cast concrete box culverts (900mmx900mm) with the cable over the culvert. Other crossings comprise replacements of existing pipes with a box culvert with cable over or the provision of a standard trench crossing over or under existing pipes or culverts.

3.1.6. Electrical Substations

The proposal comprises the construction of 2 onsite electrical substations to facilitate the proposed wind farm development. One is located in the townland of Knockacullata to the north of the western (Bottlehill/Mullennboree) cluster north of T15 and the other is within the townland of Lackendarragh North to the northeast of

the eastern (Knockdoorty) cluster. These substations provide a connection point between the proposed wind farm and the grid connection point at Barrymore substation.

For ease of reference electricity generated from the wind turbines at the Bottlehill/Mullenaboree cluster is proposed to be collected at medium voltage (20/33kV) by an internal circuit of buried cables which follow on-site access tracks terminating at a proposed onsite substation at Knockacullata. The power from this western part of the site is then transferred to the onsite substation at Lackendarragh North (to northeast of eastern cluster) via a buried 110kV cable through private lands and a section of public road. Electricity generated from wind turbines at the Knockdoorty (eastern cluster) is also proposed to be collected at medium voltage (20/33kV) by an internal circuit of buried cables within the on-site access tracks terminating at the on-site substation at Lackendarragh North and transformed to 110 kV from where it is exported via the proposed grid connection via a110kV buried cable to the existing Barrymore substation. The Knockacullata substation compound site has a plan area of c.12,896 sq.m (124m x104m) and the Lackendaraagh North substation compound site has a larger plan area of 27,234 sq.m (178m x 153m).

In terms of the facilities and layout of the substations, each one has a substation control building (c.200sq.m and c. 6m high) and includes the Independent Power Production (IPP) and grid operator control rooms, an office space and welfare facilities for staff during the operational phase of the wind farm. The substation also accommodates the electrical components necessary to export the electricity generated from the wind farm to the national grid. It is proposed to surround the substation compounds with a c.2.5 metre high steel palisade fence and internal fences will also be provided to segregate different areas within the main substation compound. Lighting is proposed to be provided by lighting poles located around the substation and exterior wall mounted lights on the control buildings. A small water requirement for occasional toilet flushing/hand washing is required with a rainwater harvesting tank adjacent to the control building. A wastewater holding tank is proposed outside the substation compound fence line so that it can be maintained where required without requiring access to the substation compound.

3.1.7. **Underground Cabling**

As outlined above, electricity generated from the wind turbines at the western cluster is proposed to be collected at medium voltage (20/33kV) by an internal circuit of buried cables which follow on-site access tracks terminating at a proposed onsite substation at Knockacullata and is then transferred to the onsite substation at Lackendarragh North (to northeast of eastern cluster) via a buried 110kV cable through private lands and a section of public road. Electricity generated from wind turbines within the eastern cluster is proposed to be collected at medium voltage (20/33kV) by an internal circuit of buried cables within the on-site access tracks terminating at the on-site substation at Lackendarragh North where it is proposed to be transformed to 110 kV and exported via the proposed grid connection via a 110kV buried cable to the existing Barrymore substation. This requires the installation of two types of underground cable. Firstly, the installation of approximately 30 km of medium voltage (20/33kV) underground cabling between the proposed turbines and the proposed on-site substations and associated ancillary works referred to as Internal collector circuit cable routes. It also requires the installation of approximately 7.7km of high voltage (up to 110kV) underground cabling between the 2 proposed on site substations and the ancillary works associated within same both within private lands and on public roads including up to 7 pre-cast joint bays (pre-cast concrete chambers where individual lengths of cables are joined to form one continuous cable).

In terms of the methodology for laying the cables it is stated that the electricity will be transmitted as a three-phase power supply so there will be three individual conductors (cables) in each cable circuit laid in separate ducts in a trefoil or flat formation. The width of a cable trench with a trefoil formation is 600mm, with a flat formation requiring a wider trench width. It is outlined that the specifications for cables and cable installation will be in accordance with EirGrid requirements.

3.1.8. **Battery Energy Storage Facility**

A battery energy storage facility is proposed next to the main onsite substation compound at Lackendarragh North (east of T23) comprising 20 battery energy storage system (BESS) units, to facilitate on site energy storage and to provide ancillary services to the electricity grid. It is proposed that the units will be housed in glass reinforced plastic (GRP) units or modified shipping containers mounted on

shallow concrete plinths within a gravel hard standing bounded in the same fashion as the substation compounds using a galvanised steel security palisade fencing.

In response to the further information request, a more detailed description of the battery energy stratagem system (BESS) was provided. It is stated that the storage units are proposed to use Lithium-ion battery storage technology, which is a widely available and globally used energy storage option which is utilised to provide storage services to the grid at a local level. It is stated that the batteries will be located on a battery rack and sealed within a container where they will be continually monitored and controlled for performance, temperature and other safety factors. It is stated that the BESS system has been sized at 50MW storage capacity.

The battery storage system, it is stated, will be capable of detecting problems (high temperatures, electrical faults) with measures and standards proposed in relation to fire detection, with measures in place for detecting issues, to controlling of temperatures within the storage units, the identification of potential fire risk and the incorporation of fire suppression systems. In particular the BESS units are proposed to comply with Irish building regulations Part B (Fire Safety) of the Second Schedule to the Regulations, 2006 as amended and Irish Standard I.S. EN 54: Fire Detection and Fire Alarm Systems. It is stated that automatic disconnect of the batteries will occur if any unusual parameters are measured (i.e. parameters such as system temperature outside normal operational conditions). In the event of an electrical fault, the system will automatically shut down. A Fire Risk/Emergency Response Plan for On-Site BESS has been prepared (Appendix 2.1 of FI response).

3.1.9. **Borrow Pits**

Three on site borrow pits and associated ancillary infrastructure are proposed within the townlands of Tooreen South, Mullenaboree and Lackendarragh North.

The proposed borrow pits are proposed to provide site-won stone that will significantly reduce the amount of construction aggregates that would need to be delivered to site. The proposed borrow pits are also proposed to act as soil deposition areas avoiding the need to export waste spoil to off-site facilities.

In response to the further information request, a more detailed description of the proposed borrow pits was provided with the locations of the proposed borrow pits

stated to be shown in Figure 9-1 of the EIAR. The proposed borrow pits will each have a footprint area of 6,400 sq.m. This will provide a potential volume of 12,800 cu.m of site won general fill based on an aggregate resource thickness of 2.0m at borrow pits BP01 and BP02 with an aggregate resource thickness of 3.0m at borrow pit BP03 providing a potential volume of 19,200 cu.m of general fill. Section 1.3 of the response to further information report provides a detailed account of the proposed construction methodology.

3.1.10. **Meteorological Masts**

It is proposed to erect 2 permanent meteorological masts for the measuring of metrological conditions. They comprise 100m high lattice steel masts with a shallow concrete foundation, fixed to ground anchors by 3 guy-wires. One of the masts is located in the townland of Tooreen South to the southwest of Turbine 2. The other is located in the townland of Knoppoge to the northwest of Turbine 21. It is stated that the two permanent masts will replace the two existing temporary met masts which are located at Mullenaboree and Knockdoorty with the temporary met masts to be dismantled and removed from site prior to construction of the proposed wind farm development.

In response to the **further information** request, the applicant now proposes an updated design for a free-standing met mast without anchored guy-wires. It is also stated that the masts proposed are 100m. A drawing showing the proposed met mast design is included in Appendix 4 of RFI response comprising: 100m high lattice steel mast with a shallow concrete foundation. It is stated that the revised met mast design does not change the conclusions of the EIAR.

3.1.11. **Tree Felling**

A large proportion of the development site comprises commercial coniferous forestry with 15 of the turbines stated to be located within forestry thereby necessitating tree felling. The development proposes the felling of approximately 62.8 ha of coniferous forestry within and around the wind farm infrastructure to accommodate the construction of some turbines, hardstands, crane pads, access tracks and the proposed onsite substation. It is stated that the felling area proposed is the minimum necessary to construct the proposed development and comply with any

environmental mitigation (e.g for bats). It is also stated that the forestry within the proposed wind farm site was originally planted as a commercial crop and will be felled in the coming years should the wind farm proceed or not. It is outlined that the felling will be the subject of a Felling Licence Application to the Forest Service prior to construction as per the Forest Service's policy on granting felling licenses for wind farm developments with the Forest Service Policy that a copy of planning approval for the wind farm be submitted with a felling licence application providing that the felling licence cannot be applied for until planning permission is received. The licence requires the provision of relevant replant lands to be planted in lieu of the proposed tree felling on the site (see next section). Figure 3-1 sets out the proposed areas to be felled. It is proposed that to ensure a tree clearance method that reduces the potential for sediment and nutrient runoff, the construction methodology will follow the specifications set out in the Forest Service Forestry and Water Quality Guidelines (2000) and Forest Harvesting and Environmental Guidelines (2000). The method for tree felling near infrastructure is also outlined.

3.1.12. **Replant Lands**

The EIAR outlines that the replacement replanting of forestry in Ireland is subject to licence in compliance with the Forestry Act 2014 as amended with the consent for same covered by the Forestry Regulations 2017 (S.I. No. 191 of 2017). As it is proposed to fell 62.8 ha of coniferous forestry for the proposed development as outlined in the preceding section, replant lands of the same area are required. It is stated that the replacement replanting of forestry can occur anywhere in the State subject to licence with potential replanting sites for the proposed development identified at Moneygorm, Co. Cork (c.40 Ha) and Ballard, Co. Wicklow. The total approved area for replanting is 77.1 ha which, it is stated, has been granted Forest Service Technical Approval for afforestation. It is stated that these lands have been assessed as part of the EIAR with an environmental assessment of these replant lands presented at Appendix 3.3.

3.1.13. **Biodiversity Lands**

Biodiversity lands have been identified and it is proposed that they are managed throughout the life of the proposed development under a Conservation and Habitat Management Plan (EIAR Appendix 8-K).

3.1.14. **Drainage Works**

The proposed development of turbine hardstands, internal access tracks, substation and the temporary construction compound will include the construction of a drainage system alongside each element. It is proposed that the drainage system for the existing tracks and roads will largely be retained although where roads require widening, the slight re-location of existing roadside swales to allow for the widening is required. I would also note that Appendix 3.1 provides a surface water management Plan for the proposed development.

As outlined within the EIAR, there are no peat deposition areas required as part of the development following assessment of the existing environment. It is proposed that any peat excavated for the construction of access roads within the site will be re-used on site in berms and for landscaping purposes and along the margins of the access roads and a number of berms are proposed around turbine hardstandings and parallel to the access tracks. It is proposed to create theses berms from suitable excavated material and locate them on the opposite side of infrastructure to any interceptor drains so as not to obstruct flow or risk siltation of the interceptor drains. It is also proposed that berms will be placed outside the roadside drains which drain the new access tracks. A Soils Management Plan is contained within the CEMP (Appendix 3.1).

3.1.15. **Construction Site Compounds**

Three temporary construction site compounds are proposed which include associated ancillary infrastructure comprising aggregate hard standings. The main two compounds are located close to the main site entrances. One of the compounds (Temp. Compound Location 1 – drwg P20-099-0300-0022) is located within the townland of Tooreen South close to the main (western) site entrance, along the existing road to access the western cluster west of T3 and south of T4 & T2. It is 30m x 70m with a plan area of 2,100 sq.m. The second compound (Temp. Compound Location 2 – drwg P20-099-0300-0023) is located in the townland of Lackendarragh North to the south of the proposed borrow pit and close to the proposed main eastern site entrance. It is 60m x 30m with a plan area of 1,800 sq.m. Both of these compounds will include site welfare facilities, offices, bunded fuel storage, waste management areas and parking. A third compound (Temp. Compound Location 3 – drwg P20-099-0300-0024) is located in the townland of Knockdoorty along the

existing road between T22 and T23. This compound is proposed as a storage area and is 63m x 84m with a plan area of 5,292 sq.m. It is proposed that the lands upon which the compounds are proposed would be reinstated upon completion.

3.1.16. **Turbine Delivery Route**

It is expected that the large components associated with the wind farm construction would be transported to site via two separate turbine delivery routes (TDR's) following their delivery via the port of Ringaskiddy where the turbine components will be offloaded and transported, via the N28 and the N40 to the Dunkettle Interchange from where the routes diverge. The routes are outlined in Figure 3.3.1 of the EIAR.

West TDR

The West TDR approaches from the N20 to the west of the site entering the site via an existing Coillte forestry access point which will be upgraded as part of the development. The West TDR primarily serves the areas of the wind farm located at Bottlehill and Mullenaboree including a proposed onsite substation at Knockacullata with the components for 15 turbines the substation and ancillary works to be carried to site via this route. In order to access the site via the existing Coillte entrance point on the L1219-0, turbine delivery vehicles would pass the final junction to the site entrance between the L-1217 and L1219-0, turn at a temporary hard standing in Coillte land at Glashaboy South which is located approximately 2km south-east of the proposed site entrance and make the final approach to the site from the east and south. At the offsite turning area, wind turbine blade components would be transferred via crane from standard extendable trailers to 'Superwing' blade lifting trailers allowing them to negotiate the L-1217/L-1219-0 junction (Appendix 13-2).

East TDR

The second route (the East TDR) comes from the M8 motorway at Junction 14 and approaches the site from the east along the N72 via Fermoy, Castlehyde, turning south onto local roads just to the east of Ballyhooly and entering the site at an existing Coillte forestry access proposed to be upgraded as part of the development.

The East TDR primarily facilitates the construction of the areas of the windfarm at Knockdoorty and Glannasack including a proposed onsite substation at Lackendarragh North with components for 7 turbines, the substation and ancillary works carried to site via this route.

Temporary Accommodation Works

In order to facilitate the turbine deliveries temporary accommodation works are required comprising two elements. Firstly, along the turbine delivery route works such as hedge or tree cutting, relocation of powerlines/poles, lampposts, signage and local road widening is required. It is stated that any accommodation works required are proposed to be carried out in advance of the turbine deliveries, following further consultation and agreement with the local authority. Secondly, five locations have been identified in Chapter 3 within the local area where more extensive works are required. For the Boards information the general location of accommodation works are identified as "TDR Nodes" with drawings of same provided. Figures are also provided in the EIAR to identify same. I would note that while Chapter 3 of the EIAR identifies the local accommodation works but includes figures of nodes outside of same, Appendix 13.2 identifies the overall works to the route which I will summarise in the following table with relevant figures from EIAR provided with emphasis on works within vicinity of subject site:

Node	**Location**	**Summary of Works**	**Relevant Figures in EIAR**
Both Turbine Delivery Routes			
1.0	Pfizer Roundabout	Remove street furniture	App 13.2. p 4 Fig 13.6.15
1.1	Shanbally Roundabout	Roundabout travelled by contraflow	App 13.2. p 4 Fig 13.6.14
1.2	Carrigaline Roundabout	Roundabout travelled by contraflow and yield sign removed	App 13.2. p 5 Fig 13.6.13
1.2.1	Bloomfield Interchange	Removal of safety barrier (left side) and street light	App 13.2. p 5 Fig 13.6.12
Western Turbine Delivery Route			
1.3	Tivoli/Silversprings	Street furniture removal, tree/hedge trimming, ramping of	App 13.2. p 6, Fig 3.3.2 &13.6.2

		splitter island, local widening with hardcore.	
1.4	Tivoli – Contraflow	Removal of street light with oversail required.	App 13.2. p 7, Fig 3.3.2 &13.6.2
1.5	Blackpool N20 junction	Contraflow over inbound splitter island with removal of traffic lights and kerbing and splitter ramped with tarmac	App 13.2. p 8/9
1.6	N20/L6955	Land for oversail and removal of street furniture.	App 13.2. p 9/10 Figs 3.3.3 &13.6.3
1.7	L6955	Land take for oversail and load bearing	App 13.2 p 10
Other Works to Western TDR Offsite Turning and Transfer Area – widening of existing forestry access, tree felling and construction of off-site turning area at Glashaboy South (Figs 3.3.11 & 13.6.11). Junction 1 (junction of L1217 and L1219) – local widening by laying of hardcore to road verges and removal of street furniture at junction of L1217 and L1219 (Figs. 3.3.4 &			
Eastern Turbine Delivery Route			
2.0	M8 Junction 14	Loads to reverse from this point into Fermoy with contraflow travel. Load bearing and oversail requirements within road boundary and enabling works on the R639 Splitter island will be sufficient to accommodate a direct turn for tower sections	App 13.2 p 11/12; Figs 3.3.5 &13.6.5

2.1	Fermoy Town R639/N72 junc.	Removal of street furniture on both splitter islands which are to be ramped with tarmac	App 13.2 p 12/13; Figs 3.3.6 &13.6.6
2.2	N72	Remove pole and street light reduce hedge on right.	App 13.2 p13/14; Figs 3.3.6 &13.6.6
2.3	N72 (near Castelhyde)	Remove bank for oversail with potential for some load bearing	App 13.2 p13; Figs 3.3.7 &13.6.7
2.4	N72 (near Castelhyde)	Road widening of 180-200m and removal of signs.	App 13.2 p15/16; Figs 3.3.7 &13.6.7
2.5	N72 junction with Ballyhooly North Rd.	Lower wall and bank on right, Remove pole and signs.	App 13.2 p16/17; Figs 3.3.8 &13.6.8
2.6	Approach to Blackwater Bridge	Local widening and removal of telephone poles.	App 13.2 p18; Figs 3.3.8 &13.6.8
2.7	Approach to Blackwater Bridge	Lower section of wall	App 13.2 p19; Figs 3.3.8 &13.6.8
2.8	Castleblagh	Removal of trees and construction of hardstanding	App 13.2 p20/21; Figs 3.3.8 &13.6.8
2.9 – 2.13	Castleblagh to site entrance	Road widening/tree trimming, laying of hardcore to verges	App 13.2 p22-25; Figs 3.3.9, 3.3.10 &13.6.9 & 13.6.10

3.1.17. **Watercourse Crossings – Turbine Delivery Route**

While there are a number of crossings of watercourses on the turbine delivery route, which are detailed in Table 3-4 of the EIAR and Figure 10-5, no works are expected at any of the locations. It is stated in the EIAR that existing watercourse crossing structures between the proposed port of entry and the respective turn-off points from the M8 and N20 were not assessed as part of this EIAR as they consist of routes which make up part of the national motorway and primary national road network.

3.1.18. **Construction Period**

The proposed construction duration of CGEP is estimated to be 18-24 months. It is estimated that due to the length of cabling within the road corridor (c. 16km), these works could be conducted over 10-month period of time (c. 40 weeks).

3.1.19. **Operation, Lifespan**

The EIAR notes that during the operational period, the turbines operate automatically on a day to day basis, responding by means of anemometry equipment and control systems to changes in wind speed and direction with the turbine manufacturer or a service company carrying out regular maintenance of the turbines with scheduled services typically occurring twice a year. It is outlined that the operation of the wind turbines are monitored remotely with a caretaker overseeing the day to day running of the proposed wind farm.

The expected physical lifetime of the turbine is approximately 30 years, and permission is sought for a 30-year operation period commencing from full operational commissioning of the wind farm. The applicant refers to section 7.2 of the Planning Guidelines 2006 which states that the inclusion of a condition which limits the life span of a wind energy development should be avoided, except in exceptional circumstances. The applicant for this reason requests the grant of permission is on the basis of a 30-year operational period from the date of full operational commissioning of the wind farm.

3.1.20. **Decommissioning**

It is outlined that following the end of their useful life, the wind turbines may, subject to planning permission, be replaced with a new set of turbines or the site may be decommissioned. On decommissioning, cranes disassemble the above ground turbine components which would be removed off site for recycling. It is stated that all the major component parts are bolted together, so this is a relatively straightforward process. The foundations are covered over and allowed to re-vegetate naturally if required as leaving the turbine foundations in situ is considered a more suitable option environmentally as to remove the reinforced concrete associated with each turbine would result in environmental nuisances such as noise and vibration and dust. It is proposed that the internal site access tracks be left in place, subject to agreement with Cork County Council and the relevant landowners. In relation to the

proposed on-site substations, these are to be taken in charge by ESBN/Eirgrid upon completion and shall be left in place forming part of the national electricity network. In terms of the underground cables it is proposed that these are cut back and left in place. It is proposed that a detailed decommissioning plan is agreed in advance of construction with Cork County Council. It is also noted that a decommissioning plan is contained in the CEMP (Appendix 3.1 of Volume 3).

3.1.21. Grid Connection

The process by which electricity generated by the turbines is proposed to reach the proposed grid connection is outlined at Section 3.1.8 above. The proposed associated connection to the national grid is considered within the application as part of the overall project within the EIAR and NIS but does not form part of the application for approval. The applicant explains the rationale for same by stating that the Enduring Connection Policy (ECP) and process for grid connection introduced by the CRU in April 2018 requires applicants to have received planning permission for the wind farm in order to lodge an application for the grid connection with the applicant in this instance intending to apply for a grid connection as soon as possible as part of the ECP2 application process. As outlined above, the proposed development will have an export capacity of approximately 105 MW, depending on final turbine and BESS technology installed. It is outlined that following consultation with EirGrid and an in-depth examination of grid capacity, it is anticipated that the project will connect from the onsite substations via underground 110kV cable to Barrymore 110kV substation in the townland of Farran South to the northwest of Rathcormac.

It is proposed to install the cable within private lands and the public road. It comprises of the installation of approximately 24.4km, of high voltage (up to 110kV) underground cabling between the proposed on-site substations and the existing Barrymore substation with approximately 16.7km of the proposed grid connection cable to be constructed within the existing road corridor. The proposed grid connection cable works include 14 existing watercourse and drain crossings and the installation of up to 17 pre-cast joint bays. Horizontal directional drilling (HDD) is proposed at up to 4 locations to cross existing watercourses and the M8 motorway. The works involve the installation of ducting, joint bays, drainage and ancillary infrastructure and the subsequent running of cables along the existing road network

which requires the delivery of plant and construction materials, followed by excavation, laying of cables and subsequent reinstatement of trenches.

3.1.22. **Infrastructure Crossing**

As part of the grid connection outlined above, it is proposed to cross the M8 Motorway by way of horizontal directional drilling (HDD) comprising a 110kV duct crossing at Corrin View Estate to the South of Junction 15 (Drawing - P1306- 2650-0033). In terms of the proposed methodology, it is stated that the locations of the launch and reception pits are adequately spaced from the carriageway to ensure the bore is at such depth as not to conflict with the drainage or surface of the motorway or associated embankments. In respect of alternatives, it is stated that consideration was given to trying to accommodate the cables in the over-bridge which spans the motorway at this location however following consultation with TII, Direct Route, and Cork County Council, it was deemed preferable to employ the proposed crossing technique. It is stated that there is sufficient room available to accommodate the necessary equipment and that the cables will be laid at sufficient depth below the motorway to stay below the motorway drainage without impacting on the road foundations. Bearing in mind this crossing is not part of the subject applicantion it is noted that it is proposed that detailed consultation with the relevant bodies is proposed and it is noted that the locations of start and finish points for the HDD have been identified following desktop assessments, site visits and consultation with the local authority, TII and Direct Route and that detailed designs for the motorway embankment and bridge crossing as well as site investigation records were reviewed by the applicants agents geotechnical engineers to confirm the suitability of the proposed crossing method at this location.

3.1.23. **Watercourse Crossings – Grid Connection**

Table 3-3 of the EIAR outlines the 13 watercourse and drain crossing locations and the proposed method for same along the proposed grid connection route. These comprise a mix of HDD under structures within the public road corridor, trench in the road above structure and trench in road below structure/service/culvert.

3.2. Further Information

In response to the **further information** request further details and particulars were provided as follows:

Consent is sought for 22 turbines and not ‘up to’ 22 turbines as outlined in original documentation.

Turbine dimensions and a limited range for the turbines (the Turbine Range) which is as follows (Drawing: P21-288-0300-0021);

- Tip height range from 165m to 169m
- Hub height range from 96m to 103m
- Rotor diameter range from 132m to 138m

Specific dimensions for the foundations - 22m in diameter with a depth of 4 meters.

The lowest and highest MW output from the turbine range proposed equates to 92.4 MW to 121 MW with the potential to produce between 267,110 MWh and 349,787 MWh of electricity per year.

It is also proposed to amend the design of the permanent met masts where they are proposed to be 100m and not ‘up to’ 100m. In addition, the originally proposed guy wires are omitted with the masts now proposed to be fixed founded met mast reducing the overall envelope of the masts. The revised met mast design does not change the conclusions of the EIAR

The applicant outlines in their response to the further information request that the defined limited flexibility as set out above is compatible with the requirements of the Planning and Development Regulations 2001, as amended, in respect of plans and particulars. It is further stated that a grant of planning permission from the Board which consents the Turbine Range proposed would ensure a competitive procurement tendering process for the final turbine selected within the Turbine Range.

4.0 **Planning History**

4.1. **On or related to Subject Site**

Ref. 19/4472: Conditional permission granted for 1 x 100m temporary meteorological mast at Mullenaboree

Ref. 19/4473: 1 x 100m temporary meteorological mast at Glannasack

Ref. 19/4979: Conditional permission granted for 1 x 100m temporary meteorological mast at Glannasack

Ref. N/01/6654 (ABP Ref. Pl04.128917) – Permission refused by Cork County Council and on appeal by the Board for the development of a windfarm comprising 16 wind turbines (60m high), electrical substation, 60m high met mast, internal site tracksways and associated works at Knockdoorty, Glannasack, Killeagh and Carrig, Nagle Mountains, County Cork for the following reason:

"It is considered that the proposed development by reason of its scale and the height of the proposed turbines would constitute a visually obtrusive feature in the unspoiled landscape of the Nagle Mountains when viewed from a range of near and distant locations including routes designated as scenic routes (A8, A9, A10, A11, A12 and A13) in the current County Development Plan, in particular Route A12, and which designations are considered to be reasonable. The proposed development would fail to successfully assimilate into the landscape, would result in serious injury to the visual amenities of the area and would, therefore, be contrary to the proper planning and development of the area".

4.2. **Other Related Developments Referenced within Submissions**

ABP Ref: EL2016: Permission granted for the Bottlehill Landfill Facility

5.0 **Legislative and Policy Context**

The following EU Directive and Polices and National Polices and Guidelines are outlined with a summary of those considered most relevant in the following sections.

<u>EU Directives and Polices</u>

- EU Renewable Energy Directive 2009/28/EC

- European 2020 Strategy for Growth
- 2030 Climate and Energy Framework
- Energy Roadmap 2050
- Recast Renewable Energy Directive (RED2)
- European Green Deal (2019)

National Policy

- Climate Action and Low Carbon Development Act 2015
- Project Ireland 2040: The National Planning Framework
- Project Ireland 2040: National Development Plan 2018-2027
- Climate Action Plan 2023
- Climate Action and Low Carbon Development (Amendment) Art 2021
- Department of Environment Heritage and Local Government Planning Guidelines for Wind Energy (June 2006)
- Draft Revised Wind Energy Guidelines (Published for Consultation on 12th December 2019)
- National Landscape Strategy for Ireland 2015-2015 (DAHG)
- 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)

5.1. National Policy and Guidelines

5.1.1. Project Ireland - National Planning Framework 2040

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

Of particular relevance is National Strategic Outcome NSO8 which seeks a Transition to a low carbon and climate resilient economy. It is stated that "*the National Climate Policy Position establishes the national objective of achieving transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. This objective will shape investment choices over the coming decades in line with the National Mitigation Plan and the National Adaptation Framework. New energy systems and transmission grids will be necessary for a more distributed, renewables-focused energy generation system, harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave and solar and connecting the richest sources of that energy to the major sources of demand*".

One of the objectives in respect of Green Energy is to "*deliver 40% of our electricity needs from renewable sources by 2020 with a strategic aim to increase renewable deployment in line with EU targets and national policy objectives out to 2030 and beyond. Itis expected that this increase in renewable deployment will lead to a greater diversity of renewable technologies in the mix*".

National Policy Objective (NPO) 55 seeks to "*promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050*".

5.1.2. **Project Ireland 2040 – National Development Plan 2018-2027**

The key role of the NDP is to set out the public capital investment to achieve the National Strategic Outcomes as set out within the National Planning Framework. A number of key energy initiatives, proposed to diversify energy resources and assist in the transition towards a decarbonised society are set out with the NDP further emphasises National Strategic Outcome 8: Transition to Sustainable Energy by stating that: "*Ireland's energy system requires a radical transformation in order to achieve its 2030 and 2050 energy and climate objectives. This means that how we generate energy and how we use it, has to fundamentally change. This change is already underway with the increasing share of renewables in our energy mix and the progress we are making on energy efficiency. Investment in renewable energy sources, ongoing capacity renewal, and future technology affords Ireland the opportunity to comprehensively decarbonise our energy generation. By 2030, peat and coal will no longer have a role in electricity generation in Ireland. The use of peat*

will be progressively eliminated by 2030 by converting peat power plants to more sustainable low-carbon technologies."

To achieve a Low-Carbon, Climate Resilient Society, the Plan outlines a New Renewable Electricity Support Scheme to support up to 4,500 megawatts of additional renewable electricity by 2030.

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

This document is a complete energy policy update, which sets out a framework to guide policy up to 2030. Its objective is to guide a transition, which sets out a vision for transforming Ireland's fossil fuel-based energy sector into a clean, low carbon system. It states that under Directive 2009/28/EC the government is legally obliged to ensure that by 2020, at least 16% of all energy consumed in the state is from renewable sources, with a sub-target of 40% in the electricity generation sector. It notes that onshore wind will continue to make a significant contribution but that the next phase of Ireland's energy transition will see the deployment of additional technologies as solar, offshore wind and ocean technologies mature and become more cost-effective.

5.1.4. Climate Action Plan 2023

The Climate Action Plan (CAP) 2023 was adopted in December 2022 and follows a number of predecessors which arose following the declaration of a climate and biodiversity emergency by the Irish Government. The Plan seeks to identify how Ireland will achieve its 2030 targets for carbon emissions by sector and through a series of actions. The overarching requirement in the Climate Action Plan as they relate to electricity require transformational policies, measures and actions, and societal change to increase the deployment of renewable energy generation, strengthen the grid, and meet the demand for flexibility in response to the challenge. The Plan seeks to reduce the State's greenhouse gas emissions by 51% by 2030. One of the most important measures increasing the proportion of renewable electricity to up to 80% by 2030, including a target of 9 GW from onshore wind, 8 GW from solar and at least 5 Gigawatts of offshore wind energy by 2030.

5.1.5. Wind Energy Development Guidelines 2006

The following sections of the Guidelines are of particular relevance:

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

5.1.6. **Draft Wind Energy Development Guidelines 2019**

Chapter 5 – considering an application for wind energy development. A planning authority may consider some if not all of the following matters:

- Environmental assessments (EIA, AA etc.)
- Community engagement and participation aspects of the proposal
- Grid Connection details
- Geology and ground conditions, including peat stability; and management plans to deal with any potential material impact. Reference should be made to the National Landslide Susceptibility Map to confirm ground conditions are suitable stable for project;
- Site drainage and hydrological effects, such as water supply and quality and watercourse crossings; Site drainage considerations for access roads/tracks, separate in addition to the impact of the actual turbines management plans to deal with any potential material impact on watercourses; the hydrological table; flood risk including mitigation measures;

- Landscape and visual impact assessment, including the size, scale and layout and the degree to which the wind energy project is visible over certain areas and in certain views;
- Visual impact of ancillary development, such as grid connection and access roads;
- Potential impact of the project on natural heritage, to include direct and indirect effects on protected sites or species, on habitats of ecological sensitivity and biodiversity value and where necessary, management plans to deal with the satisfactory co-existence of the wind energy development and the particular species/habitat identified;
- Potential impact of the project on the built heritage including archaeological and architectural heritage;
- It is recommended that consideration of carbon emissions balance is demonstrated when the development of wind energy developments requires peat extraction.
- Local environmental impacts including noise, shadow flicker, electromagnetic interference, etc.;
- Adequacy of local access road network to facilitate construction of the project and transportation of large machinery and turbine parts to site, including a traffic management plan;
- Information on any cumulative effects due to other projects, including effects on natural heritage and visual effects;
- Information on the location of quarries to be used or borrow pits proposed during the construction phase and associated remedial works thereafter;
- Disposal or elimination of waste/surplus material from construction/site clearance, particularly significant for peatland sites; and
- Decommissioning considerations.

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

Noise

- Section 5.7.4 - The “preferred draft approach”, proposes noise restriction limits consistent with World Health Organisation Guidelines, proposing a relative

rated noise limit of 5dB(A) above existing background noise within the range of 35 to 43dB(A), with 43dB(A) being the maximum noise limit permitted, day or night. The noise limits will apply to outdoor locations at any residential or noise sensitive properties.

Shadow Flicker

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

Community Investment

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

Visual Impact

- Section 6.4- Siting of Wind energy projects.

Set back

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

noise requirements of these Guidelines must be capable of being complied with in all cases

5.2. Regional Policy - Southern Regional Spatial and Economic Strategy (RSES)

The Regional Spatial and Economic Strategy sets out a strategy to implement the NPF in the Southern Region.

In relation to wind energy the RSES 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*".

RPO 99 Renewable Wind Energy – *"It is an objective to support the sustainable development, maintenance and upgrading of electricity and gas network grid infrastructure to integrate renewable energy sources and ensure our national and regional energy system remains safe, secure and ready to meet increased demand as the regional economy grow*".

At Section 8.2 – strategy energy grid – it states that "*there is significant potential to use renewable energy across the Region to achieve climate change emission reduction targets. With costs actively driven down by innovation in solar, onshore and offshore wind in particular, the renewable industry is increasingly cost competitive. The RSES supports renewable industries and requirements for transmission and distribution infrastructure*".

5.3. Local Policy – Cork County Development Plan 2022-2028

This Plan came into effect on 6th June 2022 so postdates the submission of the planning application which refers to the previous 2014-2020 plan. The current County Plan contains a wide range of policies. The following are considered to be of particular relevance to the subject proposal.

5.3.1. Wind Energy Policy

Chapter 13 of the Plan deals with Energy and Telecommunications. Figure 13.1 of the Plan outlines the key energy and renewable energy infrastructure in the County

including existing wind farms and the electrical transmission network. The wind energy strategy is outlined in Section 13.6.

The following Objectives are included in the Plan:

ET 13-5: Wind Energy Projects

a) Support a plan led approach to wind energy development in County Cork through the identification of areas for wind energy development. The aim in identifying these areas is to ensure that there are minimal environmental constraints, which could be foreseen to arise in advance of the planning process.

b) On-shore wind energy projects should focus on areas considered 'Acceptable in Principle' and 'Areas Open to Consideration' and generally avoid "Normally Discouraged" areas as well as sites and locations of ecological sensitivity

The definition of Open for Consideration is set out in Section 13.6.7 and is stated to comprises about 50% of the County with the following objective provided:

ET 13-7: Open to Consideration

Commercial wind energy development is open to consideration in these areas where proposals can avoid adverse impacts on:

- *Residential amenity particularly in respect of noise, shadow flicker and visual impact;*
- *Urban areas and Metropolitan/Town Green Belts;*
- *Natura 2000 Sites (SPA's and SAC's), Natural Heritage Areas (NHA's), proposed Natural Heritage Areas and other sites and locations of significant ecological value.*
- *Architectural and archaeological heritage;*
- *Visual quality of the landscape and the degree to which impacts are highly visible over wider areas.*

In planning such development, consideration should also be given to the cumulative impacts of such proposals.

ET 13-10: Development in line with Best Practice

Ensure that wind energy developments in County Cork are undertaken in observance with best industry practices, and with full engagement of communities potentially impacted by the development. In accordance with the Code of Practice 'Good Practice for Wind Energy Development Guidelines 2016', wind energy development

operators are required to put in place an effective complaints procedure in relation to all aspects of wind energy development projects, where members of the public can bring any concerns they have about operational difficulties, including noise and nuisance to the attention of the wind energy development operator.

ET 13-11: Public Consultation and Community Support

(a) Require wind energy developers to carry out active public consultation with the local community in advance of and in addition to the statutory public consultation required as part of the planning application process.

(b) Applications for large scale wind energy development require a 'Community Report' with the planning application documents detailing the full extent of community and wider public engagement.

Development Proposals

Section 13.7 of the Plan addresses Development Proposals for Wind Energy development stating that: all planning applications for wind energy development should include a comprehensive assessment of the potential impacts of the proposed development on the receiving environment and landscape. The Planning Authority will require the following criteria to be covered by prospective applicants:

- The requirement for Environmental assessments (EIA, AA etc.).
- Community engagement and participation aspects of the proposal.
- Grid Connection. In particular grid connections with the potential to impact on the strategic function of the national road network should be discussed and agreed with Transport infrastructure Ireland and should use alternative available routes where feasible in the first instance.
- Geology and ground conditions, including peat stability; and management plans to deal with any potential material impact. Reference should be made to the National Landslide Susceptibility Map to confirm ground conditions are suitable stable for project;
- Site drainage, water storage and hydrological effects such as water supply and quality and watercourse crossings; management plans to deal with any potential material impact on watercourses; the hydrological table; flood risk including mitigation measures;

- Landscape and visual impact assessment, including the size, scale and layout and the degree to which the wind energy project is visible over certain areas and in certain views;
- Visual impact of ancillary development, such as grid connection and access roads;
- Potential impact of the project on natural heritage, to include direct and indirect effects on protected sites or species, on habitats of ecological sensitivity and biodiversity value and ,where necessary, management plans to deal with the satisfactory co-existence of the wind energy development and the particular species/habitat identified;
- Potential impact of the project on the built heritage including archaeological and architectural heritage;
- Consideration of carbon emissions balance is demonstrated when the development of wind energy developments requires peat extraction.
- Local environmental impacts including noise, shadow flicker, electromagnetic interference, etc.;
- Adequacy of local access road network to facilitate construction of the project and transportation of large machinery and turbine parts to site, including a traffic management plan;
- Information on any cumulative effects due to other projects, including effects on natural heritage and visual effects;
- Information on the location of quarries to be used or borrow pits proposed during the construction phase and associated remedial works thereafter;
- Disposal or elimination of waste/surplus material from construction/site clearance, particularly significant for peatland sites; and
- Decommissioning considerations.

5.3.2. Policies on Archaeology

Chapter 16 deals with built and cultural heritage.

HE 16-2: Protection of Archaeological Sites and Monuments

Secure the preservation (i.e. preservation in situ or in exceptional cases preservation by record) of all archaeological monuments and their setting included in the Sites and

Monuments Record (SMR) (see www.archaeology.ie) and the Record of Monuments and Places (RMP) and of sites, features and objects of archaeological and historical interest generally.

In securing such preservation, the planning authority will have regard to the advice and recommendations of the Development Applications Unit of the Department of Housing, Local Government and Heritage as outlined in the Frameworks and Principles for the Protection of the Archaeological Heritage policy document or any changes to the policy within the lifetime of the Plan.

5.3.3. Objective GI 14-4: addresses Recreation and Amenity and seeks to:

a) Support the provision of recreation and amenity facilities in new developments and ensure that the widest range of facilities is provided at locations which can serve the wider community and intergenerational activities, which are accessible to members of the community of all ages and abilities, through initiatives in partnership with community groups and sporting organisations.

b) Seek opportunities to improve the quality and capacity of existing recreation and amenity facilities, through initiatives with both public and private sector (sports governing bodies, local community partnerships and private development proposals) and where appropriate the Council will use its powers under Section 48 of the Planning and Development Act 2000 to require development levies to achieve the enhancement of these facilities.

c) Ensure the protection and seek the enhancement and wise management of existing recreational facilities and public open space, and ensure that all new developments make adequate provision for recreational and amenity facilities in accordance with the requirements of the Council's Recreation and Amenity Policy (Interim) and any successor policy and having regard to the Council's policy regarding the management of Green Infrastructure assets.

d) To work with the various relevant stakeholders in the preparation of a Metropolitan Cork Open Space, Recreation and Greenbelt Strategy.

5.3.4. Landscape Polices

Chapter 14 addresses green infrastructure and environment with the following polices and objectives of note:

<u>Objective GI 14-9: Landscape</u>

a) Protect the visual and scenic amenities of County Cork's built and natural environment.

b) Landscape issues will be an important factor in all land-use proposals, ensuring that a pro-active view of development is undertaken while protecting the environment and heritage generally in line with the principle of sustainability.

c) Ensure that new developments meets high standards of siting and design.

d) Protect skylines and ridgelines from development.

e) Discourage proposals necessitating the removal of extensive amounts of trees, hedgerows and historic walls or other distinctive boundary treatments.

Objectives GI 14-10 & 14-11 relate to Draft Landscape Strategy with

Policy objective GI-14-10 seeking to ensure that the management of development throughout the County will have regard for the value of the landscape, its character, distinctiveness and sensitivity as recognised in the Cork County Draft Landscape Strategy and its recommendations, in order to minimize the visual and environmental impact of development, particularly in areas designated as High Value Landscapes where higher development standards (layout, design, landscaping, materials used) will be required.

The Draft Landscape Strategy has categorised sensitivity as follows;

• Low sensitivity landscapes are robust landscapes, which are tolerant to change, and which have the ability to accommodate development pressure.

• Medium sensitivity landscapes can accommodate development pressure but with limitations in the scale and magnitude. In this rank of sensitivity, landscape elements can accept some changes while others are more vulnerable to change.

• High sensitivity landscapes are vulnerable landscapes with the ability to accommodate limited development pressure. In this rank landscape quality is at a high level, landscape elements are highly sensitive to certain types of change. If pressure for development exceeds the landscape's limitations the character of the landscape may change.

• Very high sensitivity landscapes are extra vulnerable landscapes (e.g. seascape area with national importance) which are likely to be fragile and susceptible to change.

A landscape Character assessment undertaken as part of the Draft Cork Landscape Strategy (2007) provides that the subject site is within or adjacent to a number of landscape character types. It is principally within:

- LCT 13b – 'Valleyed Marginal Middleground' - Medium landscape sensitivity; Medium Landscape Value; and Local Landscape Importance.

To the west of the site:

- LCT 10b – Fissured Fertile Middleground located to the west - Medium landscape sensitivity; Low Landscape Value; and County Landscape Importance

To the north of the site:

- LCT 5 - Fertile Plain with Moorland Ridge to the north associated with the Blackwater Valley, is assigned Very High landscape sensitivity; Very High Landscape Value; and County Landscape Importance.

The following policy relates to **General Views and Prospects:**

GI 14-12: General Views and Prospects

Preserve the character of all important views and prospects, particularly sea views, river or lake views, views of unspoilt mountains, upland or coastal landscapes, views of historical or cultural significance (including buildings and townscapes) and views of natural beauty as recognized in the Draft Landscape Strategy

It is stated at Section 14.9.2 of the Plan that it is important to protect the character and quality of those particular stretches of scenic routes that have special views and prospects particularly those associated with High Value Landscapes.

Objective GI 14-13: Scenic Routes

Protect the character of those views and prospects obtainable from scenic routes and in particular stretches of scenic routes that have very special views and prospects identified in this plan. The scenic routes identified in this plan are shown on the scenic amenity maps in the CDP Map Browser and are listed in **Volume 2 Chapter 5** Scenic Routes of this plan.

Objective GI 14-14: Development on Scenic Routes

a) Require those seeking to carry out development in the environs of a scenic route and/or an area with important views and prospects, to demonstrate that there will be

no adverse obstruction or degradation of the views towards and from vulnerable landscape features. In such areas, the appropriateness of the design, site layout, and landscaping of the proposed development must be demonstrated along with mitigation measures to prevent significant alterations to the appearance or character of the area.

b) Encourage appropriate landscaping and screen planting of developments along scenic routes (See Chapter 16 Built and Cultural Heritage)

The following **Scenic Routes** are adjoining/in proximity of the site

• S11: Local Road at Carrigacunna through Nagle Mountains to Ross River Valley to Fiddane Bridge. Views of the Nagle Mountains.

• S12: Local Road between Knuttery and Bottlehill. Views of rolling landscape.

These routes are located in the wider zone of visual influence.

S2: Local Roads adjoining Kilworth Mountains Views of the Araglin River Valley, distant views of the Galtee, Kilworth, Knockmealdown Mountain Ranges & Cairn Hill.

• S3: N8 National Primary Route between Moorepark and Mitchelstown. Views of the Galtee, Nagle, Kilworth & Knockmealdown Mountain Ranges.

S4: R667 Regional Road, section of local road & R666 Regional Road between Kilworth & Fermoy. Views of the Blackwater, Funchion & Argalin River Valleys

• S5: R666, Regional Road from Coolalisheen Bridge to Ballyalacken. Views of the Blackwater River Valley.

• S6: Local Road to Coolbaun. Views of pastoral landscape & the Bride River Valley.

• S7: N72 National Secondary Route between Bellvue Cross and Kilbarry overlooking Blackwater valley. Views of the Blackwater River Valley & distant Mountain Views

• S8: Local Road between Glenabo Bridge & Ballynahina. Distant views of the Blackwater and Bride River Valleys & local views of wooded valley.

• S9: N72 National Secondary Route between Cregg Castle, Castlehyde & Fermoy. Views of the settlement of Fermoy, the Blackwater Valley, the eastern slopes of the Nagle Mountains & demesne walls, characteristic of the area.

• S10: N72, National Secondary Route from Renny Lower through village of Ballyhooly. Views of the Blackwater Valley & the northern slopes of the Nagle Mountains.

• S13: Local Road from Craig Cross Roads to County Boundary. Views of the Ballyhoura Mountains & the Awbeg Valley.

• S14: N72 National Secondary Route between Mallow and Roskeen Bridge. Views of the Blackwater valley.

• S19: R579 Regional Road from Glenaknockane towards Donoughmore. Views of Boggeragh Mountains & rural uplands.

• S37: Local Road & R618 Regional Road between Leemount and Macroom via Coachford. Views of the Lee Valley & reservoir, rural landscape & the Sullane River.

• S40: Section of Local Road between Blarney and Grenagh. Views of wooded banks of the River Martin & Putland Bridge.

• S41: R639 Regional Road & Local Road from Dunkettle to Glanmire and eastwards to Caherlag and Glounthane. Views of the Estuary & Harbour, wooded landscape, open countryside & hillsides.

• S42: Local Road at Forest-town, N.W. Carrigtwohill and Westwards to Caherlag. Views of the Harbour, open countryside & tree lined hillsides.

• S43: R626 Regional Road between Lisgould and Carrigogna. Views of wooded landscape & intermittent views of open countryside.

• S44: Local Road between Monaleen Bridge, Ardlass & Gurteen Cross Roads. Views of hills & rural landscape.

6.0 **EIA Screening**

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

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

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

7.0 **Observations**

396 observations were received and given the commonality of issues arising the following summary is provided. A list of observers is included as Appendix One of this report.

7.1.1. **Process**

- Question jurisdiction of ABP to deal with generation of electricity as applicant are not an electricity public vendor and cannot use this process.
- Issues around landowner consent, land ownership and appropriate permissions along grid connection route.
- Reference in application to lands which they have no rights to/adequate permission/consent for.
- Turbary rights on lands not addressed.
- Deed for water rights not shown on map with undertakings not given.
- Wayleaves from property owners for cables under roads with ownership of roads extending to middle of the road for adjacent owners.
- Issues with applicant company and changes to same with financial bone fides/bond of applicant to be provided.
- Planning should be for completion in 5 years with finance to maintain and a bond
- Local and regional effects rather than national effects as per pre-application report should be considered.
- Proposed should be two separate applications due to scale and distance between the two clusters of turbines.
- Little detail provided on turbines proposed

7.1.2. **Principle of Proposal**

- Support renewable energy development in the right locations and not by impacting environment/overriding environmental protections and concerns of local communities

- Potential to generate up to 500MW offshore and propose subsides and incentives should be moved to offshore windfarms
- Want a legally binding agreement that developers should be made pay for any damage or pollution caused.
- No longterm commitment to the project with constant change in ownership and name with lack of traceability and accountability
- Anecdotal evidence of developers not delivering on promises to local communities
- Contrary to government plans to regenerate rural Ireland
- Will lead to population decline and discourage new people coming to the area
- Discrimination against a locality on grounds of being sparsely populated without means and funds to defend themselves.
- Previous refusal for wind farm development.
- Permission to lease land at the Bottlehill landfill from Council refused by Members
- Concern that alternative more environmentally sustainable technologies are not being considered for power production
- Concerned at carbon cost associated with construction of each turbine.
- Majority of turbine blades end up being landfilled
- Cost of decommissioning estimated at €160,000 per turbine with no requirement to reclaim the land when useful life of turbines has expired
- Electricity has to be consistent, dependable and available when needed and wind energy is not the answer – need for more stable resources
- Solar Farm permitted in the area which is a future energy source with an additional energy source not required.
- Coillte have poor track record in the area in relation to biodiversity, fisheries, archaeology, reforestation, setbacks for watercourses and roads
- Removal of peat bog for turbines rather than maintaining for sequestration of carbon gases

- Recommendations on variety of separation distances, between 1-3km, based on range of Guidelines/Recommendations
- 2006 & 2019 draft guidelines recommend medium turbine heights in hilly and flat farmland.
- Capacity of local transmission or distribution grid questioned.
- Area is taking unfair share of developments
- Previous violations of planning – with 103m blades used rather than permitted 90m (Ballyduff in Waterford).
- Impact on plans for Burnfort Tidy Towns/Village Group

7.1.3. **Alternative Locations**

- Best option at sea
- Offshore alternative not properly considered in EIAR as Coillte one of landowners and in their interest to locate onshore, excuse of not having licences/expertise not acceptable
- Should be in remote location

7.1.4. **Policy**

- Open For Consideration in CDP cannot be construed as offering positive presumption with proposal located very close to the area where windfarms normally discouraged (c.300m at closest) and at a significant distance from areas acceptable in principle.
- Turbines T2-T7 surround a designated urban area with fact it is Bottlehill landfill irrelevant
- Wind energy only one of 11 sources and not cheapest with so many wind farms in Ireland that they are discriminating against other sources which have a lower cost which is expressly forbidden in Renewable Energy Directive.
- Recommend engagement with EirGrid with a feasibility study prior to permission.
- Impact of proposal on the Convention on Biological Diversity with limited ecological survey presented in the EIAR touching on same of without an in-depth

assessment of components ecosystem; structure and function and no assessment of how integrity of ecosystem will be maintained if proceeds.

- No concern about resilience of eco-system or any detailed study of its biodiversity – ecosystem diversity, species diversity and genetic diversity with serious questions about scope and efficacy of EIAR.

7.1.5. **Wind Energy Guidelines**

- Wind Energy Guidelines out of date and not fit for purpose and reflect different turbine height
- Proposal premature pending updated version of Guidelines and request no more wind farms are approved until Guidelines are released
- Draft 2019 guidelines do not go far enough to address set back distance with 750m not going far enough.
- Best international practice such as 10 times height rule should be followed
- Wind energy guidelines state details of feasible options for grid connection should be provided.

7.1.6. **Consultation**

- Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement (December 2016) not followed
- Comparison provided of public consultation stated by developer Addendum 3 with NVTA interpretation.
- Reason for refusal of lease on lands at Bottlehill was lack of consultation
- Presentation hard to follow online given poor broadband and prevented legally from viewing hard copies
- Advised by Board at pre-app that public consultation should as extensive as possible and undertaken with local community.
- Consider postponing decision until after Covid has passed to facilitate meaningful consultation

- Use landbank available to move/reduce and create greater set backs from homes.
- Information not provided to properties in closest proximity
- Plans shown to locals are not same as those submitted
- Concerns have not been addressed by developers with no peer evidence provided;
- Agreements to meet not fulfilled.
- Question and answer meeting format not facilitated
- Results of monitoring undertaken on lands not provided.
- Requirement of landowners to sign declarations stating awareness of potential impacts
- Testimony from other communities contradict modelled data;
- Underhand timing of application during Christmas & Lockdown depriving many of opportunity to object;
- Unfair to submit application when inadequate consultation undertaken
- ABP have breaches duty of care by allowing process proceed since onset of Covid with observer denied right to investigate and research proposal
- Unjust that hard copies of application not provided;
- Open days proposed did not fulfil what was promised;
- Many people not lodging objections due to €50 fee but views just as valid.

7.1.7. **Adequacy of Application/EIAR**

- Environmental assessment carried out for replant lands at Moneygorm Co Cork and Ballard Co. Wicklow but not included in application – risk that replant lands may not be permitted to proceed.
- Applicant fails to comply with Article 3 of the EIA Directive – deficient in many of the environmental factors

- Inconsistencies in EIAR as well as acknowledging risk of significant impacts without adequate mitigation
- Appears to be confusion, lack of clarity, conflict of epidemiological studies and lack of appropriate guidance on assessment of public health impact within EIAR.
- Various studies and research papers relied upon in EIAR outdated and unfit for purpose.
- EIAR fails to address impact on SAC and SPA from potential of landslides and sedimentation of sensitive watercourses.
- Lack of details on substations, battery storage units and grid connection.
- Lack of details of material significance and substance on environmental factors and inter- relationship between each other.

7.1.8. **Noise**

- EIAR – assesses against 2006 guidelines in Chp 7 and draft 2019 in Appendices with information spread out amongst number of chapters and inserted into appendices which is in contravention of the Directive.
- EIAR fails to set out types of windshields used, location of LIDAR wind speed measurement, allocation of background noise levels to properties, manufacturers test data for turbine sound power levels.
- Does not specify turbine proposed to be used and no evidence of sound power level of proposed candidate which is significant given difference of 10dB between types.
- Essential that background noise measurements and wind speed measurements carried out in appropriate locations and done accurately.
- Difficult to establish whether windshields used for background noise measurements appropriate for survey (pg 8 DB) – clarification required on construction of wind shield.
- Not explained how measured background levels have been allocated to noise sensitive properties or where other than noise monitoring locations.

- Turbine sound power levels assessed from chap 7 of EIAR but cannot be verified as manufacturers data not included – with level calculated using appropriate uncertainty – turbine chosen has trailing edge serrations which reduces noise level.
- 2006 Guidelines no methodology for calculation of turbine noise – appropriate methodology in IOAGPG.
- Cannot be case that small change in noise level in background noise can permit 7.5dB extra turbine noise. 35-40dB limit for low noise environment originates from UK Guidance – with lower limit of 35dB or 40dB to be followed by a limit of 5dB above background – there is no sudden jump to 45dB.
- Applicants' choice of 37.5dB as a lower limit appropriate in terms of ETSU guidance.
- Guidance refers to fixed level of 43dB at night but updated WHO guidance this would be reduced to 38dB or 40dB.
- Assessment under 2006 guidelines – flawed, inaccurate – if undertaken as intended significant number of properties would fail to meet the limits with an exceedance of up to 4dB.
- Appendix 7.3 – assessment made against 2019 with conclusion that 17 of 18 properties listed fail to meet guidelines (some by over 6dB) but only 18 assessed with examples assessed close to other properties who would presumably also exceed limits
- Significant anomalies and technical inaccuracies in 2019 guidelines – set out in joint consultation response by 13 members of IOA with justification for noise limited based on number of technical inaccuracies (response attached). Inaccuracies need to be resolved before adoption.
- Mitigation affects power output and planning balance with effect not quantified.
- Council/complainant will not know if turbines running in reduced noise mode at any particular time so impossible to assess if being run as required or not.
- Mitigating turbine noise levels to meet limits that have been exceeded not an appropriate procedure

- Developer admits proposal far exceeds acceptable noise limited day and night and is heavily reliant on mitigation measures the level of which are disproportionate and contravene objectives of Directive.
- Recognised that possibility of Amplitude Modulation is significant in any modern windfarm with penalty systems devised in UK and proposed in 2019 draft. IEC drafting a new standard for wind turbine noise at receptor positions which includes AM.
- Predicted noise levels even after proposed mitigation will lead to a significant/very significant adverse noise impact. Reference by applicant to moderate impact
- Arguable BS4142:2014 should not be used when other more specific standards apply – ETSU-R-97 (ETSU).
- EIAR does not directly compare measured background noise levels with predicted turbine operating noise levels with likely impact on baseline noise levels unclear.
- EIAR assumes on noise limits that these equate to long term averages of already averaged short term periods (10 mins) and that if/when compliance monitoring occurs then regression analysis (averaging) can be applied – use of regression analysis incorrect and should not be used.
- Turbines will (not may) produce significant levels of audible low frequency noise.
- Excessive amplitude Modulation (EAM) in the far field likely to occur and occur more frequently than EIAR suggests with claims in EIAR on AM/OAM totally incorrect
- Mitigation measures discussed but not guarantee measures can be effectively implemented.

7.1.9. **Shadow Flicker**

- Reference to 2006 guidelines and 10 rotor diameters with contention that houses within 10 rotor diameters are susceptible.
- Draft 2019 Guidelines have a zero-shadow flicker policy – meaning it should not occur.

- S.12.2.2. of EIAR one receptor within 500m of turbines (no 31 – admin building in Bottlehill Landfill) with EIAR failing to show how many or which turbines affect this. Landfill may become operational in time with permission granted for the admin building with turbines restricting its use.
- 115 properties within 10 rotor diameters – (1380m) which is an underestimate as far greater number within 1380m.
- Potential for shadow flicker at 72 of 95 receptors within study which is significant given draft Guidelines have zero policy.
- Predicted max theoretical hours per day of shadow flicker exceeds 30 mins at 54 receptors within study area.
- 20 buildings classed as uninhabited/derelict/otherwise insensitive to shadow flicker – not considered as part of assessment – but the location of these has not been provided
- Derelict buildings often restored and right of landowner to potentially restore may be adversely affected if buildings not identified.
- Request to applicant to identify on a map houses susceptible to shadow flicker denied.
- Mitigation is to cease operating the turbine which requires software which should be included in any assessment of total energy yield.
- Impact on road users/horseriders has not been explored – driver distraction/horse fright and potential for accidents.
- Impact of shadow flicker on those living in middle of two turbine clusters not addressed as sun rises to east passing behind T17-T23 leading to shadow flicker throughout the valley

7.1.10. **Health Effects**

- Carrignavar Primary School within close proximity of turbines and has an ASD unit with 30 children enrolled many of whom live near proposed turbine locations.
- Persons with autism are a flight risk with woods currently safe for them to explore but construction traffic will impact amenity.

- One person with both epilepsy and autism living in middle of clusters with development undoubtedly a nuisance to him and others.
- Infrasound associated with sleep disturbance with adverse affects on health such as obesity, heart disease and mood disorders. Relative amount of emitted low-frequency noise higher for larger turbines.
- Impulsive character of the noise perceived as threatening causing fear with children and adults vulnerable to adverse effects of night-time noise.
- Adverse health effects from low frequency noise with prolonged exposure known to cause fatigue, headaches, impaired concentration, sleep disturbance, physiological stress, increased levels of cortisol, auditory sensory overload, increased behavioural issues.
- Impact on mental health from noise disturbance to quiet environment/effects on anxiety and depression
- Experience of several patients over recent years adversely affected by living near wind farms and well established that people who live in vicinity of wind turbines can suffer ill effects with cause poorly studied with few cohort studies of the phenonenum and disturbed to read that those who complain are not believed.
- Claims that low frequency noise measurements because it is not discernible has no effects on humans made by acousticians and have no medical input with human responses to stress other than auditory not assessed in studies and needs to be addressed urgently
- Families in Banteer and Bweeng forced to take legal action when children became ill from noise, vibration and shadow flicker from wind turbines too close to homes with children suffering nose bleeds, ear aches, skin rashes, swollen and painful hands, loss of power in limbs, sleep disturbance and headaches.
- Wind Turbine Syndrome causes people to leave homes and farms;
- Impacts on family members with autism/dyspraxia/epilepsy/sensory disorders/impaired hearing/sensorineural hearing loss/convulsions/vertigo/asthma from construction and operation of proposal;
- Impacts on those with chronic illness of central nervous system/blood pressure/heart conditions/Type 1 diabetes/poor balance/immune

deficiencies/auto immune illnesses/lung conditions/tinnitus from construction and operation of proposal

- Example of refusal of permission for windfarm development in Lincolnshire due to impact on children with autism.
- Facility run by HSE for adults on autism spectrum is very close to T8.
- Pre-school situated close to area caters from children within a wide spectrum of diverse needs
- Effects on sleep for shift workers
- Light on mast for wind measurement has caused sleep disturbance
- Offer by applicant to triple glaze windows and doors and double insulate walls of home of child with autoimmune condition.
- Low frequency noise – associated with cardiovascular disease, sleep disorders and high blood pressure. The discomfort may vary and depends not only on the recorded noise pressure levels but also on the exposures time
- Effect of shadow flicker on epilepsy shadow from blades of certain turbines can result in changes in retinal illumination at a rate of >3 Hz causing epileptic seizures in susceptible people (Binnie at al 2002).
- Potential of wind turbines to elicit seizures under various meteorological conditions – flicker effects have been proven to occur only within ten rotor diameters of a turbine
- Shadow flicker & low frequency noise can result in headaches, fatigue, poor psychological well being and depression.
- Presence of industrial wind farms in quiet rural areas guaranteed to disrupt sleep in a sizeable minority with main price paid in terms of cardiovascular disease.
- Slew of publications relating environmental noise pollution to accelerated atherosclerosis in humans and sleep disruption indicates DNA damage to humans.
- Autistic children adversely affected by wind turbines becoming fixated on movement of turbines rotor blades.

- Children with photosensitive epilepsy likely to be severely impacted by shadow flicker.

7.1.11. **Impact on Utilities**

- Concern at EIAR admission that possible houses in immediate vicinity may require some remedial measures in relation to TV reception.
- Significant telecom link provided by Ripplecom and Vodafone running through centre of development with potential for significant interference at T14, 16, T5, T6, T10 given proximity of links to the turbines.
- Response received from RTE (Table 16-1) worrying as noted development may cause interference and recommends a protocol be signed. No response from Imagine which provides broadband to the area with no details of the efforts made to seek commentary.
- Response from Novatel (one of main providers of broadband) most concerning as notes 20% of overage area will be lost from Nagle mountains base range with house utilised as main feeder for coverage is surrounded by T17 – T23.
- Reference by Three Ireland to 'should be sufficient' little comfort to those using service.
- Condition must be attached to ensure that if there is interference caused by the development and following reasonable efforts to rectify that the relevant turbine is decommissioned and removed.
- Para 16.5.1 developer admits not sufficient separation between turbines and telecommunication links- relay base station proposed by way of mitigation but not clear if permission required or where this would be located.
- Request condition attached that broadband services are not interrupted for a prolong period and mitigation measures carried out expeditiously.
- Concerned at lighting requirements particularly high intensity obstacle strobe lights of concern – visually and impact on persons with epilepsy/distraction for road users/nocturnal bird migration routes.
- IAA raised concerns about impact on operations at Cork Airport with inadequate assessment undertaken.

- Inadequate internet may impact remote monitoring of proposal.
- Reliant on broadband to work from home and earn a living, conduct farm business, home schooling

7.1.12. **Impact on Property, Land and Farming**

- International studies have found wind farms reduce property value.
- EIAR grossly underestimates the number of houses within 1km, 2km and 3km of proposal failing to assess the impact of the development on property and land values in the area contrary to EIA Directive.
- Chose to build home in a rural setting on scenic route with impact on proposed new houses/ability to get permission for houses for family members in future
- Private development benefiting some and not others.
- Rural Ireland matters and accounts for 36.3% of population of State
- Impact on sporting/angling clubs due to lack of new people/people leaving
- Three dwellings in Glannasack and Toorgariffe surrounded on 3 sides by 7 turbines with turbines located on more elevated ground and 169m in height with separation distances between 780-1000m with houses overpowered
- Impact of low frequency noise on livestock raising cortisol levels which is associated with animal mortality and lower milk yield.
- 2013 study assessed whether presence of turbines impacted stress levels of badgers in nearby setts.
- Destruction of badger habitats forcing them onto farmlands with potential for TB and lock up impact on farmers unable to sell stock
- Reference to case of Yann Joly, France 2015
- Impact on access to lands – use of small boreens by trucks for construction/turbine delivery and cables
- Impact on viability of farms/passing to next generation and impact on investment/expansion needed in farm businesses

- Need written guarantee that if livelihood is affected in any way as a result of the proposal that will be properly compensated for damage to water supply or drop in milk production or damage to stock.
- Impact on horse breeding/equestrian activities on lands/daily management of horses made more risky
- Impact on exercising horses/ponies in local area on local roads
- Impact on bogland and turf cutting rights

7.1.13. **Impact on Access to Amenity Lands & Impact on Tourism**

- Closure of local walking routes, tracks and trails during construction period of 18-24 months disastrous for locals and those from wider area who use Nagle Mountains for variety of activities.
- Nagle Mountains nearest wild uplands to Cork City and a national park in all but name and Mountain should be developed as a nature park
- Walks along Nagles part of National Blackwater Way, a route following Blackwater Valley that is part of the European Route E8.
- Severe loss of forestry as an amenity with area used by hillwalkers from wide area.
- Walking route up to Cairn at summit of Nagle Mountains not marked with turbine 21 c.0.35km away
- No commitment on use of Bottlehill Forest as amenity facility;
- Area has huge tourism potential with Burnfort Tidy Towns/Village Group starting a programme a number of years ago – Burnfort Village and Environmental Plan
- Impact on scenic walking routes including Glenville mass Rock and Doonpeter Holy Well
- Absence of evidence that walking trails and local tourism would not be impacted
- Most popular path through Knocknaskagh to Killvullen (high point) will be destroyed by the turbines.

- Question if existing pathways in Nagles improved, reduced, or eliminated, will people be discouraged, will applicant allow access, could facilities be upgraded like Ballyhoura
- Request condition is attached that area continue to be available as a local amenity for cyclists and pedestrian and recommend installation of cycle and walking paths, parking areas and seating area.

7.1.14. **Impacts on Schools**

- Proximity to primary schools within the area including Glenville, Burnfoot, Killavullen, Ballyhooly, Carrignavar and Rathduff with construction and access routes interfering with bus collection points for young children which is a safety concern.
- Impact on bus stop given proximity to site entrance.

7.1.15. **Risk from BESS and of Fire/Accidents**

- Main issue is how batteries control the heat they generate and need to avoid cascading failure known as thermal runaway.
- Major problem for fire fighters in event of an accident involving lithium-ion batteries
- Inadequate information on battery storage element;
- Proposal shown to locals was for eight 40 foot containers with 20 now proposed;
- Fire hazard created by scale of battery storage;
- Risk of leak into water supply
- Dangerous up to 12km radius due to deadly emissions from fire and explosion
- Location of fire hazard so close to homes and farms.
- Irish Fire Brigade do not have correct equipment or training to quench a battery storage fire which is unacceptable.
- Lack of emergency Response/action plan/evacuation plans for incidents with no information presented
- No forest fire-flighting system

- Potential impact on air quality from fire/explosion leading to noxious fumes and on water supply from chemical/oil contamination.
- Safety and health management Plan (appendix 3.1 of CEMP) insufficient as does not take account of fire risk within forest
- Creation of firebreaks not detailed;
- Question provisions made for fire control and management
- No details provided on proposed warning system with distances from the BESS site to nearby settlements provided with Glenville closest at 4.9km south.
- Danger of fire from IWT's and substation
- Turbine fires can result in flaming debris
- Increased risk of lightning strikes
- Remote location would mean minimal monitoring and security with potential for vandalism/sabotage
- Risk of fire common with turbines, with applicant would need to insure all the forestry

7.1.16. **Impact on Water Quality, Hydrology & Geology**

- Significant construction works required will lead to contamination and pollution of ground water.
- Impact on significant amount of ground water wells and springs in the area supply water to home and farms as vulnerability of the aquifer to GW pollution increased as overburden removed.
- Water table not addressed in any level of detail in the EIAR.
- Topography of concern as proposal on extremely high and steep ground which gives rise to high-risk subsoil disturbance and potential landslides.
- Peaty deposits and peaty topsoil present yet EIAR states no peat stability assessment undertaken which is negligent given what occurred in Meenbog windfarm in Co. Donegal
- Request condition attached to ensure concrete bases are removed following decommissioning.
- Statement in Para 9.6 of EIAR that site is not sensitive in terms of land soils and
- Proposal would directly contravene aims and objectives of the WFD and SW Regs which require that the water classified as good must not be allowed to deteriorate.
- 4-day site survey not sufficient evidenced by reference at Ch10-23 to identification of two additional streams on the fourth day.
- Not all parts of the site were visited and believed that there may be additional relevant hydrological features yet to be documented.
- Flood risk assessment not sufficiently detailed.
- Cumulative impacts not adequately considered.
- Impact of meteorological mast on water supply at house in Toorgarriffe with issue reported to applicant but no responsibility taken.
- Many of the drains referenced are poorly maintained by Coillte with serious risk of flooding and inability to access areas of the site highlights poor maintenance.

- Potential for run-off to cause soil erosion and sediment release – cannot be allowed to happen due to sensitivity of area. If mitigation measures fail – disastrous impact with proposal heavily reliant on mitigation measures.
- As members of Bord Bia Quality Assurance Scheme water samples must be submitted to demonstrate required standards are met and if water affected milk or beef will not pass required standards. Lot of peat in the ground particularly in Toorgarriffe which is unsteady for turbines;
- Risk of land slippage/peat slide with examples in Donegal, Kerry, Derrybrien with history of landslides in Burnfort area
- Previous cutting of forestry in the area has led to flooding of properties and requirement to spend significant sums of money on drainage works.
- Sites are elevated and overlaps flood risk zones A & B in Fermoy MDLAP 2017.
- Ground water vulnerability at each proposed turbine location (Table 9-10) range from high to extremely vulnerable with potential for ground water to be compromised and a number of private bored wells in the area which will come under threat.
- EPA statement that Ireland's remaining near intact peatlands absorb equivalent of 200,000 tonnes of carbon dioxide a year but process reversed when peatlands degraded resulting in Irish peatland releasing 9.6 million tonnes of carbon dioxide per year with reference to erection of wind farms on upland blanket bog – 'as much of site is likely to be'.

7.1.17. **Visual Impact**

- Previous decision (01/6654) refused on lands including location of T20-T23 and adjoining lands, had less turbines (16) which were substantially smaller (60m) with refusal reason for visual amenity.
- Site close to area of High Landscape Value where WF normally discouraged. VIA fails to explain and confirm actual location of proposal relative to the high value landscape.

- ZTV mapping carried out by applicant (Fig.15.10) shows vast majority of HVL designated lands will have views of a number of turbines. Photomontages taken incl VP4 show blades of 3 turbines cutting the horizon.
- Consider vast majority of lands (esp T2-T15 – conform to hilly and flat farmland and not transitional marginal land and in line with
- Note at s.6.18.2 of draft guidelines that setback distance – one component requiring consideration.
- Concern at height of turbines above houses
- Significant failure on applicants behalf with previous refusal referencing scenic routes with turbines in similar location with smaller turbines.
- VP6i &ii taken along S11 (previously A12) with all turbines visible and contrary to S6.5 of guidelines (2006) some one behind the other on sensitive view points such as scenic views, confusing the view.
- medium Impact for some views incomprehensible as they are visually obtrusive
- Compromising north side of Nagle mountains for limited increase in output with T22, T20-21 and T23 overtopping mountains by 40-120m with extent of visibility to north of range varying
- Skyline issue repeated for many other viewpoints including scenic routes
- Scenic route 12 distracted from by presence of T8 & T2 (road from Knuttery to Bottlehill) creating road safety issue.
- Scenic route S11 completely destroyed (both legs of the route) VP 6i & 6ii.
- As per Fig 12.1 0 Shadow flicker receptor numbers – houses 1,2,3,4,5,8,9,88,90 & 91 much lower ground level than nearly turbines T2 & T8.
- Houses 83, 84 & 85 are much lower GL than T20, T21, T22 & T23 – considerable visual impact on these houses as distance to them is c.1km. (Con Sheehan).
- Reliance on findings of Failte Ireland Surveys in 2008 & 2012 flawed as turbines up to that time no higher than 115m to blade tip and visitors quite a distance from turbines as would be traveling on scenic routes with no windfarms nearby as would not have got planning.

- Turbines in this proposal are adjacent to 2 scenic routes (S11 & S12) at distances of 620m to 3.5km.
- Request photomontages for importance receptors across all areas such as St John's Well, Scenic Route S12 heading from Bottlehill to Killavullen; Tooreen Road as you head up to Bottlehill
- Lack of photomontages from dwellings with views of residents not taken into account
- Light pollution of 24 red lights on night sky and potential for movement of blade to creating flashing effect
- Clearfell of 62.8 hectares will cause a huge change in the landscape with browning of large area of countryside
- Requirement for on-off houses to blend in and not break skyline
- Photomontages taken at locations that lessen visual impact using trees

7.1.18. **Ecology**

- No agreement of landowners to manage their lands in a specified manner for CHMP
- Nagle Mountains was once proposed as an SAC and is again being proposed as an SAC under the current CDP review.
- Competency of experts questioned with number accredited by CIEEM questioned.
- Notable that 2016 on-field surveys/walkover surveys out of date.
- Failure to make greater attempts to gain response from NPWS or An Taisce.
- Proposal will displace nationally significant and important breeding HH population.
- Hen Harrier on amber list of endangered species with NPWS publishing report in 2015 (Hen Harrier Conservation and the Forestry Sector) identifying 15 distinct regions, 8 of which overlap with SPA's and the remaining 7 not part of SPA network with Nagle Mountains one of the 7 regions
- Coillte have failed abysmally to protect HH with conditions of permission ignored.

- Concern that proposal will impact on HH and other birds – disturbance of communities, direct loss of habitat, indirect habitat loss and risk of collision with blades.
- Area of significant importance to the HH with an active nest site in immediate area of wind farm as well as a roost site.
- Many of local farmers in the Glas scheme
- Impact of proposal on Bride Project.
- Refute and reject connotation that local HH breeding population showing evidence of declining numbers of breeding pairs should be used to minimise importance and significance of breeding HH in locality.
- Reference C418-04 (IRL -Birds Case) and C-374-98 (FRA- Basses Corbieres)
- Lack of response from NPWS to EIAR.
- No cumulative impact assessment on highly mobile HH undertaken or presented in NIS.
- Serious concerns over timing of surveys, lack of clearly presented information on hours of survey, methodology for surveys, names and competency of data collectors and representativeness of Vantage point data collection to inform EIAR in relation to sensitive avian receptors.
- Author of collision risk model not criticised, criticism relates to the data upon which model is based with temporal bias in data does not facilitate robust determinant of impacts
- Conservation and Habitat Enhancement Plan deeply flawed.
- Concerns over adequacy of impact assessment of Goshawk and Merlin.
- Blackwater SAC may be 600m south of development boundary but site is intimately connected with it hydrologically with potential for damage to the SAC critically high.
- Proposal will directly contravene EU Environmental Objectives (FWPM) Regulations 2009 – identified the populations requiring protection with largest freshwater pearl mussel catchment in Blackwater.

- Impact on River Bride and tributaries which are prime spawning grounds for Salmonids with EU protection;
- Zone of proposal recognised as drone congregation area for Irish Black Bees – preservation considered critical with modifications to landscapes or additional elevations structures having a potential detrimental effect.
- Detrimental impact on habitat and population of Marsh Fritillary Butterfly – one of Irelands few legally protected butterflies and protected under Annex 2 of Habitats Directive with known colony within 4km of proposed development and likely to be closer.
- Lots of wildlife not recorded – deer, woodcock and no nocturnal studies carried out – barnowl, white tooted shrew,
- Whooper swan excluded from evaluation - Nagle mountains important migratory route to the SPA where WS is an SCI.
- Abnormal loads require works to roads including cutting back of trees and Natura report does not include sufficient corrective or preventative measures to hazards identified to local wildlife and environment
- Spread of Japanese Knotweed in the area with knotweed at entrance to bottlehill forestry affected and has been treated in the past
- Displacement of deer and badger and spread of disease including TB

7.1.19. **Traffic Impacts**

- Stability of road/banks either side of proposed cable trenches from 1.2m excavation with roads left in poor and dangerous condition after installation.
- Impact on traffic/farming operations (milk lorries/silage) school buses during construction given narrow width of roads causing serious issues.
- Impact on local road network from predicted 22,836 additional HGV trips in the area for construction phase.
- No automatic traffic counts on local roads and length of monitoring inadequate.
- Damage caused to local road network from construction traffic over 2 years on local road network
- Impact on narrow historic bridges

- Use of forestry road off L-1219 would impact farm and business with need for uninterrupted access
- Alternative road access available owned by Cork County Council
- Access road to windfarm at Bottlehill has rights of way which cannot be infringed/turf cutting/walking etc. Coillte need to return the old road to the community if they close the forest road
- Previous old road was made unusable in landslide c.1947 with Coillte constructing the existing road and providing rights of way over same. Old road not shown on the maps submitted
- Impact on bus stop close to the forestry entrance.
- Cables required in local roads will impact access to homes and cause road closures
- Proposed one-way traffic systems/use of local roads/upgrade of local roads would cause considerable disruption
- Site entrance – drawing P20-099-0101-0001 shows sightline to south of entrance going through neighbouring property but no letter from property owner showing consent to have boundary cut back
- Serious concerns at turbine delivery route, number of locations where serious remedial works required removal of street furniture/traffic lights/lampposts/widening junctions/traffic disruptions – concerns outlined at impact on Ringaskiddy, urban centres, need for contra flow, land take, hedge removal/boundary removal
- Land take/boundary removal required with no permission provided by landowners with hardstanding required in some areas with impact on surface water
- Potential for cumulative impacts with operation of Landfill – creating significant increase in traffic and impact on use of road by farmers. No cumulative assessment with Greenvalley land reclamation site (entrance on L6957) which causes major issues for road users. – cumulative impact of all the traffic on rural infrastructure not assessed adequately.

7.1.20. **Cumulative Impact with Other Developments**

- Area is taking unfair share of developments with impact on community over 30 years from projects including Bottlehill landfill, existing and proposed M20, composting facility in Coom
- Permission granted for a windturbine in Moneygorm and a 13MW solar farm in Kilcummer which have yet to commence
- Proposal only Phase 1 of further phases.
- Mention of proposal to use lands to generate electricity from PV panels with potential impact from run-off
- Cumulative visual impact with wind turbines in Ballyduff, Watergrasshill not undertaken
- Precedent set by proposal for further development which cumulatively would cause significant impacts.
- Area depreciated by commercial forestry and illegal dumping
- Cumulative impact refers to other windfarms within the wider area concluding cumulative impact is low-negligible but more realistic view is that proposal would reduce spacing, would use up limited environmental capacity as need to compromise leeward side of mountains not obvious

7.1.21. **Impact on Historical/Religious Sites and Cultural Heritage**

- Visual and noise impact on places of worship – including a holy grotto called 'The Grotto of Peace and Reconciliation' close to T2, T4 & T3, Carrig an Aifreann (mass rock) and St John's well which have not been assessed.
- Impact on famine walks from Glenville village to Doonpeter Graveyard
- Glenville is a designated European Village of Tradition and manor village and impact on listed church.
- Impact on Burnfort and proposed Heritage Trail
- Impact on Bronze age wedge-gallery grave at Island;
- Historical records of a battle in late 17th century within bottlehill area.

- One national monument within the stie area – Island Wedge Tomb 2.3km to west of T2 (s.14.3.4.1) with EIAR incorrectly noting no visitor facilities or access exist – well known to local community that tomb is frequently visited.
- Construction phase resulting in extensive ground disturbance has potential to remove or severely degrade archaeological sites and associated surface deposits
- Area is of high archaeological importance and strict conditions required
- Irish national folklore collection records number of folklore traditions associated with the area.
- Location of proposed turbine delivery turning head node in Glashaboy South impact on known location of extant standing stone and recorded location of an Ogham stone with extensive works proposed in the area.
- Considered where mitigation measures have not been identified to alleviate the visual impacts the offending turbines should be removed.
- Impact on Historic landscape which includes Castles such as Monanimy Castle and Carrigacunna which were connected by subterranean passage under the River Blackwater

7.1.22. **Impact on Angling**

- Impact of silt pollution on waterways which are all tributaries of the River Blackwater, destroying spawning habitat for salmon, endangered European eel and wild Irish brown trout, impact on invertebrate life which is the primary source of food for these fish.
- River Bride catchment is significant trout and salmonoid habitat and while some evidence of decline in wild Atlantic salmon stocks, Angling club have collectively formulated proposal to allow some habitat remedial actions that may enhance the spawning grounds. Remain catch and release for salmon to help numbers
- Hosted Munster Trout Championships in 2018 which was catch and release and hope to hold again in future. Imperative that water quality preserved and work with local communities to improve it with good working relationship with farming communities with particular co-operation during the championships.

7.1.23. **Impact on Aviation**

- Notification of IAA on impact to flight path
- Safety of aircraft landing at Cork Airport;
- Impact on search and rescue helicopters flying over the area
- Munster Props, a Cork-base Paramotor Club who fly foot launched powered paragliders (PPG) use Nagle Mountains and Bottlehill as required to fly outside the Cork airport exclusion zone and need high ground for take off and landing where laminar air flow (clean and unobstructed) with proposal obstructing flying space and creating hazardous air conditions
- Questioned if exceeding the minimum vertical clearance distance by 232 feet is enough noting following consultation with IAA number of turbines reduced
- No aviation report provided

7.1.24. **Decommissioning**

- Very little information on decommissioning phase and bond required in event permission granted.
- Disposal of non-recyclable material on decommissioning;
- Means and accountability/responsibility for decommissioning questioned.
- Disposal of turbines on decommissioning/potential financial burden on landowners to remove them;
- Abandonment of concrete bases and borrow pits
- No plan to return the area to woodland for community and propose Board condition developer to remove foundations as well as turbine components once decommissioned.

7.1.25. **Community Gain Fund**

- Seen in other cases that the funds are not given to families directly affected and who live in closest proximity.

- Request that if permission granted that Board impose a strict condition that a committee similar to NVTA Group formed and those living within 2km radius of development receive the funds.
- Any community benefit fund should be directed to those within 1km/2km/3km/5km;
- Those closest should receive the funds;
- No plan from developers to provide localised supports such as monetary compensation to affected dwellings or rural investment funding scheme for sports clubs/community groups
- Details of fund governance not provided or how it is held in trust
- Lack of clarity around compensation fund
- Grants should be documented in advance as to the amount per Kc and number of years it will apply for, should be legally binding and treated as a liability should the current applicant sell the business.
- Burnfort Tidy Town/Village Group want to be identified as a beneficiary

7.1.26. **Other Matters**

- Support submission by Nagle View Turbine Aware Group
- Request Oral Hearing is held in advance of decision
- Sustainability of importing parts;
- Little detail provided on turbines proposed and no detail on high or low voltage and on maintenance
- Outdated OSI map used and mislabelled roads;
- Properties omitted from maps;
- Question why the proposed plans have not been super imposed onto google maps which would provide more detail
- Project is profit driven with profits exported
- Brookfield Renewables recently sold windfarms making profit with no local benefit

- Uncertainty as to how much of the energy produced will go to relevant communities
- Further turbines added in future
- Maintenance of development if it is sold
- Concrete type proposed not detailed with huge environmental difference between types.
- No indication of contribution to Cork Co Co for services and when would be paid.
- No detail of licence required to fell trees required
- Some of replacement forestay (62.8ha to be felled) is to be replaced local to the site (Moneygorm) but 35.5ha to be planted in Wicklow which is not local and surely there should be another local site identified.
- No site specific design drawings provided with generic drawings used in many instances.
- No topographical survey in a number of key locations such as at site entrances.

8.0 **Prescribed Bodies**

Submissions were received from six prescribed bodies and are summarised as follows:

8.1. **Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media**

The submission received is summarised as follows:

- Proposal is not within or adjacent to a European site (cSAC, SAC, pSPA or SPA), or a designated or proposed Natural Heritage Area (NHA or pNHA) but it is an area used by breeding hen harrier, a species listed in Annex I of the EU Birds Directive, and to which the obligations of Article 4 of that Directive applies, namely to strive to avoid deterioration of habitat outside protected areas (SPAs). Matters raised in relation to hen harrier are made in the context of the Environmental Impact Assessment to be undertaken
- Proposal is within the catchment of the Blackwater River (Cork/Waterford) candidate Special Area of Conservation (cSAC no. 21701). The River Bride part

of the catchment, in which the proposed development is mainly located, is particularly important for salmon, otter and lamprey species (Fig 2-1, p.29, pages 1037-1045; Appendix 1 of Appendix F of NIS).

- There is an issue of bird and bat mortality due to collision and/or barotrauma (bats) with operational turbine blades. This is an issue particularly for hen harrier and Leisler's bat.

Hen harrier habitat

- Strength of data collected for EIAR for this species is particularly commendable and valuable (particular reference made to statements in Chapter 8, p. 97 of EIAR clearly showing the importance of the area for breeding hen harrier, and noted that part of the Nagles Mountains were at one stage considered as an indicative area for Special Protection (SPA) designation for this species.
- Department cannot agree with the conclusion (p. 188 of the EIAR) that: "*Given a distance of at least 500m from known breeding areas displacement and disturbance are unlikely*" as hen harriers are known to regularly hunt 4 km from their nest sites, particularly in landscapes such as this, where there is a relatively low availability of suitable habitat.
- It is recommended in hen harrier breeding areas that suitable foraging habitat occurring within 250m of operational turbines will be subject to disturbance displacement (i.e. harriers will avoid this area), and no net loss of habitat will be required by creating alternative habitat elsewhere where it will not exist otherwise. The EIAR states (Chapter 8, p. 210) that "*hen harriers do use areas close to turbines*", but no evidence is provided of their use or success in capturing prey (strike rate, etc.) within 250m of an operational turbine. Neither is any evidence produced to support the claim by the EIAR (p. 210) that the 250m displacement is only "theoretical".
- A number of on-site and off-site measures are proposed (mentioned briefly in the EIAR p. 285), but their likely comparative success is not assessed (i.e. compared to no intervention), before concluding that the proposed wind-farm will have an imperceptible impact on hen harrier.
- The details of the new habitat and off-site measures are provided in Appendix 8-K (Conservation and habitat management plan). Five areas are selected for habitat management:

1. 118.4 ha of existing heath and bog (aerial photo in EIAR Appendices p. 681);
2. 14.4 ha heath/wet grassland/scrub (ditto, p. 682);
3. 2.4 ha wet/improved grassland (ditto, p. 683);
4. 5.7ha wet grassland/scrub (ditto, p. 684);
5. 30.5 ha wet grassland (ditto, p. 685).

- However, the largest of these areas (no. 1) is existing heath and bog that would provide hunting/foraging habitat in any case, so it cannot be considered as equivalent habitat and cannot be considered as net gain. A revised habitat management plan is required, otherwise a significant negative impact on hen harrier is likely. At a minimum the current value as habitat needs to be compared with the value under proposed management; if a 50% increase in hunting success can be scientifically predicted as a result of heath/bog management, for instance, then 118.4ha/2 (= 59.2 ha) is still required.

Water discharges in catchment of Munster Blackwater cSAC

- Reference to Surface Water Management Plan (Appendix F), during construction: "Tree felling, new site access roads, turbine hard-standing areas, the on-site sub-station and other new, hard surfaces have the potential to contribute to an increase in run-off and release of sediments in the watercourses." These watercourses drain into the River Bride part of the Blackwater River (Cork/Waterford) cSAC (Fig 2-1, p.29 NIS).
- Upland wind-farms have been constructed in the climatic conditions prevailing in south-west Ireland for approx. 20 years, many of which have had commitments and conditions requiring water quality monitoring but little or no performance data from previous wind-farms is cited in EIARs and NISs such as that presented here, nor are there cited examples of proven best-practice within the region with the key issue whether what is being proposed will work effectively and be implemented thoroughly.
- Enforcement, where necessary, can sometimes be complicated by difficulties accessing documentation arising from measures conditioned to be 'agreed with the planning authority'. This Department is aware of anecdotal information concerning good water quality in drainage from one wind-farm site in Co. Kerry which used small rock-constructed, cellular, lined access-road sediment traps, which were regularly emptied by vacuum tanker but this is not proposed here,

and further information is recommended on whether such a design is feasible for the drainage of access roads and other excavated areas.

- All proposed directional-drilling crossings of watercourses appear (from Fig. 3-3, p. 48, NIS) to be in the catchment of the River Bride rather than the catchment of the Munster Blackwater River.

Hen harrier: collision risk

- The model results (uncertainty of prediction unknown) predict 0.0055 hen harriers killed due to collision per season (p. 598 of Vol. 3 Appendices – Biodiversity) which is based on Scottish Natural Heritage (SNH) guidance but in 2017, SNH produced a guidance document entitled *Wind farm proposal on afforested sites: advice on reducing suitability for hen harrier, merlin and short-eared owl*.
- Over the next 35 years, the use of the areas proposed for turbine location may change, with changes in the landscape, leading to high uncertainty of predictions based solely on recent use and not clear if the output of the model would be different if the future changes in forestry cover were taken into account. Further information on this question would be useful. No assessment provided of the collision risks of guy wires of the two proposed meteorological masts (EIAR Chapter 3 p. 42) to hen harriers.

Mortality of Leisler's bats

- Large proportion of European population of Leisler's bat occurs in Ireland and like all bats are strictly protected species listed in Annex IV of the EU Habitats Directive and flies regularly at rotor-swept height. EIAR Chapter 8 p.217 records frequent use of some of the proposed turbine locations by this species, and indicates that a significant risk of mortality, due to collision and barotrauma, may exist before mitigation. The mitigation proposed (EIAR, 8: 274-276) is '*operational curtailment'* at turbines T11, T18 and T21, where mitigation is achieved "*by increasing the cut-in speed of turbines*", or "*by feathering turbines below the cut-in speed*".
- While monitoring is proposed, it is recommended that a condition such as the following be included to ensure compliance with these commitments: "Annual reports of monitoring of bat mortality, as per the EIAR (8: 276), will be forwarded to the Cork office of the National Parks & Wildlife Service (NPWS). Safe access

to the wind-farm site by authorised officers of the NPWS, to inspect the operational curtailment and feathering of relevant turbines will be facilitated."

Recommended Further Information is as follows:

(a) Whether rock-structured, lined, sediment traps can be used along road drains for sediment control, and can there be a commitment to ensure that these are regularly cleaned out during the construction period prior to establishment of sufficient vegetation cover. If so, please provide an indicative map of the spacing of these traps, relative to drain slope.

(b) Whether further genuinely new replacement hen harrier hunting/foraging habitat can be provided to ensure there is no net loss of habitat due to disturbance displacement, during the lifetime of the wind-farm. If so, please provide a revised Conservation and Habitat Management Plan.

(c) Taking into account the SNH (2016) guidance, please assess if the output of the collision risk model for the hen harrier will be different if future changes in forestry cover are taken into account. Also, please assess the risk of unmarked guy wires of meteorological masts to collision by hen harriers.

8.2. Irish Water

The submission received is summarised as follows:

- Notes a portion of proposal is located upstream of the River Blackwater which may include a hydrological pathway or link to an Irish Water river intake downstream forming part of a Source Protection Area, the Fermoy-Coolroe Public Water Supply which includes the existing Coolroe Water Treatment Plant.
- Critical that any and all surface/ground water source(s) within proximity are protected from any possible pollution arising from the proposed wind farm development and proposed a condition if permission granted as follows:
    - Requirement of the Water Framework Directive that waters used the abstraction of drinking water are protected so as to avoid deterioration in quality. The applicant shall ensure that there will be no negative impact to any of Irish Waters Drinking Water Source(s) which may be in proximity to the development during both construction and operational phases and any future decommissioning of the development.

- Applicant shall ensure that groundwater source(s) are protected so as to avoid deterioration in quality and ensure no negative impact to any Irish Water groundwater source(s) which may be in proximity to the development ruing both construction and operational phasis and any future decommissioning to ensure compliance with Groundwater Directive (80/68/EEC)
- Connection agreement must be signed with Irish water where any connection to public water and wastewater infrastructure sought.
- Development to be carried out in compliance with Irish Water standards codes and practices.
- Irish Water does not permit building over their assets. Any proposal to build over or divert existing water or wastewater services require details are submitted to IW for assessment with written confirmation of feasibility from IW required prior to commencement of any works.
- Separation distances as per IW standards, codes and practices must be achieved in terms of IW infrastructure.

8.3. An Taisce

The submission received is summarised as follows:

- Strategic development of appropriately located wind energy development is a national climate action priority.
- At same time, onus on applicant and in determination of application by the Board to ensure compliance with the Environmental Impact Assessment and Habitats Directive.
- Onus on Board through the EIA process to ensure the adequacy of information provided by the developer on impacts and mitigation measures and through the AA process that there will be no adverse impact on European sites or relevant Annexed species.
- Needs to be established that application has entered into appropriate engagement with the local community.

8.4. Inland Fisheries Ireland (IFI)

The submission received is summarised as follows:

- Noted that majority of the proposed development footprint encompasses two major tributaries of the Munster Blackwater, namely the River Bride and to a lesser extent that of the Clyda with some of proposed cabling routes and the northern development boundaries skirting the catchments of the Ross river and other more minor tributary catchments.
- While noting and recognising the range of relevant mitigation measures with regard to surface water protection included within the application EIAR, recommends that all construction activity is compliance with our own guidance document *"Guidelines on protection of fisheries during construction works in and adjacent to waters"*. Effective employment of relevant mitigations as included in the document, during the design, construction and operational phase of the proposed windfarm, are essential to the long-term protection of the fisheries resource. More specifically forestry operations, land preparation, and all construction practices involved in turbine hard-standing areas/foundations, roads, cabling routes and associated watercourse crossings should all incorporate pollution prevention measures including the systematic monitoring and where necessary augmentation of same during the active construction phase.
- Noted in NIS that a number of the aquatic survey sites are described as being of low fisheries significance with IFI stressing that given the fisheries significance of the larger catchments that the development lies within, that all mitigation measures relevant to the protection of aquatic habitat are equally applicable at all locations where the development is in close proximity to watercourses in order to protect the fisheries resource downstream from on-site pollution incidents or direct habitat degradation.
- With the above in mind IFI considers it appropriate to further summarise a number of fisheries issues commonly encountered during large scale civil projects such as windfarm development.
- **Physical interference with watercourses:** No interference or alterations (drainage or otherwise) without prior consultation with IFI. In-stream works, if required, should only take place during the period July to September inclusive.
- **Prevention of discharges of polluting matter such as cement.** Uncured concrete can kill fish by altering the pH of the water. Pre-cast concrete should be used whenever possible, to eliminate the risk to fish. When cast-in-place

concrete is required, all work must be done in the dry and effectively isolated from any water that may enter watercourses for a period sufficient to cure the concrete.

- **Prevention of silt loss to watercourses.** One of the potential impacts from the development is the discharge of silt-laden waters to watercourses. The silt can clog salmonid spawning beds and can also precipitate further riverbank erosion downstream. Inevitably this can lead to loss or degradation of valuable habitat. It is important to incorporate best practices into construction methods and strategies to minimise discharges of silt/suspended solids to waters.
- Silt traps should be constructed at locations that will intercept run-off to watercourses. The silt traps should not be constructed immediately adjacent to natural watercourses. A buffer zone should remain between the silt trap and the watercourse with natural vegetation left intact so as to assist silt interception. To remain effective, silt traps must be regularly maintained. Indeed the best engineered silt mitigation measures are more prone to neglect and will ultimately, if neglected, silt up and cease to function.
- All natural watercourses that have to be to traversed during site development work should be effectively bridged prior to commencement of the main body of construction on the site. The crossing of watercourses at fords is unacceptable because of the amount of uncontrolled suspended solids generated instream and the unmitigated introduction of same from adjoining roads. Measures must be put in place to prevent silt run-off with drainage networks created concurrent with the active road construction.
- **Watercourse crossing structures.** Any new structure or structural modification must ensure the free passage of migratory fish species. Bridging should be of a nature that will not interfere with the natural streambed, stream width or its gradient. Clear span designs maintain the stream channel profile, do not alter stream gradients, readily pass sediment and debris, and retain the natural stream bed and gradient. Water velocity is not significantly changed, and they can be designed to maintain the normal stream width. As stated above the crossing of watercourses at fords is unacceptable ***Culvert pipes are not generally acceptable in fish bearing waters.***

- **Hardcore areas.** The increased volumes of surface water runoff from hardcore areas must not impact on the river habitat by giving rise to erosion, attenuation measures should be designed to avoid damaging discharges during flood events.
- Monitoring of ground stability is kept under constant review in areas such as those influenced by new hard-standing areas or road chainage or drainage networks, and that those site development works are carried out in such manner as not to result in unstable ground conditions, or subsequently lead to critical instability and the occurrence of landslides.
- **Borrow pits/Borrow pit materials** While the use of borrow pits is accepted as practical in the provision of fill materials for hard-standing areas, road augmentation and material storage, the quality of materials excavated for use may be a potential source of surface water pollution. Where dirty aggregate with significant finings is sourced and used in road and hard-standing areas there then exists a short and medium term risk of significant suspended solids run-off which may overburden silt mitigation measures due to the volume or nature of the subsoil materials. IFI would recommend that a measure of scrutiny or approval system to assess the suitability of borrow pit sourced materials be in place to avoid such incidents. Where excavated materials are found to be substandard in this regard controlled washing at the borrow pit may be required or if this is impractical then the importation of materials should be considered. This would avoid the undesirable occurrence of dirty road materials being washed en-situ by precipitation, which has, unfortunately, been the experience of IFI on a number of occasions when inspecting the temporary and permanent road construction projects in sensitive upland areas high in river catchments.
- **Storage of fuels/oils etc.** All storage areas should be adequately bunded and hydrocarbon interceptors placed in locations to contain potential spillages on loading/working areas.
- **Biosecurity** The employment of effective bio-security measures during the construction phase are an important mitigation against the introduction and spread of invasive species. Notable invasive aquatic and riparian plant species can be introduced during the construction phase via contaminated machinery and topsoils. Taking further note that the development location is near the headwaters of a number of tributary catchments, any such introduction would have particular

potential to allow the spread of an invasive downstream and affect the greater river catchment.

- In the event that the project is granted permission and then proceeds, Inland Fisheries Ireland would anticipate on-going liaison during the course of the construction phase with the developer, their appointed designers and construction contractors via site inspections and meetings in order to ensure effective compliance with all fisheries related mitigations.

8.5. Transport Infrastructure Ireland

The submission is summarised as follows:

Haulage Routes

- Board should be aware that the network to be traversed includes national roads the responsibility of the relevant County Councils in their capacity as road authorities and also sections of the M8 national road subject to Direct Route PPP Company and Motorway Maintenance and Renewals Contract.
- TII advises that any works, including reinstatement works, to existing junctions on the national road network shall comply with standards outlined in TII publications and shall be subject to Road Safety Audit as appropriate and subject to outcome of the RSA, the TII has no objection in principle to proposals but works should ensure the ongoing safety for all road users and safeguard the strategic function of the national roads concerned.
- Notes and supports mitigation included in the EIAR which should be conditioned with a further condition recommended regarding consultation with relevant road authorities and Direct Route PPP (outlined above).

Structures

- An abnormal load assessment requried to assess the impact of any abnormal weights loads where the load weight falls outside the limits allowed by the Road Traffic (Construction Equipment & Use of Vehicles) Regulations 2003 (S.I 5 of 2003).
- Where abnormal loads are proposed, with specific reference to structures on national roads on any proposed haul route, all structures should be checked to confirm their capacity to accommodate any abnormal weight load proposed.

- Condition recommended seeking a full assessment of structures on roads of any proposed haul route prior to commencement.

Cabling/Trenching

- Cable routing should avoid all impacts to existing TII infrastructure such as traffic counters, weather stations, etc and works required to such infrastructure shall only be undertaken in consultation/agreement of TII.
- Experience of TII is that grid connection accommodated on national roads has the potential to result in technical road safety issues such as differential settlement due to backfilling trenches with impacts on ability and cost of maintenance.
- Noted that proposal seeks that the cable follows the route across the M8 to Barrymore with limited details on proposed M8 crossing provided (refer sections 3.5.8.1 and 3.6.5.2 and Plate 13-9). TII recommends that planning authority should be satisfied matter is addressed satisfactorily before any decision. General requirements for directional drilling under a motorway are set out.
- Condition recommended requiring an agreement and works specific deed of indemnity from TII and Direct Route is required for proposed motorway cable crossing prior to commencement.
- Stated that Board should be aware that any works to national roads including those subject to motorway designation may require licence and other consents.

8.6. Irish Aviation Authority

Two submissions have been received from a number of Departments within the IAA as follows:

Engineering Department (11 January 2021)

Observations of IAA Engineering Department that the wind farm is within Cork ILS 16 (LOC 16) coverage area and might have an impact on ILS 16 flight check profiles. FCSL are current flight checking company. Required FCSL (flight checker) to complete an assessment. (FCSL contact details are provided).

Aerodromes Department (18 January 2021)

Observations of IAA Aerodromes Department that the Safety Regulation Division of the Authority is aware that the IAA's Air Navigation Service Provider Engineering Section will furnish separate observations in relation to this development relating to

the requirement for further assessment of the flight checking profiles. Subject to that requirement being satisfied appropriately and in the event of planning consent being granted, the applicant should be conditioned to:

(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 (template provided).

(3) notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.

9.0 Planning Authority Submission

A submission was received from Cork County Council on 26 February 2021 in accordance with Section 37E(4) of the Planning and Development Act, 2000 as amended. It comprised a report from the Chief Executive and a Record of Proceedings of Cork County Council held (via MS Teams) on 22nd February 2021. They are summarised as follows:

9.1. Chief Executives Report

The report of the Chief Executive which includes reports from Departments within the Local Authority is summarised as follows:

The report includes sections on the following which I have addressed in the preceding sections of this report which I indicate in brackets in order to avoid undue repetition.

9.1.1. Site Location Overview

(see section 2 above)

9.1.2. Description of Development

(see section 3 above) includes reference to proposal, proposed grid connection route, proposed turbine delivery route and location of Protected Heritage Sites and features of Archaeological, Architectural & Cultural Heritage **(see various sections of this report).**

9.1.3. **Policy Context and Guidance**

(see section 5 above) which includes reference to the following:

EU Directives and Polices

- EU Renewable Energy Directive 2009/28/EC
- European 2020 Strategy for Growth
- 2030 Climate and Energy Framework
- Energy Roadmap 2050
- Recast Renewable Energy Directive (RED2)
- European Green Deal

National Policy

- Climate Action and Low Carbon Development Act 2015
- Project Ireland 2040: The National Planning Framework
- Project Ireland 2040: National Development Plan 2018-2027
- Climate Action Plan 2019
- Climate Action and Low Carbon Development (Amendment) Bill 2020
- Department of Environment Heritage and Local Government Planning Guidelines for Wind Energy (June 2006)
- Draft Revised Wind Energy Guidelines (Published for Consultation on 12th December 2019)
- National Landscape Strategy for Ireland 2015-2015 (DAHG)
- 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)

Regional Level

- Southern Regional Spatial and Economic Strategy (RSES)

County Development Plan and Local Area Plans

- Cork County Development Plan 2014-2020

- Kanturk/Mallow MD Local Area Plan
- Cobh MD Local Area Plan

9.1.4. **Planning History**

(see section 4 above)

9.1.5. **Reports of Internal Departments**

Reports of Internal departments included as Appendix A are summarised in Part V of the PA report which I summarise as follows:

9.1.5.1. **Report of Area Engineer (Kanturk Municipal District)**

Entrance - Existing Coillte Entrance of the LP-1219, main entrance for the delivery of the turbines to the Bottlehill/Mullenaboree side. The existing entrance is not to standard and applicant has shown sight lines of 160m in both directions, 3m back from the edge of the public road but has not shown or mentioned anything regarding the reduction of objects or structures >1m over the public road within the sight distance triangle. There are banks and trees in both directions that may need to be removed. Also, the set back from the edge of the road should be 4.5m for trucks and not 3m. Applicant to submit revised sight lines for the Bottlehill/Mullenaboree entrance to show sightlines with a set back of 4.5m and showing what needs to be done to reduce objects or structures to reduce objects or structures to <1m over the public road within the sight distance triangle. If other landowners are involved a letter giving permission to carry out works to their property should be submitted.

Delivery Route - Some temporary works are needed to accommodate these trucks - mainly removing of signs and cutting back vegetation, mainly at the junction where they turn off the N20 and along the L-2951 & L-1219.

Surface Condition - Damage will be done to the road network during the development of this windfarm and therefore a bond will need to be paid by applicant to ensure the road surface can be renewed after completion of the works. Assessment of the road surface before and after to be agreed with the Area Office. Total Cost of upgrading the road network for delivery = €514,810. A bond of €257,000 or 50% of the cost should be paid by Developer which can be partially or fully refunded.

Surface Water - Evidence that surface water runs off the Coillte road onto the public road L-1219 and damage has been caused to the edge of the L-1219 heading towards Killavullen because of this. The applicant has proposed putting a culvert under their entrance road and an interceptor ditch further up the private road to stop water flowing towards the public and a roadside swale on the northern side of the private road. All these are to prevent water flowing onto the public road.

Conditions proposed.

9.1.5.2. **Report of Area Engineer (Cobh Municipal District)**

No public water supply, public sewerage facilities or public storm sewer supply serving the location.

Locus and location of T3 and potentially T5 appear to fall within Flood Zone A and B with a full flood risk assessment report required.

Conditions recommended including special contribution or bond for damage done to road network with overall cost estimated at €561,600 with special contribution or bond of 50% of cost to be paid.

Precondition survey of roads and bridges required.

9.1.5.3. **Report of Area Engineer (Fermoy Municipal District)**

No public water supply, public sewerage facilities or public storm sewer supply serving the location.

No turbines located within any flood risk zones for areas in Fermoy MD.

Heightened concern locally that this is Phase 1 of multiple phases owing to the original design of 39 turbines. The operational planning request of 30 years goes against the established 25 year time limits consistently given across the county and the extra 5 years could be seen as lending itself to additional applications for further turbines in the interim, which we should not be facilitating as it is goes against the wishes of the community and agreed vision and spirit of wind powered electricity in the region.

The applicant committed to zero shadow flicker at residences, so far as possible, where turbines will be programmed to cease operating when there is potential for shadow flicker.

Note the consent document sent out to landowners and sent to ABP makes reference to 16 wind turbines only. This refers to the 16 turbines located on Coillte Owned Lands. There are 6 other turbines located on third party lands.

Permanent Met Masts Construction works associated with met mast installations shall be subject to the same traffic management requirements as per the energy park construction.

A lot of grid connection LP route has been upgraded in the last no. of years and is now good condition. It is appropriate to levy a bond of €50,392 as a special contribution to safeguard this 16.7km of route on the public road network.

Damage will be done to the road network during the development with a bond required from the applicant to ensure the road surface can be renewed after completion of the works.

Assessment of the road surface to include Bridge surveys before and after to be agreed with the Area Office.

Total Cost of upgrading the road network for delivery = €1,389,216 with a bond of €694,608 or 50% of the cost to be paid by Developer which can be partially or fully refunded with a further bond of €50,392 is required for the grid connection and construction phase damage this will cause.

Believe appropriate based on a contribution of €184K that was levied on 14 turbines in Castlepook to levy 50% of the rural road network upgrade on this development. The costs, broken down would approximate to; €1,389,216 – overall cost of haul / construction traffic route upgrades * 50% = €694,608 + bond for interconnector route;

Bond of €694,608 or 50% of the cost should be paid which can be partially or fully refunded with a further bond of €50,392 required for the grid connection and construction phase damage this will cause. Total charge - €745,000 which in itself is a considerable sum but is dwarfed when one considers that the project is costing/valued in excess of €210M.

Road Condition Survey: a pre-condition survey will be carried out on all public roads and bridges.

No history of bog failures or peat slips that I am aware of in this locality.

9.1.5.4. **Report of Senior Engineer (12 February 2021)**

Many of the roads on the approaches to the proposed windfarm are in poor structural condition requiring extensive rehabilitation.

The type of resurfacing proposed is road renewal/rehabilitation consisting of double surface dressing on binder course on wet mix macadam. Estimated cost €37 per m2. This will apply to roads in poor structural condition requiring extensive rehabilitation.

Table provided outlining each road, length and width of the road and the cost which totals €4,090,309 with estimate of special contribution required on this basis €2,045,154.

9.1.5.5. **Ecologist Report (undated)**

- Outlines the considerations underpinning the report and the primary considerations from an ecological perspective in relation to the proposal.
- Stated that a full assessment of the potential impacts and effects in relation to Hen Harrier and Bats, cannot be completed as PA does not have full access to all the relevant data referenced within the EIAR.
- Project description and site description provided.
- Outline of the contents of the NIS and reference to the AA screening reports/NIS's included as appendices for the replant lands in Co. Cork and Co. Wicklow and the turbine delivery routes which are also outlined.
- Findings within EIAR Biodiversity Chapter outlined.
- Primary considerations from an ecological perspective are
    - Potential for the proposed development to give rise to negative effects on designated sites.
    - Potential for the proposed development to give rise to negative effects on freshwater habitats and species.
    - Potential for the proposed development to give rise to negative effects on populations of protected species including Hen Harrier and Bats.
- potential to pose a significant risk to water pollution, changes to flow regimes and disturbance/displacement of species, associated with both the construction and operational phases.

- Releases of contaminants in surface waters have the potential to directly affect riverine habitats and aquatic species, and to give rise to indirect impacts on other species including Otter and birds.
- consider applicants have submitted enough information to allow the assessment of the possible implications of the proposed development on freshwater habitats and species.
- While concerns regarding such a large proposal, with a hydrological connection to watercourses within the highly sensitive catchment of the Blackwater, this office considers that the mitigation measures and procedures to be implemented should provide sufficient protection of water quality and aquatic fauna.
- Due to the potential significant risk of increased contamination and/or sedimentation of watercourses located within the highly sensitive Blackwater catchment and while the principle of the mitigation measures proposed look reasonable and sufficient, it is recommended that details of environmental monitoring and surface water monitoring programs should be assessed and confirmed by competent person from a technical point of view in terms of specification and design and thus agreed with and resolved prior to a grant of permission.
- Advised that due to the hydrological connection of the site to Salmonid habitat, turbidity monitoring should be conducted daily during the construction phase.
- While EIAR conclusion that the proposal will constitute a permanent negative impact on higher value habitats at a local scale, with a significance of effects on these habitats during construction being not significant reasonable in relation to the habitats themselves, however, concerns that the loss of habitat overall as a result of the proposal may have significant negative direct and indirect implications on populations of Hen Harrier and Bats which are found within the locality.
- Figures related to bats referenced within EIAR have not been provided to PA and no ability to fully assess the potential impacts of the proposal on bats.
- Recorded levels of bat activity at this site are relatively high and not satisfied that even with mitigation measures, that there will not be a significant impact on the local Bat population.

- EIAR states that preconstruction bat surveys do not provide an accurate prediction of bat activity post-construction which raises concerns as it may lead to variations of routes through the site bringing Bats within closer proximity to turbines and at a greater risk of collision and/or barotrauma. Additionally, barrier effects through the loss of habitat e.g. removal of edge and/or linear habitat utilised by commuting bats has not been addressed within the EIAR with concerns that at a worst case, this could result in the abandonment of roost sites recorded within the vicinity of the development and increased mortality rates.
- Given the high utilisation of the site by Bat species, including Leisler's bat which will forage and commute through open spaces at height, not satisfied that the proposal will not have a significant impact on the local bat populations even with mitigation measures. Also concerned that attempting to apply and enforce a number of measures described e.g. curtailment strategy's in relation to wind speeds, temperature etc. by way of condition attached to a planning permission would not, in reality, be feasible or easily enforced.
- Noted that due to the highly sensitive nature of breeding Hen Harrier data, all the relevant data referenced within the EIAR has been withheld and PA is not able to fully assess the potential impacts of the proposal on Hen Harrier.
- Clear from data provided that proposal is located within an upland area of north Cork known to support breeding Hen Harrier on a recent and historical basis with the population surviving in one of the most heavily afforested breeding areas in Ireland meaning that the breeding population can decline and increase cyclically corresponding to the availability of foraging and nesting habitat.
- Based on information from 2015 National Survey of Breeding Hen Harrier in Ireland would appear that both wind turbines T2 & T3 were within 500m of nest sites, T5 was located approximately 750m from closest nest site and T23 was located approximately 1,600m to nearest nest site. As noted within the EIAR, 2km is considered the core foraging habitat range for female adult Hen Harrier during the breeding season and hence this 2km is considered the realistic zone of influence (ZOI) of the development and concerned as to whether the proposed mitigation is sufficient and adequate to avoid significant impacts on breeding Hen Harrier.

- Concerns that EIAR takes into consideration a 92m cleared zone around each turbine, (30.4ha in total), as potential foraging habitat that could offset the permanent habitat loss (31.95ha) as a result of the proposal. Not acceptable to take this into consideration when assessing the impacts of the proposal on Hen Harrier. As is stated within the EIAR the 30.4HA close to turbines is unlikely utilised, given available research indicates displacement of foraging (100m) and flight behaviour (250m) close to wind turbines as reported in the literature with other reports that disruption may occur up to 500m from a turbine.
- Additionally, prey availability is an important factor in determining the usage of a site by Hen Harrier with small birds make up a significant proportion of the Hen Harrier diet during the breeding season. Bird densities have been found to be lower at wind farm sites and particularly lower within 100m of the turbines. Naturally with the clearance of forestry as a result of the proposal will also result in a decrease in densities of prey species associated to these habitats.
- Availability of alternative suitable foraging habitat (heath, rough grassland) has declined significantly in recent decades in the area resulting in significant pressures on the Hen Harrier population and an even greater dependency on pre-thicket conifer plantations. Foraging habitat analysis conducted as part of the EIAR shows that of the 13 nest sites (2014-2019) recorded within 2km of the CGEP only two are located within a 2km foraging range of habitat above the 30% suitable habitat threshold required for an area to be attractive to Hen Harrier. This is of significant concern as it indicates the level of considerable pressure that Hen Harrier are under within the area and that the remaining foraging habitat, coupled with increased pressures from the proposal itself, is unlikely to have the carrying capacity to sustain a population of breeding Hen Harrier along with other competing species e.g. Merlin, Owls and Kestrel.
- Local Hen Harrier breeding population is showing evidence of declining numbers of breeding pairs (EIAR) with enhancement measures proposed to improve foraging habitat quality in the wider region of the windfarm development to offset Hen Harrier foraging habitat loss as a result of the proposal by way of providing 5 Management Areas. Concerned that the proposal to offset the loss of habitat as a result of a windfarm through the creation of habitat and/or management of

species elsewhere is not in accordance with recommended best practise (SNH 2018).

- Do not consider that the proposed Management Areas will offer significant additional foraging habitat above what currently exists. The areas earmarked as Management Areas consist of habitats that are already of potential value as foraging habitat to Hen Harrier and as such are likely to be already utilised by the local population and also concerned that the proposed Management sites are largely located outside the core foraging area (2km) of occupied nesting territories, with one Management Area potentially being utilised or having been utilised as a nest site already.
- Significant redesign required to offset the significant impact on Hen Harrier and Bats
- While consider issues should be resolved prior to any grant of permission, conditions (6) requested have been outlined including (1) that turbines within 500m of active or historical hen harrier nesting sites and associated connection tracks, hardstanding areas shall be omitted, (2) ecological protection plan. (3) revised Conservation and Habitat Management Plan.

9.1.5.6. **Environment Department (29/01/2021)**

Air (EIAR Chp 6)

Summarizes details provided.

Noted that Table 6.7 and Table 6.9 in respect of presented data for Particulate matter (PM10) and Carbon Monoxide (CO) are headed ‘Particular Matter (PM10) data Carlow Town and Carbon Monoxide Data for Carlow Town 2004-2005 respectively which should be clarified.

Items the Bord may request or seek further clarification on:

1.) In respect of Chapter 6, It should be noted that the accompanying tables namely Table 6.7 and Table 6.9 in respect of presented data for Particulate matter (PM10) and Carbon Monoxide (CO) are headed ‘Particular Matter (PM10) data Carlow Town and Carbon Monoxide Data for Carlow Town 2004-2005 respectively. This should be clarified.

2.) In the context of dust nuisance/soiling impacts on receiving receptors that may have the potential to arise during both the construction phase and potentially during the decommissioning phase, it should be clarified by the developer if it is proposed or if any background dust monitoring has been conducted in the vicinity of the proposed development. This could be used to quantify the existing Environment and as a baseline for any future monitoring undertaken to support and evaluate the effectiveness of the proposed mitigation measures.

Noise and Vibration

Having regard to the specific nature of Wind Farm noise impact assessment, I would respectively suggest that the Bord should seek their own acoustic expertise to peer review the methodologies and modelling followed in the noise impact assessment.

In terms of providing clarity it would be beneficial if a noise contour map was included, detailing the study area relative to the proposed turbines.

Respective locations and distances of all noise sensitive receptors within 500m,1000m, 1500m and 2000m of the turbines should be presented and quantified, with all occupied, unoccupied and permitted dwellings identified. Dwellings that have a specific interest in the project and are associated with it should also be highlighted.

In terms of clarification, the potential number and location of dwellings impacted should be confirmed.

Prevailing background noise is higher at lower wind speeds and in keeping with Institute of Acoustics guidelines the lowest derived background noise level is adopted for all wind speeds where this derived minimum occurs. The possible reason why this may have occurred should be clarified by the applicant having regard to any inspections undertaken during the course of the monitoring and analysis of the data sets.

It should also be clarified why there is no data entry in respect of prevailing background night-time noise level at monitoring location N17 at 3 m/s.

In respect of the comment under Appendix 7,Table A7.1.8, (Prevailing background noise during night-time periods), it is submitted as an example that at monitoring location N2, the lowest derived background noise level occurs at wind speed of 5m/s. This may be a type error and should be clarified as it does not appear to be

consistent with the night time period data and curves submitted for monitoring location N2.

Several receptors were identified as farm buildings or unoccupied derelict buildings and these were not considered as part of the impact assessment and were not assessed against the derived daytime and night time noise levels. It is not indicated how many receptors were within these categories.

In respect of Table 7.16, it would allow and also provide for ease of reference if an extra column was inserted alongside the Receptor ID column identifying the applicable background noise monitoring reference location. As an example, if we take the 1st receptor identifier in Table 7.16, namely R10, by reviewing the daytime limit applied in Table 7.16 and cross referencing back against the derived daytime noise limits as per Table 7.5. it would appear by review that the background noise monitoring location deemed representative of this location would be monitoring location Ref. N11. This location as per Appendix 7.1, is located at receiver R4. While acknowledging that it is submitted that the locations presented in Table 7.16 represent the dwellings with the highest noise levels for each of the 18 monitoring locations, this should be more clearly illustrated, shown and clarified. A clear trail should be presented and evident between the selected background noise monitoring locations, the clusters of identified receptors they are deemed to be representative off and the dwellings within such clusters with the highest noise levels for each of the 18 selected noise monitoring locations.

in relation to Receptor ID R71, Table 7.16, page ref. 32 of 44, the inputted daytime noise limit at wind speeds of 3m/s and 4m/s respectively is 35 dB(A) LA90. I assume that this is a typo error and should be 37.5 dB(A) based on the noise limit criteria adopted in section 7.4.2. and derived noise limits as per Table 7.5.

Noted from a review of Table 7.16 that the predicted noise levels exceed the day time applied noise limits at 7 locations.

In terms of a further analysis of the above if for example we take Receptor ID R56, where from referencing back to Table 7.1.2, Appendix 7.1., monitoring location N10 was located. The prevailing background day and night levels recorded in respect of this location at 6 m/s from Table 7.4 (prevailing background noise during daytime periods) and Table A7.1.8 (Appendix 7.1 -Prevailing background noise during night-time periods) were 29.8 dB(A) and 28.4 dB(A) respectively. The respective predicted

levels for daytime and night-time per Table 7.16, ref. page 33 of 44, are 38.9 dB(A). This equates to a subsequent noise level increase of 9.1 dB(A) and 10.5 dB(A) respectively. Similarly, if we take Receptor ID R122 where from referencing back to Table 7.1.2, Appendix 7.1, monitoring location N18 was located. At 7 m/s wind speed, the existing background day and night levels recorded in respect of this location from Table 7.4 and Table A7.1.8 were 29.9 dB(A) and 25.8 dB(A) respectively. The respective corresponding predicted levels for daytime and night time per Table 7.16 are 39.5 dB(A). This equates to a subsequent increase of 9.6 dB(A) and 13.7 dB(A) respectively. At a wind speed of 6 m/s, the existing background day and night levels recorded in respect of this location from Table 7.4 and Table A7.1.8 are 27.5 dB(A) and 23.3 dB(A) respectively with a predicted level at this wind speed of 38.8 dB(A). This equates to a subsequent daytime increase of 11.3 dB(A) and night-time increase of 15.5 dB(A) respectively.

Items the Bord may request or seek further clarification on:

1.) A noise contour map detailing the study area relative to the proposed turbines. In addition the respective locations and distances of all noise sensitive receptors within 500m, 1000m,1500m and 2000m of the turbines should be presented and quantified, with all occupied, unoccupied and permitted dwellings identified. Dwellings that have a specific interest in the project and are associated with it should also be highlighted. For the purpose of completion the number of receptors that were identified as farm buildings or unoccupied derelict buildings and were not considered as part of the impact assessment and not assessed against the derived daytime and night time noise levels should also be quantified and indicated.

2.)The referenced noise sensitive receptors that each background noise monitoring location is considered to be representative off should be quantified and also shown on a suitably scaled map. A clear trail should be presented and evident between the selected background noise monitoring locations, the clusters of identified sensitive receptors they are deemed to be representative off and the dwellings within such clusters with the highest noise levels for each of the 18 selected noise monitoring locations.

3.) It is submitted as per Section 7.4.1 that in some cases, the prevailing background noise is higher at lower wind speeds and in keeping with Institute of Acoustics guidelines the lowest derived background noise level is adopted for all wind speeds

where this derived minimum occurs. The possible reason why this may have occurred should be clarified by the applicant having regard to any inspections undertaken during the course of the monitoring and analysis of the data sets.

4.) It should be clarified why there are no data entry results in respect of prevailing background night -time noise levels at monitoring location N17 at 3 m/s Ref. Table A7.1.8.

5.) In respect of the comment under Appendix 7,Table A7.1.8, (Prevailing background noise during night-time periods), it is submitted as an example that at monitoring location N2, the lowest derived background noise level occurs at wind speed of 5m/s.). This may be a typo error and should be clarified as it does not appear to be consistent with the night time period data and curves submitted for monitoring location N2.

6.) In relation to construction noise impact, It is noted as per Table 7.11 in respect of the grid connection works, that in some instances the maximum predicted levels may be above the applied and adopted noise limit of 65 dB LAeq 1 hr. It is submitted that these elevated noise levels will only occur for short durations at a limited number of dwellings. Mitigation is proposed which includes the usage of a temporary barrier or screen in cases where the works are to occur over an extended period. In terms of clarification, the potential number and location of dwellings impacted should be confirmed.

Conditions

Conditions related to noise and air are recommended.

9.1.5.7. **Environment Department (Potential Impacts on surface and ground water) (29/01/2021)**

Summaries the hydrology and water quality, land use & soils, and ground water vulnerability considerations as well as outlining the details in the CEMP and SW Management Plan as well as the method statements included.

Potential Impacts which have been identified by the applicant on water quality are outlined;

It is concluded that the applicant has submitted detailed proposals to protect water quality during the construction & operational stages of this proposed development.

The CEMP & Surface Water Management Plan will be finalised following the appointment of the contractor for the main construction works.

No objection to grant of permission on environmental grounds with conditions recommended.

9.1.5.8. **Traffic and Transportation Department (undated)**

Construction Traffic – HGV Traffic

Details should provided showing how the daily HGV trips have been calculated as the breakdown in Figure 13-7 is unclear.

Indicative haul routes are also shown in Figure 13-5 – however, this figure only appears to show limited sections of possible haul routes.

Limited detail provided on the quantities of imported/exported materials required during the construction phase.

Detailed site investigations will need to be carried out to establish the quantity of site won material that will be available during construction – this information will be required to adequately establish the accuracy of the HGV movements provided in the EIAR.

Construction Phase – LGV Traffic

To offset the potential impact of LGV traffic, the following is recommended;

• start times on site should be before 8.00am and/or after 9.00am

• finish times on site should be before 4.30pm and/or after 5.30pm

Transport of Wind Turbines

Details for the construction of lay-bys and other mitigation measures for transport of wind turbines should be prepared in consultation with the Traffic and Transportation Section's of Cork County Council and Cork City Council and include but not be limited to the following junctions:- N8/R635 junction & N20/New Bottlehill Road.

Grid Connection works

Full details of the construction traffic generated by the works associated with connection of the proposed development to the Electric Ireland Network (as shown in Figure 3 below) should be provided to the Traffic and Transportation Section of Cork

County Council including timelines for construction and the cumulative impacts with overall construction program for the proposed development.

Grid connection works should be planned to avoid conflicts with other major activities on the main construction site such as concrete foundation pours and large component deliveries.

Traffic Management Coordinator

Appointment of the Traffic Management Coordinator should occur prior to the approval of permission by the Bord.

Traffic Management Plan

Traffic and Transportation Section of Cork County Council should have an active role in the preparation/review of the Traffic Management Plan (TMP).

Detailed timeline for the preparation of a TMP should be provided to Cork County Council prior to the approval of permission by the Bord.

9.1.5.9. **Archaeology (17/02/2021)**

- No objection, satisfied with and concur with the assessment in the EIAR and associated documentation.
- Recommending mitigation measures recommended in the EIAR secured by condition.
- Requested that a condition be imposed requiring the method statement be sent to the County Archaeologist for agreement prior to submission for licence to the National Monument Service of the Department Housing Local Government and Heritage.

9.1.6. **Comments on EIAR & NIS**

- Provides an overview of the introduction, the need for development, reasonable alternatives (Chp 1 & 2).
- Description of development (Chp 3) is outlined noting it does not provide the make and model of proposed turbine which is dictated by a tender process.
- Review of Policy and Legislation outlined (Chp 4) noting project consistent with national, regional and local policy subject to number of considerations.

- Scoping, Consultation and Key Issues (Chp 5) outlined noting ABP should take into account the degree to which the applicants have meaningfully and properly consulted with the local community and facilitated public participation.
- In relation to Air & Climate (Chp 6), reference is made to report of Environment Department in relation to Air (summarised above at Section 8.2.5.6), noting that it should be clarified if it Is proposed or if any background dust monitoring has been conducted in the vicinity of the site which could be used to quantify the existing environment and as a baseline for any future monitoring undertaken to support/evaluate mitigation measures.
- In relation to climate cumulative benefit of proposal with other renewable energy proposals in reducing carbon dioxide emissions recognised.
- On noise, (Chp 7), reference is made to report of Environment (summarised above at Section 8.2.5.6), with much of the Environment report restated.
- Comments on Biodiversity (Chp 8) and the Natura Impact Statement refer to the report of the Ecologist which is summarised in Section 8.2.5.5 above.
- Land, soils and geology (Chp 9) is outlined and to ensure proposed mitigation measures are sufficiently robust particularly with regard to slope instability and landslides, ABP should ensure an assessment of the geotechnical information is carried out by a suitably qualified person.
- On Hydrology and Water (Chp 10) reference is made to comments from Area engineers requiring conditions on surface water and public roads and the location of T3 & T5 within Flood Zone A/B which should be addressed with a full risk assessment required for all works within Cobh MD (section above in S.8.2.5.2).
- Population, Human Health and Material Assets (Chp 11) matters addressed under other topic headings, also noted moderate temporary impact on tourism with temporary closure of forestry trails. Stated that applicant should be requested to provide an comprehensive fire safety assessment for the battery storage facility to be carried out by a suitably qualitied technical adviser. Safety and health management plan proposed should be secured by condition.
- Shadow flicker is outlined (Chp 12) noting that two permitted but not yet constructed dwellings within the study area were not considered and should be

identified and included in the assessment. Any permission should include conditions requiring mitigation measures to ensure zero shadow flicker attained.

- Traffic and Transportation (Chp 13) includes references to the internal reports outlined at Section 8.2.5 with elements of same detailed.
- In terms of Archaeology and cultural heritage (Chp 14) reference is made to the County Archaeologist Report (S.8.3.5 above) who recommends a number of conditions.
- Findings of Landscape and Visual (Chp 15) summarised as is the main areas of focus in the draft guidelines and policy in CDP with area not within area of high value landscape but area to north and northwest is with number of scenic routes.
    - The report looks at landscape impact with views protected from S12 not impacted. In terms of S11 (VP6iii), concern at stacking of linear group of 4 turbines (T5, T6, T10 & T14) leading to visual clutter and confusion which should be addressed. Spacing and location of turbines in Views VP6ii and 7i reduces impact. Irregular spacing, clustering and location in relation to topography and largely confined to one landscape type largely accord with draft Guidelines.
    - Noted earlier iterations of design with turbines on northern ridges visible from Blackwater Valley removed with proposed siting and design successfully addressing issue raised with Blackwater Valley which should be part of any consideration if amendments required.
    - In terms of visual impact reference is made to the sensitive receptors noting that assessment has been carried out in absence of information regarding location of any potential dwellings of landowners whose land is included in the development site and who have provided written consent to applicant stating no objection in terms of visual impact and in absence of such information dwellings within Fig 11 assessed.
    - Additional visuals considered to be required from receptors 83,84 & 85 (where nearest existing VP12 is downhill) with concern at collective visual impact from cluster of turbines T18-T20 & T22 & T23.
    - Receptor 9 – collective visual impact from T2, T4, T7 & T8.

- Receptors 36 & 37 – no visuals provided with properties elevated overlooking Bottlehill cluster with concern at collective visual impact.

- Impacts on Telecommunications and Aviation (Chp 16) outlined, noting mitigation strategy proposed to ensure local telecommunications will not be adversely affected. Low risk of impact associated with aviation.
- Conclusion of Interactions of Foregoing (Chap 17) outlined.

9.1.7. **Key Issues & Overall Considered View**

Stated that this element of the report should be read in conjunction with previous parts of the report. For ease of reference I will summarise the sections and the conclusion as follows:

9.1.7.1. **Principle of Development**

- Consistent with the current energy and planning legislation and policy
- Project will assist in meeting national renewable energy targets and will also result in significant reductions in carbon emissions.
- Local level, the site within an area identified as that “open for consideration” for windfarm development subject to number of considerations.

9.1.7.2. **Air/Climate**

- Clarify if it is proposed or if any background dust monitoring has been conducted in the vicinity of the proposed development.
- Table 6.7 and Table 6.9 in respect of presented data for Particulate matter (PM10) and Carbon Monoxide (CO) are headed ‘Particular Matter (PM10) data Carlow Town and Carbon Monoxide Data for Carlow Town 2004-2005 respectively. This should be clarified and amended.

9.1.7.3. **Noise/Vibration**

- A noise contour map detailing the study area relative to the proposed turbines advised.

- Respective locations and distances of all noise sensitive receptors within 500m, 1000m,1500m and 2000m of the turbines should be presented and quantified, with all occupied, unoccupied and permitted dwellings identified and dwellings that have a specific interest in the project and are associated with it should also be highlighted.
- Number of receptors that were identified as farm buildings or unoccupied derelict buildings and were not considered as part of the impact assessment and not assessed against the derived daytime and night-time noise levels should also be quantified and indicated.

- Referenced noise sensitive receptors that each background noise monitoring location is considered to be representative of should be quantified and also shown on a suitably scaled map. A clear trail should be presented and evident between the selected background noise monitoring locations, the clusters of identified sensitive receptors they are deemed to be representative of and the dwellings within such clusters with the highest noise levels for each of the 18 selected noise monitoring locations.
- Stated at Section 7.4.1 that in some cases, the prevailing background noise is higher at lower wind speeds and that in keeping with Institute of Acoustics Guidelines, the lowest derived background noise level is adopted for all wind speeds where this derived minimum occurs. Clarification required on the possible reason why this may have occurred having regard to any inspections undertaken during the course of the monitoring and analysis of the data sets.
- Clarification on why there are no data entry results in respect of prevailing background night-time noise levels at monitoring location N17 at 3 m/s (Table A7.1.8).
- Please clarify the contents of Appendix 7, Table A7.1.8, (Prevailing background noise during night-time periods), where as an example, it is stated that at monitoring location N2, the lowest derived background noise level occurs at wind speed of 5m/s which would not appear to be consistent with the night-time period data and curves submitted for monitoring location N2.
- Potential number and location of dwellings impacted by construction noise impact, (Table 7.11) in respect of the grid connection works which may in some

instances be above may be above the applied and adopted noise limit of 65 dB LAeq 1 hr should be outlined.

- If ABP decide to grant planning permission any noise limits imposed by condition should be in accordance with noise limits detailed in the draft revised Wind Energy Guidelines to protect residential amenity in accordance with best practice.
- Acoustic expertise may be required to peer review the methodologies and the modelling followed in the noise impact assessment.

9.1.7.4. Ecology/Biodiversity

- Significant concerns in relation to the potential impacts and effects that the proposed development will have on populations of Hen Harrier and Bats within the locality and their ability to maintain viable populations
- Planning Authority not convinced that the mitigation measures proposed are sufficient to offset the impact on protected species with any significant impacts on protected species contrary to the provisions of the Cork County Development Plan, in particular Objective HE 2-2.
- A redesign and layout of the scheme is likely to be required to offset the significant impact on Hen Harrier and Bats.

9.1.7.5. Land, Soils & Geology

- ABP should ensure that an assessment of the geotechnical information be carried out by a suitability qualified person to ensure that the proposed mitigation measures are sufficiently robust in particular with regards to slope instability and landslides,

9.1.7.6. Water & Hydrology

- Locus and location of Turbine No. 3 and potentially Turbine No. 5 fall within Flood Zone A and Flood Zone B and the application should address this accordingly.

9.1.7.7. Population, Human Health & Material Assets

- Applicant should be requested to provide a comprehensive fire safety assessment for the proposed battery energy storage system (B.E.S.S.). This assessment should be carried out by a suitably qualified technical advisor.
- Proposed safety and health management plan, this should be secured by condition.

9.1.7.8. Shadow Flicker

- Assessment relates only to existing sensitive receptors and does include any permitted but not yet constructed development within the study area with two properties within the study area which have been granted planning permission but have not yet been constructed. While the guidelines refer to assessing the impacts on existing sensitive receptors, it is considered that the applicant should ensure that any permitted but not constructed dwellings or other sensitive receptors within the study area should be identified and included in the assessment.
- If An Bord Pleanála decide to grant planning permission then it is considered that any conditions imposed with regards to shadow flicker should require the applicant to implement mitigation measures to ensure zero shadow flicker is attained and therefore protect residential amenity in accordance with best practice.

9.1.7.9. Traffic & Transportation

- Recommended that the applicant is requested to provide details showing how these daily HGV trips have been calculated as the breakdown in Figure 13-7 is unclear. Indicative haul routes for types of materials and plant that will need to be delivered to the site are shown in Figure 13-5 of the EIAR, however, this figure only appears to show limited sections of possible haul routes, further information on this point should be sought from the applicant.
- Limited detail is also provided on the quantities of imported/exported materials required during the construction phase. Detailed site investigations will need to be carried out to establish the quantity of site won material that will be available during construction, this information will be required to adequately establish the accuracy of the HGV movements provided in the EIAR.

- Traffic Management Coordinator appointment should occur prior to the approval of any permission on site and recommended that the applicant is requested to confirm the details of this appointment.
- Revised drawings should be sought from the applicant showing sight lines for the Bottlehill/Mullenaboree entrance with a set back of 4.5m and detailing what needs to be done to reduce objects or structures to <1m over the public road within the sight distance triangle and if other landowners involved, consent to be submitted.

9.1.7.10. **Landscape and Visual Impact**

- Particular concern about the linear group of four turbines on the left hand side of viewpoint VP6iii (from S11), - Turbines 5, 6, 10 and 14. The visual impact of the stacking of these four turbines one behind the other in such a linear manner will be significant when the turbines are in operation and rotating. It is considered that this will lead to visual clutter and confusion and the applicant should address this.
- If any amendments to the proposal are considered then care should be taken to ensure that it does not impact on the high value landscapes and scenic routes within the Blackwater Valley.
- Additional viewpoint visuals are required to ensure a full assessment on the visual impact of the following properties (receptors) can be undertaken. There are concerns about the collective visual impact of nearby clusters of turbines on these properties:
    - Receptors 83, 84 and 85
    - Receptor 9
    - Receptors 36 and 37

(Location and reference numbers of these dwellings are taken from the map located within the EIAR at Chapter 12- page 7).

9.1.7.11. **Conclusion**

Considered view of the Planning Authority is that based on the information submitted and the detailed assessment provided above that further information should be sought by the Board to enable a full assessment of the application to determine the acceptability or otherwise of the proposed development. The key issues which the

Planning Authority deem relevant are set out as points of note in this report, which the Board may wish to investigate further and/or follow up with a further information request

9.1.8. Conditions, Community Gain and Contributions

9.1.8.1. Conditions

Stated that the conditions that are outlined below are for the most part based on an assumption that any issues forming the basis of further information requests have already been dealt with. They are recommendations for conditions more as a topic heading, rather than an exhaustive list as follows:

• Requirement for a Construction Environmental Management Plan;

• Noise and vibration monitoring programme;

• Designated member of company's staff to interface with Planning Authority and Public regarding complaints or queries in relation to environmental emissions;

• Control light nuisance from safety/navigation lights on turbines;

• Limits on hours of operation of construction activities to mitigate noise and vibration and traffic congestion;

• Noise surveys

• Noise conditions to comply with limits set in Draft Revised Wind Energy Guidelines (2019);

• Shadow Flicker –Mitigation to ensure zero shadow flicker;

• Dust monitoring, limits and controls during construction phase;

• Surface water and ground water protection;

• A comprehensive fire safety assessment of the Battery Storage be undertaken;

• Safety and Health Management Plan

• Construction management plan and traffic management plan;

• Advanced notice of requirement for road closures and speed limit restrictions;

• Provision of evidence of appropriate liability and indemnity insurance for works to public roads;

• Details and requirements for reinstatement works to public roads;

• No dust, mud or debris from the site carried onto the public footpath or road and road cleansing;

• Adequate sight lines at all entrances;

• Archaeological monitoring of ground works;

• Archaeological method statement to be submitted to the County Archaeologist prior to submission to the Department;

• Requirement for pre-commencement road surveys;

• Consultation and agreement with Local Authority regarding Turbine Haul Route;

• Consultation and agreement with Local Authority regarding Grid Connection Works;

• Requirement for a Traffic Management Co-Ordinator;

• Requirement for a Traffic Management Plan;

• Requirement for a peer review of the geotechnical information.

• Requirement for a peer review of the submitted noise assessment.

• Removal of all turbines within 500m of active or historical hen harrier nesting sites and associated connection tracks, hard standing areas etc;

• Requirement for an Ecological Protection Plan;

• Requirement for a Revised Conservation and Habitat Management Plan;

• Survey of Breeding Hen Harriers;

• A survey for breeding sites and resting places of protected terrestrial species, in particular Bats (all roost types), Otter, Badger, Red Squirrel and Pine Marten, will be carried out prior to construction works commencing.

• Bond for reinstatement/decommissioning of turbines.

9.1.8.2. **Community Gain**

Proposal is outlined. Recommended to the Board that should it decide to grant permission for the proposed development, a condition should be attached clearly detailing the structure, particulars and procedures under which funding and grants are to be administered and implemented.

9.1.8.3. **Contributions**

The total general contributions due are stated to be €17,136.00. It is stated that many of the roads on the approaches to the proposed windfarm are in poor structural condition requiring extensive rehabilitation, to address this a special contribution of €2,045,15 is required.

9.2. Record of Meeting of Cork County Council

The Chief Executive sought the views of the Members on the proposed application and the views of the Members are summarised as follows:

- Expressed concerns about the impact on the area especially for the residents of Glenville, Kilavullen and Ballyhooly
- Meeting energy goals important but cannot override planning concerns
- Area known for scenic and environmental importance which would be impacted
- Threatens survival of hen harrier
- Wind energy guidelines need to be updated
- Similar development proposed in 2002 in general area was turned down
- Serious ecological impacts in a sensitive area
- Huge impact on health of the community & the environment
- Acknowledged that permission refused in this area recently for houses
- Concerns raised about noise the turbines would generate
- Concern about the visual impact of the proposal
- Concerns regarding the consultation carried out with the communities
- Proposed location is known for its prime agricultural land for dairy farming with the development impacting this.
- Some Members, while in favour of wind energy, stated turbines should be placed offshore
- Supported wind energy, but the current application was in the wrong location
- Members spoke of how offshore wind energy would affect fishermen's livelihoods.

It was resolved: "*That this Council recommends rejection of this application from Coom Green Energy Park Ltd based on concern for human health, and on environmental and ecological grounds and its negative impact on designated areas*

of special conservation, and that this recommendation is attached to the Planning Authority's report to An Bord Pleanála together with the Meetings Administrator's record of the meeting".

10.0 **Further Information & Response**

10.1. **Details and Particulars**

Request - Details of Proposed Turbines – **Part 1**

It is noted that the development description as set out in the statutory notices refers to a maximum tip height of 169 metres and a maximum rotor diameter of 138 metres. To enable the Board to determine the application please confirm the nature and extent of the development for which permission is sought, by reference to plans and particulars which describe the works to which the application relates, in compliance with the relevant provisions of the Planning and Development Regulations 2001 as amended.

Response - Details of Proposed Turbines – **Part 1**

Detailed response provided in Appendix 1 which outlines the range proposed for the 22 turbines proposed.

Design of met Masts altered to provide free standing without the proposed guy wires in original application.

Request - Details of Proposed Turbines – Part 2

If the development for which permission is sought incorporates a range of options, please indicate clearly in the application documentation the detail of all such options and confirm that each option has been fully assessed within the application documentation including within the Environmental Impact Assessment Report and Natura Impact Statement.

Response - Details of Proposed Turbines – **Part 1**

Both EIAR and NIS reviewed.

Table 2-1 provides an EIAR Chapter review. The following Chapters have been updated:

- *Air Quality & Climate;*
- *Noise & Vibration;*
- *Biodiversity;*
- *Shadow Flicker; and*
- *Landscape & Visual Impact*

Table 2-2 reviews the AASR/NIS noting assessment has been updated. A revised NIS is attached as Appendix 3 and a revised Collision Risk Model (CRM) is attached as Appendix 1.2.

Request – Details of Proposed Battery Energy Storage System

While it is noted that Drawings P20-099-0300-004, 005 &006 which relate to the proposed substation compound at Lackendarragh North and Drawing P20-099-0300-007 provide details of the battery energy storage system, this element of the proposed development is not outlined in any detail in Chapter 3 'Description of Proposed Development' of the EIAR other than a summary reference at Section 3.5 (pg 4/5) and a brief outline at Section 1.2 within the introduction. While the BESS is detailed in other chapters of the EIAR such as at Section 11.7.3, It is noted that Chapter 3 which describes the development, and which addresses the onsite Electricity substations at Section 3.15.10 and Electrical Cabling at Section 3.5.11, does not address the proposed Battery Energy Storage System which is proposed within the site compound of the proposed Lackendarragh North substation.
(a) Please provide a sufficient description of the proposed Battery Energy Storage System.

Response – Details of Proposed Battery Energy Storage System

A detailed description of the proposed BESS is provided in Section 1.2 of the further information report. This is summarised in Section 3.1.8 of the Development Description above.

Request – Details of Proposed Borrow Pits

Similar to the matter addressed above, it is noted that Drawings P20-099-0300-0010, 0011 & 0012 relate to the three proposed borrow pits, and while the proposed borrow pits are outlined in summary detail in Section 9.3.2.3 of the EIAR this element of the proposed development is not outlined in any detail in Chapter 3 of the EIAR other than a summary reference at Section 3.5 (pg 4). The 'Description of Proposed Development' which addresses the elements of the development in some detail does not reference the proposed borrow pits.
(a) Please provide sufficient details to facilitate an assessment of the proposal.

Response – Details of Proposed Borrow Pits

A detailed description of the proposed BESS is provided in Section 1.3 of the further information report. This is summarised in Section 3.1.9 of the Development Description above.

Request - Receptors within the vicinity of the Site

(a) Figure 11-2 presented in the EIAR is stated to detail the receptors within the vicinity of the proposed development. Section 11.3.1 of the EIAR states that there are 2 planning consents within 1.38km of the turbines, however these are not shown.
Response – Re-examination of the planning search and survey of the receptors within the vicinity of the proposed development, we confirmed that the 2 planning consents refenced within 1.38km of the turbines in Chapter 11 of the EIAR were included in error which has since been rectified by the revision and updating of the House Survey. An up-to-date planning search and survey of receptors within the study area of the proposed application site has been prepared and completed. Derelict sites identified during previous surveys have been re-examined to confirm their current status. Buildings have been classified as Residential; Commercial; or Combined Residential and Commercial; The updated survey included a review of new planning applications and receptors identified by the revised house survey are presented in Figure 1-1. The findings of this revised and updated housing survey

found two permissions for additional commercial units which are extensions to existing receptors and one additional residential receptor (Planning Reg. Ref: 215559) has been identified within the designated buffer zone, as indicated by the arrow in Figure 1.1, below. The updated findings of the planning search and additional receptors have been included within the Receptor and Constraints Map in the further information response.

(b) Furthermore, it is not clear whether the properties, residential or commercial or both of those landowners within whose property the turbines are proposed are included on Figure 11-2. Please address these matters.

Response - classification of the receptors in question are identifiable as Residential, Commercial and combined 'Residential *and* Commercial' within the updated Figure 11-2 for the EIAR (Appendix 4 of FI response). The colours for each of these types of receptor is identified in the legend.

(c) A number of submissions suggest that there are more than 115 receptors within the study area identified in Figure 12.1. Please respond to this matter.

Response – Figure 12-1 in the EIAR identifies a total of 95 receptors within 1.38km of the turbines. A total of 115 receptors have been assessed and identified within the revised housing survey with observers' assertion that there are more than 115 reviewed but no evidence to substantiate assertions and may be due to misclassifying residential, commercial and derelict receptors.

(d) It is also stated that the 20 buildings classed as uninhabited/derelict/otherwise insensitive to shadow flicker, which have not considered as part of assessment, have not been identified. Please respond to this matter.

Response - 8 receptors are classified as derelict in their current condition and evaluated during a site visit and regarded as insensitive to the location of the turbines as they are currently un-occupied and are not eligible to be part of the assessment

but are in the updated Figure 1-1. The reference to 20. receptors in item 4.1(d) has also been addressed, as the remaining 12 receptors have been accounted for.

10.2. Biodiversity

Request - Hen Harrier

As a species listed on Annex I of the EU Birds Directive, the Board must ensure that any assessment of impacts to this species is fully in-line with the provisions of that Directive. While the proposed development is outside of any Special Protection Area for hen harrier, the Nagle Mountains are of significance for the species.

As set out in the Submission received from the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media (Development Applications Unit), which you will have received, the Department state that they cannot agree with the conclusion (p. 188 of the EIAR) that: "Given a distance of at least 500m from known breeding areas displacement and disturbance are unlikely" as hen harriers are known to regularly hunt 4 km from their nest sites, particularly in landscapes such as this, where there is a relatively low availability of suitable habitat.

Furthermore, they outline that the EIAR states (Chapter 8, p. 210) that "hen harriers do use areas close to turbines", but no evidence is provided of their use or success in capturing prey (strike rate, etc.) within 250m of an operational turbine. Neither is any evidence produced to support the claim by the EIAR (p. 210) that the 250m displacement is only "theoretical".

In addition, the Department note that a number of on-site and off-site measures are proposed (mentioned briefly in the EIAR p. 285), but their likely comparative success is not assessed (i.e. compared to no intervention), before concluding that the proposed wind-farm will have an imperceptible impact on hen harrier.

You are requested to respond to these matters raised.

Response – Hen Harrier

Section 2.1 of response to further information report outlines the response to same. An updated Conservation and Habitat Management Plan (CHMP) is included as Appendix 5 of the response.

Request - Vantage Point Surveys

Please clarify what standard methodology was used to inform the Vantage Point flight activity surveys and indicate any deviation from standard best practice.

Please provide the rationale/methodology regarding the daytime survey timings within which vantage point surveys were undertaken, particularly as it relates to the hen harrier.

Please provide the name and expertise of the data collector/observer in the Avifauna Survey – Vantage Point Survey Watch Results provided in Appendix 8-A as per the requirements of Article 5 Paragraph 3 of the EIA Directive as amended.

Response - Vantage Point Surveys

Section 2.1.1 of response to further information report outlines the methodology used.

Statements of Authority for the ecologists (10 persons) who undertake the bird surveys including vantage point bird flight assessment provided.

Request - Hen harrier: collision risk

Please clarify if the hen harrier collision risk model took account of future changes in forestry cover in the Study area and if not please address with regard to the Scottish Natural Heritage (SNH) guidance 2017 document entitled Wind farm proposal on afforested sites: advice on reducing suitability for hen harrier, merlin and short-eared owl.

Please provide an assessment of the potential collision risks of guy wires of the two proposed meteorological masts to hen harriers.

Response - Hen harrier: collision risk

Revised Collision Risk Model included as Appendix 1.2 which addresses impacts arising from changes in forestry cover.

Revised met mat design provides guy wires are removed.

Request - Conservation and Habitat Management Plan

(a) Off-site Measures

The details of the new habitat and off-site measures are provided in Appendix 8-K of the EIAR with five areas selected for habitat management. However, as outlined by the Department the largest of these areas (No. 1) is existing heath and bog that would provide hunting/foraging habitat in any case, so it cannot be considered as equivalent habitat and cannot be considered as net gain.

Therefore you are requested to justify its inclusion as an area of net gain or submit a revised habitat management plan.

(b) Plan Implementation

Concern has been raised that the lease agreement referenced as part of the Conservation and Habitat Management Plan (Section 7.2 Consent) has not been included with the application thereby it is not clear whether the proposed mitigation in respect of the off-site hen harrier forage habitat enhancement measures (Figure 4.2) can be implemented appropriately. Please respond.

You are also requested to provide further details in respect of the proposed monitoring of the effectiveness of the off-site hen harrier forage habitat enhancement measures proposed.

Response - Conservation and Habitat Management Plan

CHMP reviewed and revised with new Plan included at Appendix 5. Legal letter attaching regarding legal interest and monitoring addressed at Section 8 of Plan.

Request - Sediment Traps

(a) You are requested to clarify whether rock-structured, lined, sediment traps can be used along road drains for sediment control, and can there be a commitment to ensure that these are regularly cleaned out during the construction period prior to establishment of sufficient vegetation cover. If so, please provide an indicative map of the spacing of these traps, relative to drain slope.

Response - Sediment Traps

Reference made to EIAR and SW management plan submitted and Figures 2-1 to 2-4 of response provides pictures and plans for the proposed silt traps and check dam. The proposed spacing of silt traps is provided at table 2-1.

10.3. Noise

Request

(a) Submissions received by the Board in respect of the subject application, including the report from the Planning Authority, include a number of reports prepared by Acoustic/Related Consultants/Experts which critically assess the information provided in Chapter 7 of the EIAR and related appendices. You are requested to review the submissions and respond/clarify accordingly.

Response

Appendix 2 Section 3.2 Issue 4 responds to the report of the Planning Authority and Section 5.3 responds to the reports submitted by Acoustic/Related Consultants/Experts.

Request

(b) Specifically, you are requested to submit a noise contour map detailing the study area relative to the proposed turbines. In addition, the respective locations and distances of all noise sensitive receptors within 500m, 1000m,1500m and 2000m of the turbines should be presented with all occupied, unoccupied and permitted dwellings identified including dwellings that have a specific interest in the proposed development included.

Response

Noise contour map included in Appendix 4 of the RFI response.

10.4. Landscape

Request - Classifications

(a) Table 15-3 of the EIAR outlines the Landscape Impact Significance Matrix which the preceding paragraph notes is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. While Tables 15-1 & 15-2 describe the classifications for sensitivity and magnitude, there is no such description for the classifications used in Table 15-3. Similarly, Table 15-5 outlines the Visual Impact Significance Matrix, with the same classifications as those within Table 15-3, with Table 15-4 categorising magnitude value and sensitivity. To facilitate a thorough assessment of the analysis undertaken, you are requested to present a description of the classifications provided in Table 15-3 and 15-5.

Response - Classifications

Response outlined in Section 4.1 of the report.

Request - **Visual impact on receptors**

(a) Receptors 36 & 37 – As outlined by the Planning Authority, no visuals have been provided in the vicinity of this cluster of dwellings (as referenced in Figure 12-1 in the EIAR) and it is noted that VP15 & VP16 are at a considerable remove. You are therefore requested to provide a photomontage from these receptors.

Response - **Visual impact on receptors**

Two additional photomontages included at Appendix 1.4 to address these receptors.

Request - Other Matters

(a) Reference is made in the consideration of cumulative impacts at Section 15.10.1 of the EIAR to the Barranafaddock Wind farm which it is stated is 23km east in the Knockmealdown range. It is noted that this windfarm is not included in the Table outlining projects considered in the cumulative assessment in Appendix 2 and therefore clarity should be provided as to whether it is referred to by another name in that Table or if not if the relevant details could be provided for the development.

Response - Other Matters

Response at Section 4.3 noting that Barranafaddock wind farm was 'only mentioned in passing' and is not within the study area.

10.5. Land, Soil and Geology

Request - Classifications

(a) Table 9-5 of the EIAR outlines the Ratings of Significance of Impacts for Geology/Hydrogeology (NRA 2009). To facilitate a thorough assessment of the analysis undertaken, you are requested to present a description of the classifications provided in Table 9-5.

Response – Classifications

Response provided at Section 5.1 of the report with description of classifications provided.

10.6. Aviation

Request

(a) Observations have been received from the Irish Aviation Authority including the IAA Engineering Department. You are requested to address their requirements in respect of the potential impact on the Cork ILS 16 (LOC 16) coverage area.

Response

FCSL Impact on ILS Flight Inspection report included at Appendix 6.

Request

(b) You are also requested to clarify the following: Section 16.5.2.5 of the EIAR - Construction Phase – states that "no scoping response was received by the IAA or DAA citing any concerns with the proposed development despite multiple attempts at engagement It is considered therefore that there will be no significant effect on aviation from the proposed development". However, both Table 16.1 and Section 16.4.1 refers to correspondence received from the Irish Aviation Authority. Please clarify.

Response

Section 6b of the RFI response report refers stating that it is clarified that no scoping response was received from the IAA or DAA. The text in Table 16-1 and Section 16.4.1 of the EIAR states that a scoping response was received from the IAA, when in fact the consultation with the IAA was separate to the scoping process.

Request

(c) Section 16.7 of the EIAR states that "During the development of any large project that holds the potential to effect telecoms or aviation, the Developer is responsible for engaging with all relevant Telecoms Operators and Aviation Authorities to ensure that the proposals will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the Developer for each individual project is responsible for ensuring that the necessary mitigation measures

are in place. Therefore, as each project is designed and built to avoid impacts arising, cumulative impacts are unlikely".

The consideration of cumulative impacts provided in relation to the above, refers to the process by which cumulative impacts should be addressed rather than a consideration of any cumulative impacts. You are therefore requested to provide a consideration of the cumulative impact of the proposal with the other developments referenced.

Response

Section 6c of the RFI response report refers with Table 6-1 providing a cumulative assessment.

10.7. Roads and Entrances

Request

(a) Reference is made at Section 13.4.2 of the EIAR to the site entrances and in particular to the proposed use of four entrances. However, as is outlined in further detail in the following point, only three drawings have been submitted of three of the four proposed entrances. While it is understood that the fourth proposed entrance is the existing entrance serving the Bottlehill facility you are requested to provide a drawing of the entrance arrangement.

Response

Previously submitted site entrance drawings (Drawing Ref. P20-099-0101-0001 to P20-099-0101-0003 inclusive) were reviewed and a new revision of these drawings submitted with an additional site entrance layout illustrating the existing Bottlehill facility entrance arrangement (Drawing Ref. P20-099-0101-0004) also included - all drawings included in Appendix 4

Request

(b) While the entrance layout drawings submitted are noted, you are requested to provide detailed drawings of the proposed site entrances (Bottlehill & Mullenaboree, Lackendarragh and Knockdoorty) including the proposed sightlines and setbacks. You are also requested to provide the rationale in respect of the setbacks proposed.

Response

Drawings as above with sightlines and set backs included with consultation with LA Roads Engineers and response at point 7b of report and Appendix 8.

Request

(c) Section 3.5.8.1 of the EIAR refers to the proposed crossing of the M8 Motorway by way of horizontal directional drilling (HDD) and references Drawing P1306- 2650-0033. However, no such drawing has been submitted. Furthermore, Drawing P1306-0501-0003 does not appear to have been submitted as part of the application drawings. Please address. AND

It is further noted that Transport Infrastructure Ireland note that the proposal seeks that the cable follows the route across the M8 to Barrymore and consider that limited details have been provided on the proposed M8 crossing provided (refer sections 3.5.8.1 and 3.6.5.2 and Plate 13-9). Please address accordingly.

Response

Clarity provided on drawings at Section 7c of report with HDD methodology and M8 crossing outlined.

10.8. Replant Lands

Request

The description of the proposed development for which consent is sought correctly does not include reference to the replant lands as the replacement replanting of forestry is subject to licence in compliance with the Forestry Act 2014 as amended and the consent for such replanting is covered by the Forestry Regulations 2017 (S.I. No. 191 of 2017).

Environmental Impact Assessment Report

It is noted that while the replant lands are stated projects considered in the cumulative assessment in the Environmental Impact Assessment Report, a document entitled Environmental Assessment of Replant Lands at Moneygorm and Ballard is attached at Appendix 3.3 of the Environmental Impact Assessment Report with references to the replant lands included in a number of Chapters of the Environmental Impact Assessment Report other than in respect of cumulative impacts.

Natura Impact Statement

Appendix B of the Natura Impact Statement includes an Appropriate Assessment Screening Report for the proposed replant lands at Moneygorm, Co. Cork and Ballard Co. Wicklow and a Natura Impact Statement for the proposed replant lands at Moneygorm, Co. Cork. However, it is noted that the Appropriate Assessment Screening Report and the Natura Impact Statement for the proposed development incorporates the replant lands as part of the proposed development rather than as part of the consideration of in-combination effects.

You are therefore requested to clarify:

(a) Why the documents outlined above have included documents related to the replant lands;

(b) Why the replants lands have been included as part of the development in the Natura Impact Statement and in some Chapters of the Environmental Impact Assessment Report other than in respect of in-combination effects/cumulative effects respectively.

(c) In light of the above, please review the Appropriate Assessment Screening Report, Natura Impact Statement and Environmental Impact Assessment Report accordingly.

Response

Relevant EIAR chapters refer to replant plants in respect of cumulative impacts. The NIS has been revised to include the replant lands under the assessment of in-combination effects (Appendix 3). NIS appendices C and D have been updated as part of the RFI response. Appendix C is included with the revised NIS document and Appendix D has been reproduced under Appendix 5 of the response.

10.9. **Errata/Inconsistencies within the EIAR**

(a) Please clarify why Table 6.9 in the EIAR refers to Carbon Monoxide Data for Carlow Town 2004-2005. **Response** – Incorrect and should refer to Cork Harbour 2007-2008.

(b) Please provide a paper copy of Figures 7.1 & 7.2 as the hard copy of the document received by the Board contains a link for these rather than a copy of the maps.

Response – 3 copies of Figures 7.1 and 7.2 submitted.

(b) Section 8.2 & 8.3 of the EIAR include references to a large number of Figures, the references for which are bolded in the text. You are advised that these Figures have not been included in either the main EIAR Chapter itself or in the Appendices to Chapter 8. Please provide the figures referenced throughout Chapter 8 of the EIAR.

Response – figures included in Appendix 4.

(c) Please outline why there is reference to the Lower River Shannon SAC at Section 8.3.4.5 of the EIAR. **Response** – error and should read Blackwater River (Cork/Waterford) SAC.

(d) Please provide a table of contents for Chapter 8 of the EIAR. **Response** – provided in RFI response report.

(e) You are also advised that the table of contents provided for Appendix 8 is incomplete and you are requested to amend accordingly. **Response** – provided in RFI response report.

(f) You are advised that Table 13-4 in the paper copy of the EIAR has not been properly copied such that the information on either side of the page is missing. Please provide a copy of same. **Response** – provided in RFI response report.

(g) The assessment methodology used to determine significance in Chapter 13 has not been provided and you are requested to address including providing the classifications for significance of effects. **Response** – provided in RFI response report.

(h) Reference is also made at Section 13.4.2 of the EIAR to the site entrances being shown on drawings P1306-0101-0001, P13006-0101-002 and P1306-0101-00. No such drawings exist. You are requested to clarify. **Response** – provided in RFI response report with revised drawings included at Appendix 4 as outlined above.

(i) You are requested to clarify whether reference to Table 15-10 in the first paragraph of Section 15.8 should refer to Table 15-9 rather than 15-10. **Response** – should refer to Table 15.9 and not 15-10.

(j) The concluding paragraph of Section 15.10.1 refers to Table 15-11 but no such table exists but it is considered that the reference should be to Table 15-10. You are requested to clarify same. **Response** – should refer to Table 15.10 and not 15-11.

(k) You are requested to review the EIAR and also the NIS to establish if there are any further errors within the documents and address same in your response.

Response

Table 6.7 should refer to Cork Harbour 2007-2008 rather than Carlow Town.

Appendix 16.3 of EIAR – version dated December 2019 included when latest version was August 2020 with latest revisions included in Appendix 7 of RFI response.

10.10. Submissions and Observations

Request

Please respond to the matters raised in the submissions and observations received by the Board from members of the public and prescribed bodies and to the matters raised in the report received from the Planning Authority, where not specifically addressed in the matters raised in the further information above. Given the large number of observations received and the commonality of many issues you are advised to address the matters arising by topic.

Response

Response to address submissions/observations received included as Appendix 2 of the response. It is presented under the following headings – statutory bodies, community groups and community & individual core issues.

11.0 **Further Submissions**

11.1. **Prescribed Bodies**

Two submissions were received from prescribed bodies which are summarised as follows:

11.1.1. **Irish Aviation Authority**

- Observation of Surveillance Domain that a detailed Radar Impact Assessment is required due to proximity to Cork Radar.
- Observation of Safety Regulation Division, Aerodromes that completed Aeronautical study should be submitted to DAA/Cork Airport and IAA's Air Navigation Service Provider and Engineering for their review and comment prior to the finalisation of the application.

11.1.2. **Transport Infrastructure Ireland**

Haulage Routes

Works including reinstatement works to existing junctions on national road network to comply with TII standards and subject to Road Safety Audit as appropriate.

Notes and supports mitigation in original EIAR as amended by further information and recommends condition regarding consultation with relevant authorities.

Structures

Abnormal load assessment to be undertaken with condition proposed.

Cable/Trenching

Cable routing to avoid existing TII infrastructure and notes response to TII issues and advises that a Works Specific Deeds of Indemnities arrangement required.

General requirements for directional drilling under a motorway outlined and condition recommended.

11.2. Observations

57 submissions from observers were received by the Board in response to the invitation to respond to the further information submission. The names of those who made submissions is outlined in Appendix One. The matters arising are summarised as follows:

11.2.1. Process

- Insufficient time given for response.
- No response given by Board to support refusal of time extension
- Unfair developer given 7 months to prepare response to FI
- Response period coincides with exam period preventing many people responding.
- Seek oral hearing and 3 months to prepare for it with OH absolutely necessary and within boards control to grant an oral hearing
- Reference in applicants cover letter to EirGrid's Enduring connection policy – open September 2022 and if grant not secured by then will have to wait - clear attempt to put pressure on the Board.
- FI response complex and weighty and requires input from experts many of whom cannot review the response within short time and no option other than to submit brief comments. Made it clear to ABP that needed minimum 3 months.
- Concerns that Cork CC and other prof bodies not expected or aware they need to review new information. Email from Sen Exec Officer in Cork Co Co attached which states that CCC do not make a submission they prepare the CE report with determination of whether FI submitted adequately response to issues raised a matter for ABP – Council not involved in assessing this information
- Question asked by Colm Burke TD (26/4/2022) in relation to minimum set back distances for turbines and outcome of review of guidelines – reply of Dept provided – noting in meantime 2006 guidelines remain in force – request ABP redrain from approving any turbines until guidelines are made public and accepted by all.

- No explanation given for the change from guy wired to free standing met masts. Question validity of same at this stage of process.

11.2.2. **BESS**

- Response to BESS is summary overview and does not provide sufficient description as requested by ABP. Significant fire risk which lacks clear regulations and procedures.

11.2.3. **Peat Stability**

- Applicant has not completed an adequate assessment of soil stability and EIAR cannot be deemed adequate for assessing same.

11.2.4. **Ecology**

- Impact on bats not adequately assessed
- Woodcock breeding at the site, Grasshopper Warbler occur and breed at the site, Crossbill an important species not mentioned
- Nocturnal migration data for a site 2-3km to south of site indicates substantial nocturnal migration activity in the area. Significant roost to feeding area nocturnal movement with are particularly during winter months for species such as snipe and golden plover.
- Total observation hours of over 2,500 hours with 6630 individual birds giving nocturnal flight calls recorded. List of species provided – requirement to follow up with specialist surveys to elucidate the scale of nocturnal migration activity in the area.
- Grasshopper Warbler and Crossbill not mentioned. Refer to Species recorded – NVTA response – nocturnal migration activity not requested by ABP or provided by applicant and insist ABP request it.

11.2.5. **Drainage**

- Existing drainage has not been fully documented and mapped so detailed drainage assessment and mitigation not possible. Adequate data not provided to

support claim that proposal will not negatively impact on water quality and ecological status of river within catchment.

- Appropriate for a project of this scale to undertake more detailed and through hydrological assessment of likely impacts given lifespan and climate rainfall uplift.
- Potential impact of high end future scenario climate projections as outlined in 2019 Climate Change Sectoral adaptation plan should be fully evaluated.
- Existing drainage has not been fully documented and mapped so detailed drainage assessment and mitigation not possible. Proposed measures simplistic and not tailored to site conditions. Emergency silt control and spillage response procedures hampered by lack of on site personnel to detect spills.
- Concern about borrow pits and drainage – where will the drainage water be discharged to/will it be tested,
- Disposal of sediment from silt traps and water from interceptor drain at borrow pits.

11.2.6. **EIAR**

- Use of 100% mitigation not good enough – failed mitigation measures, concerns at safety layers in BESS.

11.2.7. **Roads and entrance**

- Sightlines and survey results for Bottlehill entrance – picture in Fig 7-3 and 7-4 misleading as photos taken from a position on public road rather than from a position pulling out of the entrance. Photos from entrance provided – reference that site surveys indicated that required mitigation can be achieved without works in third party lands not true with property highlighted in red in private ownership.
- Entrance not suitable for many reasons – scenic route used by cyclists, on road to house and farm, grotto, forestry walkways, right of way to bogs, school bus pick up 120mts on RHS.
- Instead of using the landfill entrance and engaging in proper consultation with Council members they moved to an entrance on a local road that is not suitable.

11.2.8. **Visual Amenity**

- T2 on a ridge to west of site and should be removed as takes over skyline.
- Request for additional montages in an arc between VP42 and VP 35 not addressed and ask ABP to look for montages from a series of locations in an arc north of VP42 down to VP35.
- Photomontages from houses in middle of development not provided

11.2.9. **Noise**

- FI response fails to respond to points raised by Mr Dick Bowdler Noise Consultant – not addressed criticism of their interpretation of the guidance or that the guidance is not a methodology for assessing the impact of the development as required by an environmental statement.
- Applicant does not address core point that even with noise mitigation, significant adverse impact will likely occur.
- Applicant states BS4142 not an appropriate assessment methodology for wind turbines dismissing original assertions made. Leaving aside use of BS4142, question why EIAR does not directly compare predicted turbine noise levels with background noise measurements. If measurements used, even with noise mitigation, perceived noise levels will more than double at most noise monitoring locations. Using BS4142 or not will not change the key finding that noise levels will more than double and will dominate.
- Continually updated and as per pg 176 of draft guidelines, ETSU-R-97 which is used here was 124based originally on BS4142 suggesting its use is reasonable.
- Rationale of BS4142 used at low wind speeds – note when predicted noise levels compared directly to measured background noise – results indicate greatest adverse impact likely to occur at lower wind speeds.
- Wind farm noise not specifically excluded from use of BS4142 likely other activities.
- Use of regression analysis for monitoring (averaging averages) – Applicant disagrees – WMcS clarifying that ETSU-R-97 short term regression analysis used but not intention of guidance to use over long period and days weeks or months

apart. This would allow noisy period to be obscured by repeated data averaging. Regression analysis over long time periods should not be allowed.

- Low frequency noise – potential for emissions from proposal were shown in original submissions – note shift in applicants position where they stated that turbines may produce LFN at levels above threshold of audibility to now implying LFN is produced by turbines but because ‘low frequency sounds need to have ahigh level of amplitude before they are audible, LFN will usually go unnoticed. Original WMcS submission contradicts this contention – in terms of how audible LFN is.
- Reference to 2004 Leventhall paper cited by applicant contradicts their assertion stating LFN can disturb rest and sleep even at low sound levels. Applicants have still failed to address this in any meaningful way.
- EAM – another change in position now accepting that EAM occurs more frequently than in original EIAR (EIS). Should be clear EAM commonly occurs, potentially very intrusive and likely to occur with this wind farm.
- Proposal to turn off turbines or address by manufacturers if EAM should occur is not a mitigation plan – this is a wait and see and admitting that there is no mitigation plan. No response is provided by the applicant to the doubts raised in original WMcS submission to implementation of mitigation measures.
- Latest response is more an entreaty not to impose an AM planning condition on grounds that there is not method available to predict AM and not possible to predict what impact inclusion of an AM condition would have. If not method available to predict when AM will occur then how can mitigation be deployed.
- Prove beyond doubt that proposal will experience EAM frequently.
  Change from EAM is rare to admitting its cannot be predicted and where no simple solutions, pleading that no AM condition imposed.

11.2.10. **Hen Harrier**

- Proposal has potential for direct effects- direct mortality (nest sites during construction), disturbance, land cover change, collision mortality (operational) and displacement.

- HH strictly protected species listed on Annex 1 of BD with Nagle Mountains hosting nationally significant breeding population equivalent to 2.9-8.5% of estimated breeding population in state
- Footprint of site overlaps nationally important breeding area of HH.
- European CJEU rulings on birds – C4198-04 – Ireland Bird case and C-374/98 Basses Corbieres.
- Favourable conservation status of HH must be considered when making assessment of EIAR and NIS and whether this has been represented in the EIAR and NIS.
- Bird collision risk may be low but not absent with significant loss of habitat
- No measures in place to ensure nesting species (2019 nest near Lackendarragh) wont be affected.
- No objective comparison between other windfarms with hen harrier activity and subject site made – every setting different. Mitigation measures not sufficient.
- HH Threat Response Plan proposed by Irish Authority in 2012 is not adopted with no clear deadline.
- Provision of managed foraging habitat does not mitigate for loss of nest sites or HH ecological requirements.
- Proposed habitat (65.1% of total CHMP area) comprising improved agricultural grassland is avoided by HH. No stipulation on what habitat condition is to be achieved through management other than it will be allowed to revert to a more natural state with conflicting and unclarified caveats.
- Strongly disagree with conclusions that CHMP is likely to improve foraging success.
- No detail as to how improved foraging success rates will be measured through monitoring or how breeding success will be measured. No evidence of similar CHMP's with breeding/foraging success
- No performance related mitigation and statement is not evidence based. No evidence provided of how similar CHMP have improved foraging success and consequently breeding success rates.

- Baseless conclusion that infers the CHMP will likely improve breeding success of HH population – highlights exposure to legal challenge.
- Unresolved item in CHMP in lease agreements, statutory oversight and lack of performance based measure of mitigation success which is not addressed
- Misunderstanding of the concept of net gain in mitigation. No net gain where mitigation hierarchy does not first avoid impacts.
- Response does not address item raised about statutory consultation in the EIAR being missing. Consultation with DAU (NPWS) missing (Table 8-1 – EIAR) – Permission should be denied on basis of lack of consultative approach.
- Concern that NIS incomplete and revised doc provides no further assessment on impacts to HH as SCI to SPCA through-out their annual cycle and or the wider countryside within the likely zone of impact. WF development recognised as significant land use pressure on conservation of HH in Ireland – no cumulative assessment on highly mobile HH undertaken
- NIS makes clear admission of possible links and effects to SPA – no assessment in NIS presented. NIS is not legally compliant as no attention to cumulative assessment of potential likely significant effects on coherence of Natura 2000 network or important sites outside and connected to the SPA network. Believe ABP have no alternative other than refuse permission
- Response to experts not addressed – without a determination of suitably qualified experts undertaking fieldwork the lack of detections in 2021 remains open to challenge (membership of CIEEM).
- Representatives of vantage points/data sample when majority done between 9-5 – the response that there is a range of survey times does not address matter.
- Applicant misrepresented what was stated in submission about pre-dawn or post dusk surveys.
- Request that applicant provide a histogram with a clear approximate representation of the distribution of vantage points not provided. Temporal bias in data used in Collision risk model means ABP cannot have confidence in subsequent robustness of impact in EIAR

- Inadequate assessment of Goshawk and Merlin – response from applicant avoids explanation of why further survey work during those years where observations were made of Goshawk and Merin was not undertaken when they were required.

11.2.11. **Health Effects**

- Lack of evidence in respect of children with additional needs is not reason to go ahead.
- Request turbines are removed in vicinity of houses where occupants have ASD/ADHD
- Concerned about aviation risk assessment and use of 'unlikely' several times when addressing risks which is not acceptable. (Niamh Dorgan)
- Noise monitors at 755m and not 750m and want to know difference of 5m if at 750m (Niamh Dorgan).
- Response to consultation – workshops held where answers to questions were not forthcoming. Question and answer session requested not provided (Noreen Dorgan).

11.2.12. **Other Matters**

- Impact on TP-Link_E68C (formerly Nova) Broadband
- No consideration given to submission made by Nichola Mansergh on visual impact on Blackwater valley.
- Julian Humphreys from Mallow didn't receive an acknowledgement
- Half acre pond (duck pond) north of T20, 22 & 23 not included in EIAR.
- Run-off into Bunnaglanna River from contaminated water from BESS & impact of hydrofluoric acid
- Question description of roads and speed limits
- Survey on road sediment and picture of trap insufficient for volume of water
- House missing from map of 1.33km – Marcus O'Reilly
- Use of Likely and probably in reference to parts of EIAR

- Gortroche area not addressed.
- Installation of battery packs before operational state of mitigation systems continues to pose risk of fire.
- Noise concern from HVAC systems raised in first submission not addressed – Figures 3 & 4 in submission provide illustration.
- Final public consultations did not take account of intervening delays or new residents
- Shadow Flicker – maps of anticipated shadow flicker grossly inaccurate (2-D reps and do not reflect impact of elevation over wider area and does not address Gortroche.
- Not stated how 0% shadow flicker will be implemented. Ceasing turbine operation will reduce generation and not clear if 105MW takes non-operational periods into account.
- Proposal not an immediate contribution as 18 months to construct. Other options available - Solar - less impactful, Offshore, hydrogeneration.
- Existing noise from descending aircraft to Cork airport – proposal an unreasonable additional burden
- Building house at Knockanulour, Glenville and not marked on any maps with nearest turbine T17 at 1.2km with no photomontage from my house, road, area with nearest one.
- Neighbours houses not marked on maps nor included in noise, shadow flicker or visual impact assessments.
- Number of red warning lights required and impact on night sky.
- Who will undertake annual bird monitoring and where will data be stored/ will it be made public.
- No additional information supplied on community benefit fund – how will benefit/how will it be administered.
- No decommissioning plan presented – who will be responsible/will site be returned to 2022 state and where will materials be disposed of.

- Positive health gains of proposal – upgraded forest trails and offset CO2 emissions will not compensate those who would suffer adverse effects on health from shadow flicker and LFN

12.0 **Oral Hearing**

The Board directed on the 22rd July 2022 that an Oral Hearing in respect of the application should not be held.

13.0 **Assessment**

Having regard to the requirements of the Planning and Development Act, 2000 as amended, this assessment is divided into three main parts, the planning/project assessment (Section 14), the environmental impact assessment (Section 15) and appropriate assessment (Section 16). In each assessment, where necessary, I refer to the issues raised in the submissions made to the Board either in response to the approval application or submissions received following advertisement of the further information.

There is an inevitable overlap between the assessments, for example, with matters raised falling within both the planning assessment and the environmental impact assessment. In the interest of brevity, I have tried not to repeat matters but it is not possible in all instances and therefore relevant sections within the EIA and AA are indicated in the following sections of the Planning Assessment.

14.0 **Planning Assessment**

I consider the following matters in turn in the planning assessment below:

- Procedural Matters
- Principle of Proposal
- Consultation Process
- Battery Storage Facility
- Residential Amenity
- Landscape and Visual Amenity
- Recreation, Amenity, Tourism and local Cultural Heritage Sites

- Ecology
- Impact on Angling
- Impact on Agriculture/Land
- Access Arrangements
- Water Quality and Mitigation Measures
- Flood Risk
- Peat & Landslides
- Telecommunication Interference
- Impact on Aviation
- Decommissioning
- Community Benefit Fund
- Competency
- Financial Contributions and bonds

14.1. **Procedural Matters**

I will address a number of procedural matters arising in turn.

14.1.1. **Extension of time to Respond**

A central matter raised in the submissions received in response to the further information was the Board's response to the observers request for an extended period of time to respond. In the submission received from the Nagle View Turbine Group they outline the content of an email they received from the Board outlining that an extension was not going to be provided. I would note that the response was prepared and sent by a member of the administrative section and its colloquial manner and the absence of reference to the relevant legislative considerations are unfortunate. The observers are aggrieved that they were not afforded an equal amount of time to the applicant. However, the requirement for further information is one which relates to the applicant and there is no provision within the legislation that observers are afforded the same timelines. I would refer in this regard to Directive 2014/52/EU, which states 'The time-frames for consulting the public concerned on the environmental impact assessment report referred to in Article 5(1) shall not be

shorter than 30 days.' While I acknowledge that the amount of information received requires time to absorb and experts cannot make themselves available within tight timelines, the Board is required to deal expeditiously with applications and in this regard, applying the timelines set out in the legislation is appropriate.

14.1.2. **One Application for Two Clusters**

A key concern expressed in a large number of the submissions received was that the scale of the proposal and the distance between the two clusters of turbines amounts to two developments with applicant seeking permission under one application when it should have been two separate applications and not just one. While this might be the opinion of many observers, the applicant is entitled to make the application in the way it has been submitted. The application documentation complies with the regulations in terms of outlining and describing the site and undertaking the requisite examination of the potential impacts and effects. The configuration of the site is therefore appropriate.

14.1.3. **Clarification regarding Replant Lands**

As outlined in the EIAR including at Section 3.5.16 the proposed development requires the felling of c.62.8 hectares of forestry. As outlined, this felling will be the subject of a Felling Licence Application to the Forest Service prior to construction as per the Forest Service's policy on granting felling licenses for wind farm developments. It is stated that the Forest Service Policy requires that a copy of the planning permission for the wind farm be submitted with a felling licence application therefore the felling licence cannot be applied for until planning permission is received for the proposed development site. Furthermore, replacement replanting of forestry is subject to licence in compliance with the Forestry Act 2014 as amended with the consent for replanting subject to the provisions of the Forestry Regulations 2017 (SI No. 91 of 2017). The proposed replant lands are located at Moneygorm, Co. Cork and Ballard, Co. Wicklow. I would note for the Boards information that both the sites are specifically stated to be projects considered in the cumulative assessment (Appendix 2.2) and within the various chapters of the EIAR.

It is further noted that the original application documentation included, at Appendix 3.3, an environmental assessment of the replant lands and Appendix B of the NIS included an Appropriate Assessment Screening Report and Natura Impact Statement

for the proposed replant lands. Given that the Board is not the consenting authority for either the felling of the existing forestry nor the replanting of proposed forestry, clarification was sought from the applicant by way of further information which is outlined at Section 10.8 above. In response the applicant states that the relevant EIAR chapters refer to replant plants in respect of cumulative impacts. There is no reference to the rationale for the inclusion of Appendix 3.3 of the EIAR, however notwithstanding, I will not be addressing this document in my assessment.

The NIS has been revised to include the replant lands under the assessment of in-combination effects (Appendix 3 of Response). NIS appendices C and D have been updated as part of the RFI response. Appendix C is included with the revised NIS document and Appendix D has been reproduced under Appendix 5 of the response. For the sake of clarity, the replant lands will only be considered in this report in the context of cumulative impacts/in-combination effects in the EIA/AA respectively.

14.1.4. Jurisdiction of the Board

An observation received from Dr. Eugene Moran states that An Bord Pleanala do not have the jurisdiction to deal with the generation of electricity by turbine and storage batteries according to Section 37 as the applicant are not an electricity public vendor and cannot use this process. Furthermore, concern has been expressed that this may not have been noted in the pre-application process. I am not aware of any subsection of Section 37 (presumably of the Planning and Development Act, 2000 as amended) which requires an applicant for a wind energy development to be an electricity public vendor. Therefore, I do not consider that any further consideration of this matter is required.

14.1.5. Grid Connection

As outlined elsewhere in this report and to clarify for the Boards information, the grid connection element of the overall development is considered as part of the EIAR and the NIS and will be addressed in the EIA and AA below, as appropriate, but it is not part of application. I am satisfied that the applicant has submitted sufficient information within the EIAR and NIS to enable the Board to undertake a cumulative impact assessment of any impacts on the environment, and likely significant effects on European sites, of the overall windfarm in-combination with the grid connection,

other windfarms, and plans or projects. In this regard I consider that the proposal complies with the Guidelines as it relates to the grid connection.

14.1.6. **Other Matters**

There are a range of other procedural matters raised in the observations which I will address in turn. There is a reference by an observer that the deed for water rights are not shown on a map with undertakings not given. The observer has not provided the legislative requirement for same and therefore I do not consider it requires further consideration. There are a number of concerns expressed in terms of property ownership, turbary rights and wayleaves. There is reference to some lands not being registered. There is reference to an absence of wayleaves from property owners for cables under roads with ownership of roads extending to middle of the road for adjacent owners which appears to refer to landowner consent and appropriate permissions along grid connection route. Reference is also made to land ownership near T11 which is subject of ongoing court case. I would refer the Board to Section 37H (6) of the Planning and Development Act 2000, as amended where it is clearly stated that *"a person shall not be entitled solely by reason of a permission under this section 37G to carry out any development".*

In terms of the grid connection, this application does not seek permission for the grid connection. The EIAR and NIS address the grid connection in respect of facilitating the Board in assessing the potential impacts/effects of same but the application does not seek permission for the grid connection so therefore legal considerations regarding same are not relevant.

Concern has been expressed in a number of submissions as to what company will be responsible for the implementation and maintenance including decommissioning of the proposal and the motivation of the applicant which is contended is project driven. As with all applications, the applicant is entitled to make an application and the permission pertains to the land and not the person/entity.

Reference is made to the content of the pre-application report and what the observers consider was a favourable view of the application in the context of the national benefit. The observers plead with the Board to consider local and regional effects. The local and regional effects of the proposal are considered in the assessment below.

Finally, I note reference in submission received to the further information response to the removal of the guy wires associated with the met masts. Drawing P21-288-0300-0008 submitted with the further information response refers. The guy wires were removed in response to concerns expressed in a submission received to the original documentation. The alterations to the mast have been outlined in the documentation submitted with the response to further information and therefore I do not consider that the application has been invalidated by the removal of same.

14.2. Principle of Proposal

14.2.1. Previous Decision

Reference is made in a number of observations received to the previous decision to refuse permission for a windfarm development on lands which include part of the subject site. This is detailed in the planning history above Ref. N/01/6654 (ABP Ref. Pl04.128917). While the decision is noted, both the national and local policy context has evolved significantly since that time such that climate change and renewable energy are central tenets of national, regional and local policy. Since the time of that decision (September 2002), climate and wind energy policy have changed significantly at all policy levels and in particular at local level where wind energy policies and locational strategies for the consideration of specific areas which are open for consideration for wind energy development have been incorporated. As is detailed in section 13.3 below, the subject site is located in an area where wind energy development is open for consideration. Landscape and visual impact, which was the main concern in the previous refusal reason is addressed in Section 14.6 of this planning assessment and in Section 15.13 of the EIA below. In terms of the principle of the proposal when considered in terms of the planning history of the site, I do not consider that the previous decision establishes a precedent which dictates that permission cannot be considered in principle.

14.2.2. Need for Proposed Development

This matter is addressed in some detail in the documentation received and it is not intended to repeat same. The proposed windfarm would be compatible with European and National climate change and renewable energy policies as summarised in section 5 above. It would contribute to the achievement of European

and National renewable energy targets, and in particular the objectives of the Climate Action Plan (2023) which seeks to reduce the State's greenhouse gas emissions by 51% by 2030 and increase the proportion of renewable electricity to up to 80% by 2030, including a target of 9 GW from onshore wind. Providing the physical infrastructure, in this instance onshore wind turbines, to facilitate the achievements of this measure is critical thereby providing a demonstrable need for the proposed development.

While it is noted that many of the submissions reference their agreement in principle in respect of merits of renewable energy, there is resistance to the location of such a proposal within the locality for the range of reasons outlined in the summary of submissions received above. In order to address Climate Change, I would suggest that other elements of our environment and the context within which the environment is perceived must also change. This includes in particular the visual context of an area which cannot be expected to remain unchanged in perpetuity but particularly within the context of a climate emergency.

I note that a number of submissions reference decisions to refuse single one-off dwelling houses within this area for reasons related to visual impact and impact on scenic routes or where roof height limits are imposed. I would suggest that one of the main differences between these individual developments and the subject proposal is the policy context within which they are considered. The development of renewable energy to address climate change and meet renewable energy targets is a national policy which benefits society as a whole with the structures decommissioned and removed after a specified time. The development of a permanent one-off house in a rural area has no wider benefit than to the individual/s involved.

14.2.3. Compliance with Planning Policy & Guidelines

14.2.3.1. Guidelines and National and Regional Policy

There is a positive presumption in favour of renewable energy development at National, Regional and Local policy levels. At national level, the proposed development complies with national planning policy as set out in the National Planning Framework Plan, 2018-2040 which recognises the need to move toward a low carbon and climate resilient society with a sustainable renewable energy supply. The 2006 Wind Energy Development Guidelines (and 2019 Draft Guidelines) 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. These matters will be addressed specifically, where relevant, in the relevant sections of this assessment and the EIA and AA below.

In terms of the consideration that the current Guidelines are not fit for purpose, while it is acknowledged that the Guidelines date from 2006, draft Guidelines dated 2019 have been prepared and consenting authorities await the finalisation of same by the Department which according to the CAP 2023 (Table12.6) is expected to be redrafted in 2023 and published in 2024. Until that time, the existing guidelines remain in force but with the applicant in this instance opting to apply key elements of the draft guidelines in terms of the proposed development – such as the minimum set back of 4 times the tip height and zero-shadow flicker. I consider that this is appropriate and seeks to apply best practice to the consideration of the proposed development.

At regional level, the policies reiterate those at National Level in the main and I note it is outlined that t*he RSES recognises and supports the many opportunities for wind as a major source of renewable energy and contends that Wind Energy technology has an important role in delivering value and clean electricity for Ireland*.

14.2.3.2. **Local Planning Policy**

At a local level as it relates to the principle of the proposal, the site is located within an area defined in the current wind energy strategy as being open for consideration (policy objective ET 13-7). It is acknowledged that it adjoins an area where such uses are not normally permitted. However, it is within the open for consideration area and in this regard, can be considered in principle subject to several specific considerations which are set out in the wind energy policy. These are residential amenity particularly in respect of noise, shadow flicker and visual impact. These matters are addressed specifically in 14.5 and 14.6 of the planning assessment and Sections 15.6, 7 & 13 of the EIA. In relation to Urban areas and Metropolitan/Town Green Belts, the site is not located within or in close proximity to any of these. The consideration of Natura 2000 Sites (SPA's and SAC's), Natural Heritage Areas

(NHA's), proposed Natural Heritage Areas and other sites and locations of significant ecological value are addressed elsewhere in this report, particularly in 14.8 of the planning assessment, 15.11 of the EIA and in the AA. In terms of architectural and archaeological heritage, this is addressed specifically in Section 15.12 of the EIA. The assessment of visual quality of the landscape and the degree to which impacts are highly visible over wider areas is addressed specifically in 14.6 of the planning assessment and 15.13 of the EIA. The policy also asserts that in planning such development, consideration should also be given to the cumulative impacts of such proposals and this is specifically addressed, where relevant, in the EIA below.

Section 13.7 of the Plan addresses Development Proposals for Wind Energy development stating that: all planning applications for wind energy development should include a comprehensive assessment of the potential impacts of the proposed development on the receiving environment and landscape. A list of criteria is outlined which the Planning Authority require of prospective applicants (see section 5.3 above). While many of the matters are referenced in the preceding paragraph, I would note that the application documentation submitted addresses all of the matters outlined in Section 13.7 which refer to matters such as community engagement, grid connection, considerations of carbon emissions, cumulative effects, location of quarries to be used, disposal of waste and decommissioning.

I also note that an observation notes that Turbines T2-T7 surround a designated urban area which is the site of the Bottlehill landfill and while they consider that its proposed use as a landfill is irrelevant, I would note that the Bottlehill landfill site is not located within a development boundary in the current Cork County Development Plan.

14.3. Consultation Process

14.3.1. A large proportion of the observations received raise the matter of what the observers consider to be inadequate consultation in relation to the proposal. I would note that chapter 5 of the EIAR outlines the consultation undertaken. Section 3.1 (Issue 2) and Section 5.2 (Issue) 1 of the RFI response responds to submissions received. Both the EIAR and the further information response received outline the consultation undertaken prior to the submission of the application, and while many observers will continue to believe the opposite, I consider the pre-application consultation was adequate in respect of informing the local community about the

proposed development and seeking views on same. The information presented in the EIAR complies with the Aarhus convention and the planning application public consultation process with An Bord Pleanala saw a very large number of submissions received, which are summarised in this report, which indicates robust engagement with the consultation process.

14.3.2. In relation to the concerns expressed as to the impact the covid restrictions placed on the process, the restrictions imposed by the Covid-19 pandemic had to be adhered to by the applicant. In this regard, I do not consider that the applicant should have been forced to delay submitting the application due to Covid-19 restrictions, particularly as it comprises a development which is proposed to contribute to the National objectives in respect of climate change.

14.3.3. Finally, I note that concern is expressed by the Irish Raptor Study Group with regard to the lack of consultation undertaken by the applicant with the NPWS and An Taisce as it relates to ecological matters in the EIAR. I note the particular difficultly applicants face in getting direct pre-application consultation with the NPWS in particular given the volume of requests and the availability of staff. I note that both these prescribed bodies made submissions to this application. The NPWS raised matters related to the hen harrier and following the receipt of the response to further information, did not make a further submission. An Taisce made a submission to the original application which is not specific to any species and did not make a submission to the response to further information.

14.4. **Battery Storage Facility**

14.4.1. In terms of the description of the proposed battery storage facility I note that in the response to the further information request that the applicant has provided a detailed description of the proposal. This includes details in relation to the storage of the batteries. I have outlined a description of this element of the proposal above at section 3.1.8. The matter of the safety of the proposed battery storage facility is raised in many of the submissions with the absence of a Fire Risk/Emergency Response Plan for the BESS noted in many of those received to the original application. I would refer the Board to Appendix 2.1 of FI response where a Fire Risk/Emergency Response Plan has been submitted. While I note the concerns, I consider that the applicant has sought to address the matter and has provided the

information required to inform the Board's consideration of the landuse and environmental effects. However, I would note that the matter of fire safety is outside of the Board's remit and in respect of what is within the remit of the Board, I consider that the matter has been addressed satisfactorily.

14.5. Residential Amenity

There are a number of matters arising in respect of residential amenity which I will address in turn. These are shadow flicker, noise, health effects and property devaluation. Impact on visual amenity as it relates to residential amenity is addressed in Section 14.6 below. Where the environmental effects in respect of these matters are also addressed in the EIA below, I have indicated the relevant section of same.

By way of context, the applicant submitted figures in the EIAR outlining the location of receptors – residential properties, commercial properties and both and some submissions criticised same saying that not all properties were included or that specific properties were omitted. I note two figures in particular which have been submitted with the response to the further information and which outline the receptors within the vicinity of the proposed development – these are Figure 3.2.1 which includes receptors within a range of distances from turbines up to 2km and Figure 11.2 which outlines receptors within 1.38km of the turbines. It is these figures that I propose to use as reference for the following assessment.

14.5.1. Shadow Flicker

I have addressed shadow flicker in my EIA at Section 15.7 below. However, in this section I propose to address concerns specifically raised in the submissions.

Concern has been expressed that one of the receptors identified is within 500m of turbines, and that the turbines in question have not been identified. However, I would refer the Board to revised Figure 12.1 (RFI response Section 2.2.4) which clearly outlines the receptors and turbines in question. It was contended that the impact of shadow flicker on the potential operation of the Bottlehill Landfill has not been addressed with a potential impact on the operation of same. This is not correct and the Board should be aware that Chapter 12 of the EIAR clearly outlines the methodology for the preparation of the assessment and the parameters included.

The admin building (which was within 500m) was identified as the only likely receptor on the site and was considered accordingly. However, this receptor is not occupied and has been removed from the revised Figure 12.1.

It is suggested in a submission that given the draft guidelines require a zero flicker policy that the turbines in question should be removed. It is also questioned how the policy can be met if 72 of the 95 sensitive receptors (original EIAR – revised in RFI to 86) have the potential to be affected. I would note that the mitigation measures proposed in terms of the technology to prevent the turbines operating during times which shadow flicker might occur facilitates the zero shadow flicker policy and therefore the removal of those turbines is not necessary to meet the policy requirement.

It is stated that the mitigation measure to cease operating the turbine which requires software should be included in any assessment of total energy yield. I would suggest to the Board that the EIAR outlines exactly both the theoretical and likely hours of operation which would be affected by each turbine in respect of shadow flicker (Table 12-3).

It is suggested that the potential impact on road users/horseriders has not been explored, that being driver distraction/horse fright and potential for accidents. Again, the assessment undertaken at Chapter 12 of the EIAR sets out the parameters and includes the likely hours when each of the turbines will be turned off to prevent shadow flicker at sensitive receptors.

The submissions include reference to the potential impact of shadow flicker on those living in the middle of the two turbine clusters not addressed as sun rises to east passing behind T17-T23 leading to shadow flicker throughout the valley. Again, I would note that the assessment undertaken in Chapter 12 and updated in the FRI outlines the study area within which shadow flicker is likely to arise. It also provides mitigation measures to ensure compliance with the zero shadow flicker policy.

Reference is made to the Inspectors report on the previous application for a single turbine in Moneymore (S-E of T23) where it was noted that there were no dwellings within 560m of the turbine but that there may well now be dwellings and this was not addressed in the cumulative assessment. The cumulative assessment undertaken is clearly considered and outlined and I do not consider that the concern expressed is relevant given that the relevant areas of concern for both the permitted turbine and proposed development do not interact.

The potential impact of shadow flicker on persons with epilepsy is addressed in the response to further information concluding that the risk of shadow flicker triggering an epileptic seizure, without the shutdown mechanisms is deemed to be less than one in 10 million and given technological advances which has made shutdown possible in conditions which might cause shadow flicker it can be completely avoided.
One of the submissions received in response to the further information addresses the matter of shadow flicker outlining that they do not reflect impact of elevation over the wider area and does not address Gortroche. I consider that the assessment undertaken comprehensively addresses the relevant area for consideration. It is also stated that it is not stated how 0% shadow flicker will be implemented but it is clear from the documentation provided how the zero flicker policy can be undertaken. The impact of ceasing turbine operation on the generation of the development with a concern that it is not clear if the 105MW takes non operational periods into account. The predicted generation of the development is outlined in detail in the documentation provided as the total Maximum Export Capacity and is dependent on a number of factors including the turbine design. This is a maximum figure and the development is not required to meet this so the concerns expressed are not considered to be material.

14.5.2. **Noise**

I would refer the Board to Section 15.6 of the EIA below which addresses Noise. I would also note the Board's request for further information which sought in the second instance a noise contour map detailing the study area relative to the proposed turbines. In addition, the respective locations and distances of all noise sensitive receptors within 500m, 1000m,1500m and 2000m of the turbines were requested to be presented with all occupied, unoccupied and permitted dwellings identified including dwellings that have a specific interest in the proposed development included. I would also note that Figure 7.2 includes the noise monitoring locations. I also note the inclusion of an additional receptor in the further information response to the north east of T15 but which is located at a further distance than an existing receptor examined in the noise monitoring and modelling. Specific clarifications in respect of prevailing background noise raised by Cork County Council are addressed by the applicant who outlines the current best practice in the derivation of the prevailing background noise levels and the minimum number

of data points considered to be adequate. I consider that the matter has been satisfactorily addressed.

In response the applicant has submitted the map (Figure 3.2.1 - Appendix 4). It is outlined that for certain receptors and turbine combinations a +3dB correction is added to the results, where sound propagation occurs across a valley. While requested by the Board to include dwellings that have an interest in the development, it is stated that individual dwellings that have a specific interest in the proposed development are not called out on the map. I acknowledge the rationale for not including these receptors and I note that there are no reduced setback distances for involved landowner residential properties. It is clarified that there are no receptors within 750m of the proposed wind turbines and the closest residential receptor is located 755m from a wind turbine. I consider that the Receptor map is a comprehensive representation of noise sensitive receptors.

The applicants were also requested to respond to the submissions received from acoustic experts. In this regard in their response to submissions they have responded under a number of headings which I consider is a practical way of addressing the issues raised and for ease of reference I will address the matters as they are provided. I would note that the applicants have engaged a number of experts to review the material and respond to the matters arising. These are Dr. Martin Hogan from Corporate Health Ireland and Jim Singleton MIOA of TNEI Services. The review and response effectively comprises a peer review of the documentation submitted rather than a defense by the authors of the original assessment. While I address health effects separately in Section 14.5.3 the following matters related to noise, also refer to potential health effects.

In relation to low frequency noise (and infrasound), the TNEI experts outline that wind farms do produce low frequency sounds but that the threshold of hearing at such low frequencies is relatively high with LFN usually going unnoticed. The experts then reference a number of reports which they believe counter the papers referenced in particular in the submission from Professor Alun Evans, which conclude that infrasound associated with modern wind turbines is not a source which will result in noise levels which may be injurious to the health of a wind farm neighbour. In terms of the effects on livestock, which there is no specific information on the impact on cattle, a series of references is provided with one noting that cattle have a similar low frequency threshold to humans (25Hz compared to 20 Hz), but their higher frequency

response extends beyond the human range and they are more sensitive to noise at higher frequencies than humans with the applicant contending that it is reasonable to assume that cattle will be no more affected by LFN than a human would and I would agree.

The TNEI experts state, in reference to amplitude modulation, that in recent times the acoustics community has sought to make a distinction between the AM discussed within ETSU-R-97, which is expected at most wind farms and as such may be considered as 'Normal Amplitude Modulation' (NAM), compared to the unusual AM that has sometimes been heard at some wind farms, hereinafter referred to as 'Other Amplitude Modulation' (OAM). In terms of requests for a planning condition to address AM, it is stated that at present there is no method available to predict AM and it is not possible to predict what impact the inclusion of an AM condition would have on the operation of the wind farm. The recommendation to impose a planning condition and the associated penalty scheme is at odds with the advice from the IOA A Good Practice Guide to The Application Of Etsu-R-97 For The Assessment And Rating Of Wind Turbine Noise (GPG), which currently states (paragraph 7.2.10) that "*the evidence in relation to "Excess" or "Other" Amplitude Modulation (AM) is still developing. At the time of writing, current practice is not to assign a planning condition to deal with AM*." I consider that this matter has been satisfactorily addressed.

Reference is made to the modelling undertaken against the 2019 Draft Guidelines and the 'failure' of 17 of the 18 properties to meet the guidelines. I would agree with the applicant that the proposal has been appropriately assessed against the limits applied in the 2006 Guidelines which remain in force. There is concern expressed that the assessment in the EIAR is against the 2006 Guidelines with the assessment in the 2019 Guidelines included in an Appendix which an observer believes is contrary to the Directive. I would not agree. The appendix is referenced in a number of locations in Chapter 7 and is quite clear. Rather than confuse by including it in the main Chapter it is available for review within a clear context. Again, I would outline that the 2006 Guidelines are the relevant section 28 guidelines that the Board must have regard to in coming to their decision.

In terms of specific matters raised by Mr Dick Bowdler in his submission the applicant has provided a detailed response noting that the details of wind shields are included in Appendix 7.1 of the EIAR, the co-ordinates of the LiDAR is provided which it is

considered to be in an appropriate location. References to the applicability of elements of the 2006 Guidelines and I consider that the applicants defense of the lower fixed limit proposed, in the context of the Guidelines, is rationale and supported by the Guidelines currently in force.

I would also note that Mr Bowdler, in his observation proposes a number of alterative assessment methods. Firstly, the alternative assessment by absolute level proposed with reference to the WHO Guidelines 2018 is reviewed by the applicant and I consider that their response to same is robust. Effectively the metrics in the WHO Guidelines (Lden) are different to those in the 2006 Guidelines and ETSU-R-97 with the Lden an annual weighted sound pressure level which the applicant notes is rarely used for wind farm noise assessment due to practical difficulties. I would also refer the Board to the fact that the Institute of Acoustics has not made any changes to the good practice guidance set out in the IOA GPG to incorporate the 2018 WHO guidelines. The second alternative is assessment by relative level, BS 4142:2014 which is used to assess the impact of industrial and commercial noise on residential receptors and compares a Rating Noise level (the predicted or measured level plus any corrections to account for noise character) against the background sound levels. The applicant responds to the use of this method by referring to the issues raised about this method in the ETSU document and I consider that the rebuttal clearly outlines why this methodology is not necessary in the current context. While I note that Mr. William McSweeney in particular outlines why this standard can be applied and disagrees with a number of the responses provided by the applicant I consider that the applicant has provided a satisfactory response to the issues raised. I would conclude by stating that it is not the role of the Board to dictate the methodology used by the applicant but rather to assess the information provided.

14.5.3. **Health Effects**

A large number of submissions raise concerns about the potential for the operational development to cause health effects by way of impact on sleep, impact on those with a range of medical conditions including epilepsy, cardio issues and cancer and the impact on neurodiverse persons living within the area. There are also multiple references to families who live or have lived beside existing wind farms and who have experienced issues in relation to same. Some submissions received also reference ‘wind turbine syndrome’. I note that the EIAR at Section 11.7.3.2

addressed health impacts and outlined that as part of the human health assessment of the proposed development, an analysis of peer-reviewed literature on potential health impacts arising from wind energy projects was undertaken. Anecdotal reports were identified of negative health impacts in people living in close proximity to wind turbines, however, the literature review demonstrates that peer-reviewed research has generally not supported these statements. I note the documents referenced in the EIAR and I also note the large number of references to reports, studies and papers contained within the submissions received which counter this claim.

The further information request sought the applicant's response to the submissions received and in Appendix 2 (Section 5.3 Issue 3 & 4) of the response, they address concerns expressed in respect of health effects and vulnerable persons. I would note that the applicants have engaged a number of experts to review the material and respond to the matters arising. These are, as outlined above, Dr. Martin Hogan from Corporate Health Ireland and Jim Singleton MIOA of TNEI Services to address the concerns in respect of Noise and Health Effects. While I have addressed Noise and Shadow Flicker above, and in the EIA below, I would note that the applicant addresses in particular the submission from Professor Alun Evan which discusses potential health effects associated with wind farms which it states references wind farms in general. The response reference studies relating wind turbine noise and a variety of conditions with varying results from no association to lack of or low quality evidence. In relation to impact on sleep from noise, reference is made to a number of studies where there was a high risk of bias or absence of recommendation with the applicant referencing guidelines recommendations.

In respect of vulnerable persons, the response at Issue 4 (Section 5.3) in respect particularly of neurodiverse persons who are stated to have a particular sensitivity to the impact of noise and persons with or recovering from cancer, noting that any human community will have vulnerable individuals with the Dept of Health estimating in 2018 that 1-1.5% of the population have ASD. Reference is made to genuinely held fears but also to the amount of wind farms in the State and the likely number of vulnerable people proximate to same. Reference is also made to the absence of any suggested exclusions of persons by WHO in their Guidelines with health based limits designed to protect all including vulnerable persons. It is stated that this would suggest that the observation of the limits suggested by WHO would be sufficient to protect vulnerable persons. I would tend to agree with the applicant in this regard.

While I acknowledge the concerns expressed, limits and set backs are designed to protect receiving environments and in this regard I consider that the proposed development given its distance from receptors will not adversely impact the population including vulnerable persons.

There is also concern that persons with epilepsy may be impacted by shadow flicker, and as I note above, in relation to shadow flicker, the applicant addressed same at Section 5.6 Issue 2 stating that the risk of shadow flicker triggering an epileptic seizure, without the shutdown mechanisms is deemed to be less than one in 10 million and given technological advances which has made shutdown possible in conditions which might cause shadow flicker it can be completely avoided.
In conclusion, in respect of the critical consideration of the proposal I would refer the Board to the setback distances provided for in the Draft Guidelines in particular the provision of a set back of 4-times the tip height between turbines and the nearest point of curtilage of nearby residential properties. The proposed development provides a minimum 750m setback between turbines and dwelling structures allowing for 4-times the tip height of the proposed turbines with the nearest receptor 755m.

14.5.4. **Property Devaluation**

Many submissions received outline their concern with regard to the potential impact on the valuation of their properties, holdings if the proposed development is permitted. The applicant, in their further information response, responds to the concerns raised and outlines the ways in which the proposal will benefit local landowners and the local community via the community benefit fund. Reference is then made to research carried out in the UK, the US, Canada in 2014 and Scotland in 2016 which find no evidence of a negative impact from the location of turbines. I would note that the turbines are at a minimum 755m from any property and the area is sparsely populated.

14.6. Landscape and Visual Amenity

14.6.1. **Context**

The environmental effects on Landscape and Visual amenity are addressed in Section 15.13 of the EIA below so this section addresses a number of policy matters

in respect of landscape and visual amenity and addresses concerns raised in submissions received. As I note above, since the application was submitted in December 2020, a new Cork County Development Plan has been adopted. While the policy references differ from the previous Plan referenced in the applicant's documentation, the context and content of the policy objectives remain largely the same. These include impact on the landscape and consideration of such developments on scenic routes which I will address in turn. As I outlined in Section 14.2.1 above, the previous decision to refuse permission for a windfarm on a site which includes part of the subject site related in the main to landscape and scenic route issues. As I note above, the policy considerations now pertaining in terms of climate change and renewable energy targets differ immeasurably from those pertaining at the time of the previous decision and it is within the current context of addressing climate change that the current proposal must be considered balanced with a determination of impacts on the context within which the site is situated.

14.6.2. **Draft Landscape Strategy**

A number of polices refer to this strategy. Policy objective GI-14-10 seeks to ensure that the management of development throughout the County will have regard for the value of the landscape, its character, distinctiveness and sensitivity as recognised in the Cork County Draft Landscape Strategy and its recommendations, in order to minimize the visual and environmental impact of development, particularly in areas designated as High Value Landscapes where higher development standards (layout, design, landscaping, materials used) will be required. Policy objective GI 14-12 is a general objective which seeks to preserve the character of all important views and prospects as recognized in the Draft Landscape Strategy. I would note that while there is a high value landscape in close proximity to the subject site, the subject site is not itself located within a high value landscape. I note the NVTA submission shows location of site in relation to HLV with the nearest turbine T11 stated to be only 269m from the HVL and 5 of the turbines (T11, T15, T20, T21 & T22) all within 500m. In response to the concerns raised on this matter in the submissions the applicant stated that the design iterations undertaken had changed to take account of the high value landscape and potential impact on same with the location of turbines altered during the course of the design. It is their contention that the proposal would not impact adversely on the high value landscape.

The site itself is located within a medium value landscape which are defined as being able to accommodate development pressure but with limitations in the scale and magnitude. In this rank of sensitivity, landscape elements can accept some changes while others are more vulnerable to change. I address the effects of the proposed development in the EIA at section 15.13.

In terms of the type of landscape within which the site is located as it relates to the Guidelines, I note that the NVTA submission in particular seeks to classify the landscape type/s of the subject site with their consideration that the vast majority of lands conform to hilly and flat farmland and not transitional marginal land. On this basis, it is their contention, that in line with Guidelines, aesthetic considerations for hilly and flat farmland should have been more influential on the design approach. They also question the assessment of the development in the context of the 2006 Guidelines as it relates to hilly and flat farmland and reference the previous refusal. While, as I outline above, the previous refusal decision was made in a completely different policy context as it relates to climate change, I note the response of the applicant to the matter of landscape character whereupon they believe that the observer has incorrectly assumed the need to assign a single landscape type from the Guidelines with the applicant outlining the rationale for the consideration of more than one landscape type in a site which extends over a considerable land area with a variety of landscape forms and to the fact that the Guidelines are not overly prescriptive with the observer seeking, in the applicants opinion, to apply flexible guidance in an overly rigid manner and to a single landscape type which does not reflect the receiving landscape. I would concur with the applicant's rationale in this regard. The subject site is not a uniform type but a mix of forms and I also note that the report from Cork County Council concurs with the interpretation of landscape form provided by the applicant.

14.6.3. **Impact on Landscape and Visual Amenity and Residential Visual Amenity**

Policy objective GI 14-9 includes a number of objectives. In an overriding objective it seeks to protect the visual and scenic amenities of County Cork's built and natural environment (a) which is a very strategic objective. The second consideration is that landscape issues will be an important factor in all land-use proposals, ensuring that a pro-active view of development is undertaken while protecting the environment and heritage generally in line with the principle of sustainability (b). This puts landscape

as a central factor in the consideration of development proposals seeking to proactively encourage development while protecting the environment. It is an objective that new developments meets high standards of siting and design (c) and that skylines and ridgelines are protected from development (d). Finally, it is sought that proposals necessitating the removal of extensive amounts of trees, hedgerows and historic walls or other distinctive boundary treatments are discouraged (e). While the consideration of individual viewpoints is provided in the EIA below, I would note that the proposal development will alter the visual amenities of the area. This is clear from the photomontages provided and the consideration of the proposed development within the proposed site.

There is concern expressed as to the breaking of the ridgeline of the Nagles by blades and the impact this would have on the Blackwater Valley and the wider views of the Nagle Mountains. The actual environmental effect of this change is considered in my EIA below. In terms of the principle of this change, while it is acknowledged that a number of blades will be visible on the ridgeline and the overall quality of the landscape will be changed, the change cannot be considered to be significant and can be absorbed given the extent of the area over which the development is proposed. As outlined by the applicant in their response to the submissions, the reverse ZTV maps produced shows that while there is minor visibility of turbines above the Nagles from the Blackwater Valley, such views do not occur from highly sensitive receptors or scenic views. I consider that this is satisfactory.

In terms of the impact on residential visual amenity which is one of the most prevalent matters raised in the submissions received. This can be summarised as the change the proposal would have on the views from residential properties, from local landmarks and from the local roads. As I outlined above, in terms of renewable energy, in order to affect change in respect of the climate, our perception of landscape must also change and alter to facilitate the development of such projects which are dependent on a location remote from built up areas with appropriate wind speeds. The enjoyment of a view, whether a view from a private house or local landmark, or a fleeting view along a scenic route, cannot be expected to remain unchanged in perpetuity and cannot be given priority over the need to address climate change. In respect of the many submissions who contend that insufficient photomontages have been provided or photomontages have not been provided from their home or particular viewpoints, the visual assessment undertaken to inform the

locations sought to provide representative viewpoints. It would not be practical or necessary to provide a montage from every single property within the area. I consider that the photomontages provided including the additional views provided in response to the further information provide a representative example of the visual impacts likely to arise within this area.

14.6.4. **Development on Scenic Routes**

A number of objectives in the Development Plan address scenic routes. Objective GI 14-13: seeks to protect the character of those views and prospects obtainable from scenic routes and in particular stretches of scenic routes that have very special views and prospects identified in this plan. In terms of the consideration of development on scenic routes, Objective GI 14-14(a) requires those seeking to carry out development in the environs of a scenic route and/or an area with important views and prospects, to demonstrate that there will be no adverse obstruction or degradation of the views towards and from vulnerable landscape features with the objective that the design or mitigation of same would prevent significant alterations to the appearance or character of the area. It is also stated at Section 14.9.2 of the Plan that it is important to protect the character and quality of those particular stretches of scenic routes that have special views and prospects particularly those associated with High Value Landscapes.

What is apparent in terms of the policy context is that the policy does not prevent development along scenic routes. What it requires is that the applicant demonstrate that there will be no adverse obstruction or degradation of the views towards and from vulnerable landscape features. While I address the effects on the views in the EIA below, I do not consider that the proposal cannot be considered on the basis of the impact on the scenic views. Yes, the views would be altered to a significant degree by the proposal but whether the change would adversely affect the quality of the view is not the main consideration and as I outline in Section 15.13 below, I do not believe that the impact would be adverse.

In terms of the stretches of scenic routes associated with High Value Landscapes which is a matter raised by a number of observers, I note that there are parts of scenic route S11 which are located within the high value landscape. As I have stated above, I examine the visual effects as presented within the photomontages in the EIA below, but in principle and in consideration of policy, I would note that none of the

development is within the higher value landscape and as outlined by the applicant and in my opinion, the stretches of the scenic route located within the HVL does not afford any open or panoramic views over the subject site which would be impacted by the proposal.

14.6.5. Other Landscape Issues

Reference is made, in a number of submissions, to the difference in ground levels between dwellinghouses and the turbines which they consider exacerbates the impact of the height of the turbines. I agree with the applicant's response to this concern that while the figures provided in terms of difference may be correct, the figures do not facilitate a consideration of context either distance or the form of the landscape. Although as acknowledged by the applicant, a view of an uphill turbine can have a more overbearing effect than a similarly distant turbine at the same ground level.

The visual impact of red lights in the night sky and lighting required by the Department of Defence are matters included in the observations. While lighting in the night sky will create a change, I do not consider that the impact could be considered to be significant.

There is concern that the clearfelling of 62.8 hectares of forestry will cause a huge change in the landscape with browning of large area of countryside. Forestry by its very nature is a cyclical form of development with areas of same felled and replanted on a rotational basis. Areas required to be felled to facilitate the proposed development would be felled in due course notwithstanding the proposal.

14.7. Recreation, Amenity, Tourism and Local Cultural Heritage Sites

Many of the submissions are concerned at the potential impacts which might arise in relation to recreation, amenity and tourism within the area of the proposed development. This matter is also addressed in the EIA below at Section 15.4. I would also refer to concerns raised in the submissions received about the impact of the proposal on local heritage sites which are of importance to the local community. I have addressed the matter of Cultural heritage and archaeology in my EIA below at Section 15.12 which relates to sites which includes consideration of National Monuments. I will address the matters in turn. In relation to recreation and amenity

within the area, while I have addressed landscape and visual impact above, I would note that while there will be changes to the visual context within which recreational activities are undertaken, it will not impact the carrying out of such activities albeit some tracks will be closed temporarily during the construction phase. Within many other similar areas around the State, recreational activities co-exist with windfarm developments and in some instances additional recreational activities have been facilitated by the development of tracks and trails within such sites. While the visual context may change and the perception of the enjoyment of same by way of the views currently available, the activities are not incompatible. I note Section 11.6.3 of the EIAR which examines the matter and I would agree that, as outlined in the Wind Energy Guidelines 2006 that wind energy developments are not incompatible with tourism and leisure interests.

In terms of the wider tourism product within the wider area, I note the concerns expressed on relying on findings of Failte Ireland Surveys in 2008 & 2012 which some observers believe are flawed as turbines up to that time were no higher than 115m and visitors were quite a distance from the turbines as such tourists would be traveling on scenic routes with no windfarms nearby as would not have got planning. I do not believe there is any evidence to support this contention. Windfarms are visible travelling on many routes within the State and the enjoyment of the landscape by tourists is not limited to scenic routes. The subject site is not within a high value landscape and while glimpses are available from areas within the high value landscape, this is not considered unacceptable. Furthermore, I would agree with the applicant, as stated in their response to further information, the proposed development will not adversely affect existing trails within the Blackwater region nor would same impact future greenways or other similar recreational projects.

Many of the submissions received refer to the potential impact of the proposal on local sites of importance and the enjoyment of same. These include the ‘Grotto of Peace and Reconciliation’ in the forest at Bottlehill which the observers consider will be impacted by reason of noise and visual impact. This grotto is a site of local importance and while the current amenity enjoyed will be altered it will not be significant and the site will remain accessible and amenable. Concern is also expressed about the impact on Burnfort village which is subject of planned local improvements and Glenville which includes some buildings of historical/architectural

importance. I do not consider that the proposal will impact the proposals the local community propose and the setting of these villages will not be impacted.

Other locations of worship or areas considered by observers to be of archaeological or heritage importance include Carrig an Aifreann (mass rock) at Chimneyfield and St John's Well & Cemetery at Doonpeter These sites are clearly important to the local community although I note do not themselves have any national significance. When within the site of the mass rock at Chimneyfield the development would not have any presence. While the proposed development will be visible from Doonpeter as shown in Photomontage 14, the site will not be significantly impacted by the proposal. The amenity of the site will not be changed such that the site would not remain a place of local pilgrimage and retain its peaceful setting.

14.8. Ecology

14.8.1. Introduction

Section 15.11 below of my EIA addresses biodiversity. An appropriate assessment is included in Section 16 and addresses the requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, section 177AE of the Planning and Development Act 2000 (as amended). This section addresses a number of specific matters which provide some context, as outlined, to matters addressed in the EIAR and addresses a number of other matters not addressed in the EIAR.

At the outset, I note the submission received from Fearghal Duff which refers to the impact the proposal will have on the Convention on Biological Diversity. For the Boards information, the Convention on Biological Diversity is a multilateral treaty which came into effect in December 1993 with three main goals: the conservation of biological diversity (biodiversity); the sustainable use of its components; and the fair and equitable sharing of benefits arising from genetic resources. It is asserted by the observer that the EIAR presented limited ecological surveys and does not provide an in-depth assessment of its structure and function and no assessment of how the integrity of ecosystem will be maintained if proceeds. While I address data and the competency of experts in the following sections below, I consider that the surveys undertaken which are detailed in respect of timelines and species are satisfactory and I do not agree that the ecological surveys are limited.

14.8.2. **Survey/Modelling Data/Competency of Experts**

Concern was expressed by the Irish Raptor Study Group (IRSG) in respect of the vantage point surveys in particular, the methodology used, the rationale/methodology for daytime survey timings and the names/expertise of those undertaking the surveys. The further information request sought clarification in respect of these matters. In response the applicant outlines that the methodology used for the Vantage Point Flight Activity Survey is stated in the EIAR in section 8.5.2.3.3 and 8.5.3.3.1 (SNH, 2017) with no deviation for the standard methodology as indicated in the Best Practice Guidance. It is stated that over the 3.5 years of data collection (March 2016 to September 2019), the VPs changed to reflect modifications to the location of turbines on the site with the modifications stated to be partly based upon re-locating turbines to avoid intensive areas of Hen Harrier activity.

It is stated that Best Practice Guidance for evaluating flight risk for birds at onshore wind farms (SNH, 2017) requires two full years of data collection with the applicant stating that it is only the most recent two years of the 3.5 years of data collected for the site that were used.

In response to the concern that surveys were not spread over full daylight periods which does not reflect raptor activity, it is outlined by the applicant that it is important to note that pre-dawn and post-dusk surveys are required where wildfowl (particularly geese or swans) are identified as important ecological receptors at specific sites with these critical receptors not identified at the proposed site with no important sites for wintering wildfowl with any likely Zone of Influence of the site. It is stated that the vantage point surveys were therefore undertaken during daylight hours (including periods covering both dawn and dusk) and were undertaken when raptors are considered to be most active, and thereby ensuring that the Vantage Point Flight Activity Survey is representative of times when Hen Harriers and other raptor species are likely to be on the wing.

In relation to the concern expressed regarding the expertise of the data collectors/observers who were charged with obtaining the vantage point survey results, the applicant has provided at Section 2.1.1. of the RFI report the credentials of all the ecologists who undertook the bird surveys including the vantage point bird flight assessment. In terms of concerns expressed with regard to the number of ecologists who are accredited by CIEEM or the absence of accreditation and the impact on same on the veracity of the surveys undertaken, ecologists undertaking

surveys which form part of an EIAR or NIS are not required to be a member of CIEEM. They are required to be competent in order to undertake the survey work referenced which is based on their experience which is outlined by the applicant in the response. I consider that the Board, contrary to the IRSG assertion, can accept the survey work outlining detection provided.

In terms of similar concerns expressed in the submissions received that the Collision Risk Model for Hen Harrier is based on misrepresented data. It is stated by the applicant that dates and timings for all surveys are presented, showing that the full suite of Vantage Point surveys were undertaken across a range of survey times. I further note that the author of collision risk model is expressly not criticised, as they are stated to be a highly respected Ornithologist (Dr. Alex Copeland). It is stated that the criticism expressed relates to the data upon which model is based. It is outlined that the temporal bias in data does not facilitate robust determinant of impacts I have outlined my opinion on the data which has been used to inform the assessment and the collision risk model. I would also question why the highly respected Ornithologist would not have sought revised data if they had concerns regarding the temporal bias suggested. I consider that the matter has been satisfactorily addressed. While the IRSG consider the matter has not been addressed, I consider that the applicant has provided sufficient rationale to justify the approach undertaken and I consider that the matter has been satisfactorily addressed.

In response to the clarification sought in respect of whether the collision risk model took account of future changes in forestry cover in the Study area, it is outlined that the revised Collision Risk Model (Appendix 1-2) includes an assessment of impacts arising from changes in forestry cover. It is further outlined that the approach adopted in the revised CRM presents a highly precautionary (over-estimated) approach, by assuming that no flight lines were recorded in forestry habitats, then removes all forestry habitats and re-assessing collision risk based upon a boot-strapped data set. I consider that the matter has been appropriately addressed.

14.8.3. **Hen Harrier**

While I address the potential impacts on the Hen Harrier in Section 15.11 of the EIAR in respect of the assessment of environmental effects on this species, this section seeks primarily to set out the context within which the consideration of the potential impacts on hen harrier are addressed and should be read in conjunction with Section

15.11. As outlined above, further information was sought in respect of the consideration of this species. This includes a response to the matters raised in submissions and in the report from the DAU. The response to the request also includes a revised Conservation Habitat Management Plan and a revised Collision Risk Model. Matters related to appropriate assessment are addressed in Section 16 of this report which addresses the matter of ex-situ.

14.8.3.1. **Context**

The Hen Harrier is an Annex I and Amber listed species. Reference is made to the 2015 National Survey of breeding Hen Harrier with an updated survey awaited with the previous survey showing the hen harrier still resident and breeding albeit breeding pairs have declined with proposal detrimental impact. Reference is also made to the participation of local farmers in the Glas Scheme (The Green Low-Carbon Agri-Environment Scheme (GLAS) offers payments for applicants who carry out actions to enhance the rural environment). Furthermore, a submission was received on behalf of the BRIDE Biodiversity Project (Biodiversity Regeneration in a Dairying Environment) which deals with biodiversity loss on farmland, the aim of which is to create a template that could be rolled out in other parts of the country to reverse the decline in wildlife species or restore species formerly present including lapwing, curlew, cuckoo snipe, hen harrier, corncrake, skylark and barn owl. The project is funded by the Dept of Ag & EU commencing in 2018 with the selection of over 40 farmers across the Bride Valley from Glenville to Tallow drawing up BMP's (Biodiversity Management Plans) for each tailored to suit the species on that farm. Each farm was surveyed in 2018 for bird species, pollinators and bats and will be resurveyed in 2023 to identify any increase.

Reference is made to the 15 years' experience surveying Hen Harrier in the Nagle Mountains with dramatic decline over that time but do still breed with their habitat of open moorland and extensive farmland disappearing with proposed proposal considered a significant potential impact on the species and the Project.

I also note reference is also made in a number of submissions to research by Dr. Fernandez-Bellon (UCC) and MKO; Campedeilli at al (2013) and Pearce-Higgins (2012) on the need for an action plan for Hen Harrier and impact from wind turbines

Reference is also made to an NPWS 2015 report (Hen Harrier Conservation and the Forestry Sector) identifying 15 distinct regions, 8 of which overlap with SPA's and the remaining 7 not part of SPA network with Nagle Mountains one of the 7 regions.

It is stated by the Irish Raptor Study Group (IRSG) that there is a nationally significant population on Nagle Mountains equivalent to 2.9-8.5% of the breeding population in Ireland (Ruddock at al, 2016 Table 13 pg 39) and that the proposal will displace a nationally significant and important breeding Hen Harrier population. Reference is also made to the proposed Hen Harrier Threat Response Plan which is in preparation with wind farm development considered to be is a key threat and pressure being considered in the Threat Response Plan. Outlined that the development footprint is within area identified by NPWS as important non-designated breeding area for Hen Harrier as part of Interdepartmental Ministerial Hen Harrier Threat Response Plan.

The IRSG refute statements that displacement and or disturbance is considered unlikely in mid-longer term to breeding and wintering Hen Harrier and that wind farm will not create a significant additional pressure on conservation status of local Hen Harrier breeding populations. They refute the connotation that local Hen Harrier breeding population is showing evidence of declining numbers of breeding pairs and reject that this should be used to minimise importance and significance of breeding Hen Harrier in the locality. They believe that this adds further weight to the significance and magnitude of the impacts. They reject the connotation that any proposed habitat enhancement can offset and improve conditions for breeding Hen Harrier.

In response to the further information request, the IRSG again reiterate the importance of the area for the Hen Harrier and state that the Board must take account the NPWS Article 12 report for Hen Harrier submitted to EU Commission which states one of main known impacts on this species is wind farms. As outlined above, the assessment of potential environmental effects on the Hen Harrier are addressed in Section 15.11.2.4 below.

14.8.3.2. Response to DAU Concerns in relation to Displacement and the CHMP

While I refer to these matters in the EIA below (Section 15.11.2.4), I would note that in their submission the DAU state they do not agree with the statement at page 188 of the EIAR that "*given a distance of at least 500m from known breeding areas*

displacement and disturbance are unlikely" as they outlined that hen harriers are known to regularly hunt 4 km from their nest sites, particularly in landscapes such as this, where there is a relatively low availability of suitable habitat. In response the applicant clarifies that the statement relates to disturbance or displacement to Hen Harriers at the nest and does not include Hen Harriers foraging during the nesting season. It is stated that this is based on peer reviewed studies. Wider disturbance or displacement impacts on Hen Harrier are stated to be acknowledged and addressed in the EIAR which I can confirm is the case as I address the Hen Harrier specifically at Section 15.11.2.4 of the EIA below.

Furthermore, they outline that the EIAR states (Chapter 8, p. 210) that "*hen harriers do use areas close to turbines*", but no evidence is provided of their use or success in capturing prey (strike rate, etc.) within 250m of an operational turbine. Neither is any evidence produced to support the claim in the EIAR (p. 210) that the 250m displacement is only "theoretical".

The applicant outlines that the statement referenced by the DAU is based upon unpublished data obtained during surveys of Hen Harriers foraging at operational wind farms in Ireland but that no reliance is placed upon the statement in relation to the determination of impacts to Hen Harriers nesting or foraging within 250m of the proposed projects area. They refer in this regard to section 4.1 and section 9 of the Conservation and Habitats Management Plan (CHMP) which explicitly states that all suitable habitats within 250m of a turbine are considered to be no longer available for foraging Hen Harrier and this exclusion area forms the basis for the determination of the area required within the CHMP.

In addition, the Department note that a number of on-site and off-site measures are proposed (mentioned briefly in the EIAR p. 285), but their likely comparative success is not assessed (i.e. compared to no intervention), before concluding that the proposed wind-farm will have an imperceptible impact on hen harrier.

The applicant stated that the updated CHMP (see Appendix 5) addresses this issue comprehensively. Habitat enhancement measures are proposed through the CHMP at alternative lands due to loss of potential foraging habitat within 250 metres radius of each turbine, which totals an area of 148.8ha. They state that the management prescriptions applied under the CHMP are based upon those used by the National Parks and Wildlife Service (NPWS) in the NPWS Farm Plan Scheme. They consider that the measures will benefit Hen Harrier in both the short and long term, and will

ensure the supply of a substantial area of suitable foraging habitat for the local Hen Harrier population, over and above that potentially lost as a result of the proposed development. The overall aim of the CHMP is to provide a net gain of foraging habitat for Hen Harrier for the lifetime of the proposed development. They consider that the proposed Conservation and Habitat Management Plan provides full and effective additional foraging habitat for Hen Harrier, as part of the proposed development of the CGEP. I would refer the Board to both Section 15.11.2.4 of the EIA below where I address the matter of the CHMP as a mitigation measure and in particular to a memo provided by Dr. Maeve Flynn, Inspectorate Ecologist in response to my request to review this Plan which is included as Appendix Three of this report which concludes that further measures are required with conditions recommended to address same.

14.8.4. **Bees**

It is outlined that the zone of the proposed is recognised as a drone congregation area for Irish Black Bees, the preservation of which is considered critical with modifications to landscapes or additional elevations structures having a potential detrimental effect. An observation from Bee Master, David Lee outlines that this species depend on the Nagle Mountains as a mating area for Queens with thousands of drones congregating in the area from April to September. It is noted that worldwide bees are in decline and that the minimum objective of Irish Bee Keeping Association is to promote their conservation and establish areas of conservation throughout Ireland for the Native Honeybee. While the applicant does specifically not address this matter in their response to the submissions received, I note that the submissions received do not provide any reference to the effect a wind farm may have on this species. While I note the reference to the worldwide decline, there is no specific evidence to suggest that wind farm development comprise a reason for same.

14.8.5. **Marsh Fritillary Butterfly**

In terms of the Marsh Fritillary Butterfly, there is concern at the lack of reference to same in the EIAR as it is stated to be one of Irelands few legally protected butterflies and is protected under Annex 2 of the Habitats Directive. A submission received from Ken Bond, who is stated to be a leading authority on butterflies refers to a known

colony within 4km of the proposed development with potential for colonies to be nearer than that. It is outlined that recent records have not been considered or made available with the Marsh Fritillary Butterfly present in Bottlehill woodlands and observed in summer 2020. Other submissions reference a large colony in Knuttery close to T9 and note that this species was the sole reason for the refusal of forestry planting in close proximity to the site. It should be noted that forestry is assessed under a separate licencing code. In terms of the potential impact on this species I consider that the matter has been appropriately addressed in the EIAR, which I assess in Section 15.11.X below with the most pertinent consideration, the lack of suitable habitat on the subject site for this species.

14.8.6. **Bats**

Concern has been expressed in a number of submissions regarding the impact on Bats and in particular the Leisler bat. I note the response of the applicant to this matter Section 3.3 (Issue 4) of the response to submissions whereby the potential impact is acknowledged. Bats are addressed in Section 15.XX of the EIAR but I would note that detailed mitigation measures are outlined which follow Best Practice Guidance (SNH 2021) with the mitigation measures outlined in the EIAR. These include the management of lighting at the stie with lights being turned off at night. Other measures include buffers around the bases of the turbines with the removal of tress within 50m of the rotor blade. For the Boards information, the SNH 2021 guidance reference was updated following the submission of the subject application which would refer to the previous 2019 version in the original documentation. I consider that the matter has been appropriately addressed.

14.8.7. **Impact on Hedgerows from Abnormal Loads**

There is concern expressed that the abnormal loads required to bring turbine parts to the site will require works to roads which may include cutting back trees and hedgerows. The documentation outlines areas where there is a requirement to cut back hedgerow. This is a standard requirement and has been assessed for the project. I do not consider that there will be a significant impact arising.

There is a concern that the Natura report does not include sufficient corrective or preventative measures to hazards identified to local wildlife and environment. It should be noted that the Natura report (NIS) is a very specific document which seeks

to address Article 6(3) of the Habitats Directive and relates to Natura 2000 sites and the potential impact on the conservation objectives of the relevant qualifying interests or special consideration interests.

14.8.8. **Invasive Species**

Concern is expressed in some submissions that the proposed development would lead to the spread of Japanese Knotweed in the area. A submission received from the IFI outlines the importance of employing effective bio-security measures. I would refer the Board to EIA below where mitigation measures are addressed in respect of water quality to ensure that such spread would not occur. I consider that this is satisfactory to address a matter which requires careful management.

14.8.9. **Other Matters**

A number of submissions received refer to the potential displacement of deer and badger as a result of the proposal and the spread of disease including TB which might arise. Firstly, I would note that no active breeding or resting sites for badger were recorded within the application boundary or along the grid connection route as outlined in section 8.3.4.3 of the EIAR. I also note that the otter no active breeding or resting sites (holts or couches) or other evidence of otter were recorded within the windfarm site or the site of the grid connection route.

Concerns are expressed that other animals are not recorded, I consider that the site surveys undertaken as set out in the EIAR are comprehensive and that all species which required consideration in the EIAR have been addressed which includes deer.

14.9. Impact on Angling

14.9.1. A number of submissions have been received which outline the concerns that the proposal will negatively impact fishing/angling on local rivers. It is stated that the River Bride catchment is significant trout and salmonoid habitat and while there is some evidence of a decline in wild Atlantic salmon stocks, the Angling club have collectively formulated a proposal to allow some habitat remedial actions that may enhance the spawning grounds. Reference is made to the practice of catch and release for salmon to help numbers. It is also outlined that the Munster Trout Championships were hosted in 2018 which was catch and release and hope to hold again in future. The concern is related to the preservation of water quality and the

angling groups outline how working with local communities to improve same with good working relationship formed with farming communities with particular co-operation during the championships. The proposed development in itself would not impact the ability to fish the rivers in the local area. The concern is that the proposal would lead to a diminution of water quality which would affect the quality and quantity of fish within the rivers. Water quality and mitigation is addressed in Section 14.12 below and in the EIA below at Section 15.10. I consider that the mitigation measures proposed are satisfactory.

14.10. Impact on Agriculture/Land

14.10.1. A large number of the submissions received outline concerns that the proposal would impact on the viability of livestock within the local agricultural community. This includes concerns about the viability of farming as a livelihood and also the potential impact on the health of livestock. The EIAR states at section 11.5.3 that there are no peer reviewed studies which indicate that wind energy development has a negative impact on the health of livestock. They also refer to the numerous examples of renewable energy developments throughout the country and internationally where livestock coexist and routinely graze in the same fields as wind turbines. Existing land-use, such as grazing livestock or crops can continue on the site as normal. It is outlined that as such, there will be no significant impact to livestock farming practice as a result of the proposed development. While I note the examples of impacts provided in some of the submissions, I would refer the Board to the number of existing windfarms around the country which operate within and adjoining farming operations. I do not consider that the proposed development would have an adverse impact on farming or livestock. A number of submissions refer to the potential impact on securing permission in the future for rural housing. Any application for future development would have to be considered on its own merits and any proposed development, such as the subject renewable energy development, cannot be precluded on the basis of potential one off housing in the future.

14.11. Access Arrangements

The consideration of impact on the local and wider road network and the Grid Connection Route are addressed in Section 15.8 of the EIA below. This section deals with other matters including the proposed site entrances and other matters raised in

submissions received and in the further information requested by the Board from the applicant as it relates to the application.

Entrances

As outlined in the further information request, while four site entrances to access the proposed development were proposed, drawings of three entrances were submitted with details in respect of the existing Bottlehill access omitted. Furthermore, of the three entrance details submitted, further detail on the three entrances was requested. In response the applicant has provided a set of revised drawings for each of the entrances and an additional set of drawings for the Bottlehill entrance which they state was not originally included as no works were proposed to it. Prior to addressing each of the entrances I note that the applicant has consulted with the Planning Authority in respect of sight lines at the entrances.

By way of context to the RFI submission, the applicant outlines that the previous assessment of sight lines for all site entrances were carried out in line with TII Publication DN-GEO-03060 national roads which requires visibility 'Y' distances of 160m in both directions and set back distances of 'X' = 3m for a speed limit of 80kph which are the standards applicable to access from national roads and were considered by the applicant to represent a conservative worst case assessment target.

In relation to the Lackendarragh site entrance it was determined that TII sight line requirements were not achievable at this location with the Cork County Council (CCC) visibility requirements for local roads of 90m 'Y' distance in both directions applied.

In order to address the concerns raised in the Chief Executives report in relation to the Bottlehill/Mullenaboree entrance, the applicant contacted the Area Engineers via email to discuss the observation point requirement of 4.5m 'X' distance set back from the road edge which the applicant outlined was not included in TII publications DN-GEO-03060 or DN-GEO-03030 with the Council's rationale related to the change in use of the access.

Each entrance was then revisited with revised sightline drawings with specific mitigation for achieving sightline requirements provided in Appendix 4 of the RFI report. The results of the second site access survey, which shows existing sight line distances without mitigation, are set out in Table 7-1 of the response. Updated site

entrance drawings were issued to Cork County Council engineers for consultation in February 2022 and the applicant was advised that they did not wish to provide further comment. The applicant has set out in the response that following revised surveys of all of the proposed site entrances, that they satisfy CCC's sightline requirements.

Drawings of each of the entrances are included in Appendix 4 of the RFI response report and each one is addressed in the RFI report with a consideration of the achievement of Cork County Council requirements, which are ('Y'=90m) at a setback distance of 'X'=4.5m and the TII requirements. I will address each in turn.

Existing Bottlehill Facility Entrance

It is stated that the existing Bottlehill facility entrance can achieve minimum Cork County Council sight line requirements with minor mitigation in the form of roadside hedgerow trimming and the moving of a road sign to the left of the entrance which is photographed in the response. TII sightline requirements are also achievable in both directions with some additional hedgerow cutting to the left. I consider that this entrance has been appropriately assessed and is satisfactory.

Bottlehill/Mullenboree Entrance

This entrance can achieve minimum Cork County Council sight line requirements with mitigation in the form of roadside hedgerow trimming in both directions. In terms of the TII sight line requirements, these are stated to be also achievable in both directions with additional mitigation in the form of roadside hedgerow trimming in both directions. It is outlined that following site surveys it has been determined that the required mitigation can be achieved without works in third party lands. I note the observation from Kevin Creedon received in response to the further information submission in respect of this entrance where reference is made to third party lands within the area required for mitigation. The lands referenced by Mr Creedon are shown in a photo on page 4 of his submission with a red line indicating same. Given this is a photo and is not scaled or detailed in any way, it is not clear where this is on the plan drawing submitted by the applicant. Drawing P20-009-0101-0001 provides the sightline and visibility splays in each direction. Reference is made on the drawing to public road hedgerow. If there is a dispute with regard to what is in public or private ownership, I would refer the Board to Section 37H (6) of the Planning and Development Act 2000, as amended where it is clearly stated that *"a person shall not be entitled solely by reason of a permission under this section 37G to carry out any development".*

Knockdoorty Entrance

This entrance can achieve minimum Cork County Council sight line requirements without any mitigation. TII sight line requirements are also achievable in both directions without additional mitigation. I consider that this entrance has been appropriately assessed and is satisfactory.

Lackendarragh Entrance

The Lackendarragh entrance can achieve minimum Cork County Council sight line requirements with mitigation in the form of roadside hedgerow trimming in both directions. TII standard sight lines are not achievable in both directions due to unfavourable road geometry and third party land boundaries to the left. Following site surveys the applicant states that the required mitigation can be achieved without works in third party lands. Drawing P20-009-0101-0002 outlines the 90m sightlines available in each direction. I consider that this entrance has been appropriately assessed and is satisfactory.

For all entrances it is stated that roadside hedgerows will be managed throughout the lifetime of the project to ensure visibility splays are maintained. This is acceptable as is would comprise standard practice.

Clarification on Drawings

The Board in the further information request sought clarification in respect of a number of drawings which were referenced in the documentation submitted but which themselves did not appear to have been included. The first drawing, P1306-2650-0033, refers to part of the grid connection route (GCR) as it passes under the M8 motorway via HDD east of Corrin Woods but as the GCR is not part of the application it was not submitted. In light of the concerns of the TII above, a new revision of the drawing (P20-099-2650-0033) with further details of the proposed HDD has been prepared and has been included in Appendix 4 of the RFI report.

The other drawing referenced in the FI request was drawing P1306-0501-0003 is stated to have illustrated a turbine delivery route (TDR) node which was subsequently removed as part of the TDR assessment within section 3.5.6 of the EIAR and the drawing has since been superseded. The matter has been appropriately clarified by the applicant.

14.12. **Water Quality & Mitigation Measures**

14.12.1. I note that many of the submissions received refer to the potential impact of the proposed development on water quality in the local environment. Water Quality has a number of facets as it relates to the proposed development, firstly, the impact that a proposed development would have on ecology by way water quality, the impact on water quality status and impact on water supply to domestic and agricultural water supplies. In relation to ecology, this matter is addressed in Section 14.8 of this assessment, in Section 15.11 of the EIA below and in the Appropriate Assessment at Section 16 of this report. In terms of water quality status, the applicant outlines that surface waters will not be negatively impacted as a suite of strict mitigation measures are proposed to ensure the status of surface waterbodies will be maintained. These are outlined in detail in the EIA below. In terms of water supply, as with measures proposed to ensure there is no impact on status, the drainage design and sediment control measures including interceptor drains will ensure that no deterioration is likely on any surface or groundwater body which feeds water supply systems in the area. No direct discharges from the site are proposed to any waterbody within or surrounding the site.

14.12.2. I note the IFI reference to the need to assess borrow pits in terms of their suitability so that any surface water pollution emanating from same can be prevented. I would refer the Board to Section 1.3 of the Further information response report which provides additional description of the proposed borrow pits including the proposed drainage design which I consider is satisfactory to address the IFI request.

14.12.3. The IFI also refer to the location of silt traps which they consider should be located in areas where run-off will be intercepted rather than immediately adjacent to natural watercourses. The applicant has responded to this matter by outlining the proposed location of silt traps and the design proposed in respect of same and for the Board’s ease of reference this comprises the location of silt traps at the outfalls from roadside swales to silting ponds with both silt traps and check dams proposed used to catch the sediments within the swales. The unsettled particles will run through a settlement pond where they discharge diffusely. Silt traps proposed in swales would consist of geotextile staked across the swale at regular intervals with the geotextile weighed down on the upstream side with clean filter stone to provide

further filtration and stability to the silt trap. Regular maintenance of same is proposed, as is outlined in the next section.

14.12.4. I would also refer the Board to the response of the applicant to the DAU request in respect of the sediment traps proposed. Reference is made by the applicant to the EIAR and associated Surface Water Management Plan submitted with the EIAR which describes sediment traps with a plan of a silt trap attached to the FI response as Figure 2.2.

14.12.5. As is clearly outlined in the EIAR, in the absence of mitigation, there is the potential that the proposal could impact on receiving waters. However, as with other similar developments, the inclusion of a range of best practice mitigation measures in the drainage design for the site, which is detailed above, provides that there will be no negative impact. The range of measures provides options in the event that one measure should fail. There are also additional measures proposed such as the Surface Water Management Plan (SWMP) and the Emergency Silt Control and Spillage Response Procedure to address emergency events should they arise. The CEMP and the aforementioned SWMP include measures for the maintenance and management of the site drainage system during the operational phase. I consider that the documentation submitted and the further information response clearly demonstrates that the measures proposed by way of the proposed site drainage system are satisfactory to address the concerns raised. The concern expressed by observers as to the need for mitigation in the first instance, and the extent of measures in the second, while acknowledged, does not reflect that such measures are commonplace with developments of the type proposed.

14.13. Flood risk

14.13.1. Concern is expressed with regard to the potential for the proposed development to create a flood risk. While I address hydrology at Section 15.10 of the EIA below, I would note a number of matters in respect of concerns raised in relation to flood risk. Whether in the first instance any of the turbines are located in area subject of flood risk or secondly whether the proposed development has the potential to create flooding downstream. In relation to the first matter and in response to the concerns raised in the submissions, Section 3.2 (Issue 2) of the further information response to issues raised by the Planning Authority particularly in relation to the

location of T3 and T5 within flood zones A & B respectively. As outlined in the response, T3 is 172m from the flood plan and T5 is 313m with Figure 3.1 illustrating the location of all turbines within the context of the flood plains. Therefore, there are no turbines within either flood zone A or B. In terms of whether the proposed development in terms of surface water flow patters has the potential to lead to downstream flooding, as outlined in the EIAR, without mitigation there is a negligible impact in respect of flood risk but it has been proposed to include mitigation measures to ensure that any potential impact can be mitigated. While this is outlined in the EIA below but for ease of reference the proposed site drainage design is based on SuDS where swales (with check dams or berms where required) are proposed to be utilised to retain additional volumes. It is also proposed that access roads and hardstanding areas are constructed from a permeable material to allow water to infiltrate underground. I also note that a concern was expressed that increased run-off had not been calculated to allow climate change expectations. In their response to the further information, the applicant addresses this matter (Section 4.1 Issue 10) outlining that rainfall depth (storm intensity) was increased to allow for potential climate change effects. I am satisfied that the matter of flood risk has been satisfactorily addressed.

14.14. **Peat & Landslides**

While land, soils and geology are addressed in Section 15.9 of the EIAR below, I note the reference in a number of submissions to concerns regarding the location of the proposal on peat lands and the potential landslides. As outlined in Chapter 9 (Land, Soil & Geology) of the EIAR, the GSI Landslide Susceptibility database indicates that the proposed development and proposed infrastructure locations are generally located within areas of 'Low' susceptibility with 2 turbines (T20 & T21) located in areas considered 'Moderately High' susceptibility and 1 turbine (T22) located on lands considered 'Low to Moderately Low' susceptibility. Figure 9.10 in the EIAR illustrates this and I note that Figures 9.11.1 – 9.11.4 show the locations on site of peaty topsoil and thin blanket peat. A slope stability assessment was carried out at the site to investigate potential slope failure. Safety ratios for potential slope failures indicate that the slopes are considered stable in the long-term drainage conditions. A shallow Peat/Peaty Topsoil deposit limited in extent and thin with typical thicknesses of between 0.1 – 0.4m was identified on site and as less than

0.5m of peat was recorded, a peat stability assessment was not considered relevant for the proposal as per the Guidance outlined. Therefore, in the interest of clarity, a Slope Stability Assessment was carried out but a Peat Stability Assessment was not.

I note the submission from Alun Evans where reference is made to an Energy Policy paper related to the erection of wind farms on upland blanket bog and to his accompanying statement 'as much of site is likely to be'. This site is not an upland blanket bog and therefore concerns related to same are not considered relevant. As outlined in the EIA below the site walkover and site investigations found the presence of small areas of peat deposits and peaty topsoil within the proposed development boundary but the site does not comprise a bog.

There is also reference to an Irish Times series entitled 'Picture of Ireland (8-12-2012) which includes a map showing the location of windfarms and a map of peatlands (39/03/2012) and suggesting that one map could be superimposed on the other. This is not of direct relevance to the subject site given it is not a peatland.

I also note the EPA statement referenced by Mr Evans, that Ireland's remaining near intact peatlands absorb the equivalent of 200,000 tonnes of carbon dioxide a year but the process reversed when peatlands degraded resulting in Irish peatland releasing 9.6 million tonnes of carbon dioxide per year. Again, given that the site is not an intact peatland, the carbon loss referenced will not occur.

Concern is also expressed elsewhere in relation to blanket bog with Ireland possessing 8% of this habitat with the potential for landslides such as occurred at Meenbog which it is stated would be disastrous for the area. It is further outlined that the catchment of the River Bride is in real danger from the proposal with many cases of environmental disasters from similar developments with breaches occurring where spawning beds were smothered due to run-off with landslides such as the River Finn in Co Donegal referenced. Having regard to the assessment of this matter in Section of the EIA below, I consider that the matter of slope stability has been satisfactorily assessed.

14.15. Telecommunication Interference

14.15.1. The importance of telecommunications is expressed in many of the submissions particularly as it relates to internet access to facilitate working from home/businesses within the area and access to TV services. Telecommunications is

addressed in Chapter 16 of the EIAR and I address same below in Section 15.4 of my EIA. No significant impacts are predicted, a suite of mitigation measures are proposed and if the Board are minded to grant permission, I consider that a condition should be attached to any grant of permission which requires the applicant to introduce other measures at the expense of the development to minimise interference, should such interference arise.

14.16. **Impact on Aviation**

14.16.1. For the Board's reference, Section 15.4 below of the EIA addresses Aviation. As outlined in the EIAR, the development is located ca. 27.4km (14.8 nautical miles) from Cork Airport. Turbine 22 is the turbine at the highest elevation with the tip height altitude being 543m or 1,780 feet.

14.16.2. Concern has been expressed by a number of observers as to the potential impact of the proposal on the flightpath for Cork Airport. A number of submissions were received from the IAA following the submission of the application. These concerned a number of matters which I will address in turn.

14.16.3. The first related to observations received from the IAA Engineering Department that the wind farm is within Cork ILS 16 (LOC 16) coverage area and might have an impact on ILS 16 flight check profiles. It outlined that FCSL are the current flight checking company and it was required that FCSL (flight checker) complete an assessment. The second matter related to observations received from the IAA Aerodromes Department which referred to the Engineering Section observations and subject to that requirement being satisfied appropriately and in the event of planning consent being granted, they recommended a number of conditions including warning lighting, as-constructed coordinates in WGS84 format and notification of intention to commence crane operations.

14.16.4. Further information was sought by the Board in relation to the matters arising, including as outlined above in the first matter whereby the IAA requested the applicant address their requirements in respect of the potential impact on the Cork ILS 16 (LOC 16) coverage area. In response, the applicant stated that it commissioned Flight Calibration Services Ltd (FCSL) to assess if the proposed development would have any adverse effect on flight inspection procedures and

profiles associated with the Cork Airport Runway 16 Instrument Landing System (ILS). The report is attached as Appendix 6 of the response.

14.16.5. For ease of reference, Runway 16 ILS provides radionavigation information to aircraft in the initial and final approach phases of flight towards Runway 16 within 25NM of Cork Airport. As outlined above, the subject site is within 14.8NM of the Airport.

14.16.6. The response submitted, on the applicant's behalf, outlines that a flight inspection aircraft flying centreline, part orbit, bottom edge, slice and left slice 8° flight profiles associated with the Cork Airport Runway 16 ILS will remain sufficiently clear of the proposed development in Visual Meteorological Conditions (VMC). It was qualified that if the 17 nautical mile part orbit profile is to be flown in Instrument Meteorological Conditions (i.e. in poor visibility), the part orbit height would need to be increased to allow 1,000 ft vertical clearance above the highest wind turbine (T22). For the slice and left slice 8° profiles, the proposed wind farm would require that these profiles are flown at higher altitudes to provide sufficient clearance above the proposed wind turbines. The flight inspection Glide Path slice and left slice 8° profile (level runs) would have to be raised to an altitude of 2,800ft in Instrument Meteorological Conditions (i.e. in poor visibility), to provide the flight inspection aircraft adequate clearance over the proposed wind turbines. They further qualify, that if there is insufficient Glide Path Radio Frequency signal for the extended level run at 2,800 ft then it may not be possible to conduct this flight inspection in conditions of bad visibility. To this end, the report by FCSL includes one specific recommendation that being that flight trials should be conducted at the next routine Runway 16 ILS flight inspection to assess the radio frequency signal levels for extended Glide Path level runs at an altitude of 2,800 ft above mean sea level.

14.16.7. Overall, it was stated that the impact of the proposed development on Runway 16 ILS flight inspection procedures is expected to be minimal, with minimal cost implications, as ILS flight inspection tasks are normally planned such that they are conducted in conditions of good visibility. If however weather deteriorated during a flight inspection task or if the task had to be conducted in poor visibility for some operational reason, then aircraft crew would need to revert to instrument flight rules with the recommendation regarding flight trials outlined above reiterated.

14.16.8. The responses received from the IAA in response to the further information submission, which I address in the paragraphs below, make no reference to this report and in this regard, I consider that the matter has been addressed to their satisfaction. I would also note that the EIAR references (Table 16-1) responses received to consultations with service providers including the IAA which stated that there were no further objections.

14.16.9. Following on with the matter of consultations, the Boards second matter of further information requested clarification on Section 16.5.2.5 of the EIAR – which related to a statement that "*no scoping response was received by the IAA or DAA citing any concerns with the proposed development despite multiple attempts at engagement It is considered therefore that there will be no significant effect on aviation from the proposed development*". However, both Table 16.1 and Section 16.4.1 refers to correspondence received from the Irish Aviation Authority.

14.16.10. In response it was stated that it is clarified that no scoping response was received from the IAA or DAA. The text in Table 16-1 and Section 16.4.1 of the EIAR states that a response was received from the IAA, with this consultation with the IAA separate to the scoping process, however I note Section 1.4.1 refers to scoping. Notwithstanding, it is clear consultation was undertaken. I consider that this matter has been addressed.

14.16.11. A submission was received from the IAA in response to the further information response which required two further reports. It was stated that the observation of the **Surveillance Domain was** that a detailed Radar Impact Assessment is required due to proximity to Cork Radar and the observation of the **Safety Regulation Division, Aerodromes** that completed an Aeronautical study should be submitted to DAA/Cork Airport and IAA's Air Navigation Service Provider and Engineering for their review and comment prior to the finalisation of the application. The IAA submissions received in the first instance were from the Engineering Section and the IAA Aerodromes Department.

14.16.12. It would appear in the response to further information from the IAA that they have referred to two additional assessment/studies - a Radar Impact Assessment and Aeronautical Study, which have not been referenced heretofore by the IAA in the submissions received to the original documentation. I note that the applicant has submitted an Aviation Impact Assessment report (Appendix 7 of response), with the

further information reports, which was prepared in August 2020 (most up to date versions submitted). This identifies receptors and notes in respect of IAA consultation that the IAA had been consulted with and had raised concerns that the proposed turbines could impede some ILS test flights. This has been addressed as outlined above. Furthermore, this report outlines that three assessments have been undertaken two of which were done as a result of consultation with the IAA. The three reports are – Aviation Risk Assessment, ILS Calibration Flight Impact Assessment and Radar Vectoring Area Assessment. These studies were undertaken in the knowledge of and following consultation with the IAA. The most up to date August 2020 versions have been submitted with the response. In this regard, I do not consider that it is necessary to undertake further assessments having regard to the robust consultation and assessment undertaken to date.

14.17. **Decommissioning**

14.17.1. Concern is expressed in observations received as to decommissioning of the development in the context of the environmental impacts of the works required to undertake same and also who will be responsible for the decommissioning in c.30 years. The decommissioning phase of the proposed development, which comprises the removal of the turbines and the associated infrastructure, is described in detail in Section 3.9 of the EIAR. It is proposed that the turbine foundations will remain and allowed to revegetate with site tracks, substations to remain in place with cables cut back and left in situ. A decommissioning plan was included as part of the Construction & Environmental Management Plan (CEMP) (Appendix 3.1 in Volume 3) in the EIAR. The potential environmental impacts are described in the EIAR under the environmental factors where relevant and are addressed in my EIA below. I consider that appropriate measures are being proposed to facilitate the future decommissioning phase and the potential impacts have been satisfactorily addressed in the EIA which I have assessed in Section 15 below.

14.18. **Community benefit fund**

14.18.1. A number of submissions suggest options for the implementation of any community benefit fund. These include providing householders within a range of distances of the proposed development with monetary compensation. As outlined by the applicant in their further information response, the matter was addressed in the

EIAR in a number of sections. In particular Section 11.4.3.2 states that as set out in the terms of the Renewable Energy Support Scheme (RESS), all renewable energy projects applying for RESS will require a Community Benefit Fund prior to commercial operations of the project. They reference the contribution for RESS 1 (2020), the first renewable energy auction under the new support program, required a contribution of €2/MWh for all projects. They also state that as part of RESS 1, the Community Benefit Fund will provide a minimum payment of €1,000 to all dwellings located within a distance of 1 kilometre radius from RESS 1 projects and a minimum of 40% of the funds is to be paid to not-for-profit community enterprises, focusing on education, energy efficiency, sustainable energy and climate action. It was stated that following public consultation, it was made clear that part of this fund should be ring-fenced to provide support to the residences in closest proximity to the project, a Near Neighbour scheme. The extent of the overall benefit fund to be allocated to the Near Neighbour scheme and the distribution of the balance of community benefit funds is to be further discussed and agreed with the community in future engagement with the total fund per annum dependent on the power output of the project overall which may vary due to the installed turbine output and the number of permitted/constructed turbines.

14.18.2. The methodology by which the fund is managed I consider is most suitably agreed between the applicant and the planning authority and in this regard I propose that a condition is attached to any grant of permission if the Board decide to approve the proposal.

14.19. Competency

14.19.1. I am satisfied that the EIAR and NIS surveys and data analysis have been undertaken by suitably qualified experts in their relevant fields. The names and qualifications of the experts are set out in the documentation provided. The assessment of same is undertaken in Sections 15 and 16 of this report.

14.20. Financial contributions and bonds

14.20.1. I would recommend that the standard conditions in respect of financial contributions and bonds should be attached if the Board are minded to grant permission.

15.0 **Environmental Impact Assessment**

15.1. **Introduction and Legislative Provision**

15.1.1. This application was submitted to the Board after 1st September 2018 and therefore after the commencement of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 which transpose the requirements of Directive 2014/52/EU into Irish planning law.

15.1.2. The EIAR is laid out in a series of documents as follows:

- Volume 1 – Non-Technical Summary
- Volume 2 – Main EIAR
- Volume 3 – Appendices
    - Folder 1 – Appendices 1-5
    - Folder 2 – Appendices 6-8
    - Folder 3 – Appendices 9-16
- Volume 4 – Photomontages – Books 1 & 2

Chapter 1 provides an Introduction to the EIAR and outlines the applicant, proposed development, requirement for EIAR and methodology and structure of same. It also addresses contributors to the EIAR (CV's provided in Appendix 1), the permission period sought and the difficulties encountered in addition to details of where the document may be viewed or purchased.

Chapter 2 outlines the Need for the Proposed Development and the Alternatives Considered. In relation to the need, the EIAR references climate change, EU Targets and Policy, Energy security and competitiveness of wind energy in addition to the economic benefits of the proposal. I address the matter of need at Section 14.2.2 of the planning assessment above. In relation to alternatives considered these address alternative processes, site selection at a macro and micro level as well as alternative layouts and design in addition to constraints. Alternatives are specifically addressed in this report at Section 15.2 below.

Chapter 3 provides a Description of the Proposed Development and outlines the project construction. I would refer the Board to Section 3 above for a detailed

description of the proposed development. I would also note that in response to the further information request further detail was provided on several elements of the proposal.

Chapter 4 outlines the relevant Policy which includes International, European, National, Regional and Local polices and relevant Guidelines. I would refer the board to Section 5 above which outlines the relevant polices for the proposal and to Section 14.2.3 of the planning assessment which addresses compliance with policy.

Chapter 5 addresses EIA, Scoping Consultation & Key Issues outlining the key issues raised during the scoping process, the consultation with key stakeholders, community consultation and public information events and the key issues raised during the scoping, pre-application and public consultation. I would refer the Board to Section 14.3 of the planning assessment above which refers to Consultation.

15.1.3. The likely significant direct and indirect effects are considered under the following headings, after those set out in Article 3 of the Directive from Chapter 6-16 as follows:

- Air & Climate
- Noise & Vibration
- Biodiversity
- Land, Soils & Geology
- Hydrology & Water Quality
- Population, Human Health and Material Assets
- Shadow Flicker
- Traffic and Transportation
- Archaeology, Architecture and Cultural Heritage
- Landscape and Visual Impact Assessment
- Telecommunications and Aviation

Each of these factors are assessed in Sections 15.4 to 15.13 below.

15.1.4. Cumulative Impacts for each environmental topic are addressed within each Chapter of the EIAR with the projects considered in the cumulative assessment set out in a

table in Appendix 2 (Volume 3 – Folder 1). I note that Section 1.4.3 of the EIAR states that the assessment material for the cumulative impact appraisal was compiled on relevant developments within the vicinity of the proposal, including the length of the proposed grid connection route. The material was gathered through a search of relevant County Council's Online Planning Registers, reviews of relevant EIA documents, planning application details and planning drawings, which served to identify past and future projects, their activities and their environmental impacts. It is stated that the relevance of the projects was considered on a case by case basis in each chapter as necessary depending on the interaction and likelihood of in combination impacts. While the EIAR states that the projects identified for cumulative assessment are set out in Appendix 1.2 of Volume 3 of the EIAR, as clarified in the further information they are included within Appendix 2. I propose to address cumulative impacts within each environmental factor rather than separately for ease of reference as not all projects referenced are of note for each environmental factor. For ease of reference, I would note that the projects included for consideration include the following:

- Bottlehill Landfill
- Castlepook Wind Farm
- Knocknatallig Wind Farm
- Boggeragh Wind Farm
- Esk Wind Farm
- Single Wind turbine
- M20 Motorway
- M28 Motorway
- Dunkettle Interchange
- Existing Forestry Activity
- Replant Lands at Moneygorm
- Replant Lands at Ballard.

15.1.5. Interactions between environmental factors is addressed in Chapter 17. I propose to address this matter at Section 15.14 of this EIA. Major Accidents and Disasters are addressed at Section 15.15 of this EIA

15.1.6. I would note that a number of submissions consider that the site was not adequately assessed on the basis of the walkover surveys conducted particularly as it relates to the consideration of hydrology on the site. The applicant's response to this concern highlights that while the overall site is considerable, the construction area covers a much smaller area and that the days spent on site was sufficient to cover the area concerned for the ecology and geotechnical teams.

15.1.7. For the Boards information, a schedule of the mitigation measures proposed is included as Appendix 1.1 of the EIAR. FURTHER INFORMATION

FURTHER INFORMATION

15.1.8. In response to the request for further information issued by the Board to the applicant, details in respect of a range of heights/diameters for the turbines and other details including the dimensions of foundations and changes to the met mast as well as the removal of reference to 'up to' in respect of the height and number of elements of the proposal are outlined in further information response. Appendix 1 of same provides further detail in respect of the nature and scale of the proposal and I outlined same in Section 3.2 of my report above but for ease of reference the following ranges are of note:

- Tip height range from 165m to 169m
- Hub height range from 96m to 103m
- Rotor diameter range from 132m to 138m.

15.1.9. Table 2-1 of Appendix 1 of the RFI response outlines each of the EIAR chapters and indicates where updates were required to address the proposed turbine range. I note the applicants statement that the conclusions in the EIAR remain the same and the mitigation measures where required remain the same as outlined in the EIAR. I have indicated the relevant section of the RFI response under each environmental factor below.

15.1.10. I am satisfied that the information contained in the EIAR and supplementary information received in response to further information has been prepared by competent experts, whose qualifications are provided in Appendix 1.1, and generally

complies with article 94 of the Planning and Development Regulations 2000, as amended, and the provisions of Article 5 of the EIA Directive 2014.

15.1.11. I have carried out an examination of the information presented by the applicant, including the EIAR, the submissions made during the course of the application and the response to the further information request. A summary of the submissions made by the prescribed bodies, observers and the planning authority has been set out at Sections 6, 7, 8 & Appendix 1 of this report with the submissions received in response to the further information request are set out at Sections 11. These submissions include matters relevant to this EIA. The relevant issues raised are addressed below under the relevant headings, and as appropriate in the reasoned conclusion and recommendation including conditions.

15.1.12. I am satisfied that the EIAR and revisions to same has been prepared by competent experts to ensure its completeness and quality, and that the information contained in the EIAR and supplementary information provided by the developer, adequately identifies and describes the direct and indirect effects of the proposed development on the environment and complies with article 94 of the Planning and Development Regulations 2000, as amended.

15.2. Consideration of Reasonable Alternatives

15.2.1. Introduction

Article 5(1)(d) of the 2014 EIA Directive requires:

"(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;"

Annex IV of the Directive (Information for the EIAR) provides more detail on 'reasonable alternatives':

"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

Chapter 2 of the EIAR deals with the alternatives considered under a number of headings which I will consider in turn. I would also note that alternatives were considered in respect of the location of the proposed turbines, the grid connection, the turbine delivery route and battery storage facility.

15.2.2. Alternative Processes

The consideration of alternative processes relates to other technologies for the production of renewable energy. One such technology is bio-energy, which is the production of energy from materials which are biodegradable, which is explored in some detail in the EIAR where I accept the conclusions that this is not a reasonable alternative to the proposed development for the production of electricity.

Another alternative addressed is solar energy which has seen a surge in proposals in recent years but as outlined by the applicant is a less efficient power source than wind with the same output as proposed requiring more than three times the area of felling. I consider the details provided are sufficient to support this contention.

I would also note that the applicant at Table 2-1 has provided a comparison of environmental impacts of the proposal, a biomass development and a solar farm development.

The applicant also mentions off-shore wind under the consideration of alternative technologies. I would also note that a number of observations received address the matter of alternatives principally in relation to the alternative of off-shore wind which they believe is an appropriate alternative to the on-shore proposed and consider that it has not been adequately addressed. The applicants state that this energy was not considered feasible for this project as the applicant does not hold the relevant licences required nor do they have the expertise necessary and therefore it was not considered further. While I acknowledge what may be perceived as being an inadequate consideration of this technology, off-shore wind is not a feasible alternative at this location given it is an on-shore site. Furthermore, the proposals likely to materialise for off-shore wind in the short to medium term will not have the required capacity to render on-shore wind no longer necessary. Therefore, I consider that the matter has been appropriately addressed.

15.2.3. Do-Nothing

Critical to the consideration of the ‘Do-Nothing’ scenario are Ireland’s binding targets, set by the EU in reslpect of the amount of energy generated by renewables and the overall objective of carbon neutrality which form part of national policy. As outlined in

the EIAR, the proposal has an estimated annual saving of approximately 137,371 tonnes of CO2 emissions. This coupled with the growth in energy demand provides that the do-nothing scenario would put further strain on existing infrastructure and economic growth. I consider that this matter has been satisfactorily considered.

15.2.4. Site Selection

The EIAR considers site selection in respect of alternatives both in terms of the macro level and micro level which I will address in turn. At a 'Macro Level' the primary considerations related to national environmental designations, existing windfarms, grid capacity and infrastructure in addition to national and regional polices and the availability of Coillte lands. The EIAR provides details on all of these factors with a series of figures showing the national profile of designations, wind energy development and the transmission system provided. The rationale underpinning the macro site selection addresses the matter appropriately.

At a 'Micro Level' the considerations outlined relate to Local planning polices, Natura 2000 sties, population density (Table 2-2 and Fig. 2.5), access to major transport corridors, proximity to the Grid, land availability, local environmental sensitivities and wind speeds (Fig. 2.6). All of these are addressed by the applicant in Section 2.3.4 of the EIAR and includes figures which outline the area open to consideration for wind energy in the CDP. I consider that the rationale is reasonable.

15.2.5. Layout Alternatives

The consideration of layout alternatives is addressed in some detail in Section 2.3.5.1 with the 'iterative process' taking account of distance houses, designated sites and constants such as watercourses. Other criteria included suitable wind speeds, landscape and visual sensitivity, ecology, ornithology, soils & geology, noise and cultural heritage. Table 2-3 tabulates the environmental considerations outlining the required set back/constraint for each environmental factor. All of these matters are addressed elsewhere in this EIA.

15.2.6. Design Alternatives

It is stated in terms of design and scale that as part of the design a number of different turbine heights were considered noting that fewer larger turbines with greater power output is in line with industry trends with a number of recent decisions by the Board outlining developments with larger but fewer turbines are outlined. The EIAR presents a visual interpretation of this concept at Figure 2-7 with turbine height/density considered in respect of the same output at tip heights of 156m/170m

and 185m with four design iterations outlined in further detail and residual impacts assessed against environmental factors (Table 2-4).

15.2.7. Grid Connection

Noting that a range of potential options were considered and examined, Table 2-5 outlines the potential grid-connection options and capacity whereby of the 8 options considered only two had capacity. The decision to choose Barrymore was made following discussion with EirGrid and in light of the need for further infrastructure at the other potential location. It is also outlined that alternatives were also considered in relation connections by way of overhead and underground was examined with the options outlined and rationale for choosing the underground option now proposed provided. I consider that the alternatives examined have been satisfactorily outlined.

15.2.8. Turbine Delivery Route

The applicant outlines how two options were examined which I note is examined in detail within Chapter 3 of the EIAR and which I have addressed in detail in Section 3 of this report. It is stated that the existing routes between the two proposed turbine clusters indicated no viable route was available for the delivery of turbines without significant accommodation works and potential impacts to property, land and potential for impact to watercourses and habitats and therefore the reasonable alternative was to use both eastern and western TDRs to delivery turbine components to the respective sites. The alternative of using the two routes was considered to have significantly less impact on local roads and land located between the two proposed turbine clusters of the proposed development. The consideration of alternative access to facilitate the western cluster are also outlined in detail with Table 2-7 comparing the potential environmental impacts of each option under the environmental factors with option 1 chosen which comprises an existing Coillte access track located on the L-1219-0 road which was selected as the existing entrance has safe visibility and much of the land required to be cleared and surfaced to accommodate turbine delivery is previously disturbed land where a carpark was formerly located.

15.2.9. Battery Energy Storage System

It is explained that the proposed BESS units were first proposed at the 2 proposed substations locations at Knockacullata and Lackendarragh North with the sites

chosen for their location in proximity to the grid export cable and to minimise potential impact on the receiving environment. It is outlined that the BESS requires a hardstanding area and security fencing to house the system with the potential impacts of providing another additional hardstanding area for the BESS assessed with the substation compounds chosen to avoid potential impact from additional land take required for separate hardstanding compound/s with the substation compounds doubling as BESS compounds. It is stated that safety issues raised at the public consultation stage particularly in relation to proximity to dwellings with the BESS element of the proposal consolidated into one facility to be located next to the main on-site substation compound at Lackendarragh North given its lower density of dwellings than the Knockacullata site with the Lackendarragh North compound also closer to the national grid. I note that the do nothing scenario of not including battery storage was considered with the conclusion that following mitigation there would be no impact from the proposed BESS so therefore no significant benefits from not providing same. It would reduce the electricity output capacity of the proposed development with less benefit to air quality and climate. Table 2-8 provides a comparison of potential environmental effects of the alternatives considered.

15.2.10. Having regard to the requirement to consider reasonable alternatives and its purpose (that being the avoidance of significant environmental effects) and noting the nature and purpose of the proposed development and its constituent elements, I am satisfied that the consideration of alternatives in the EIAR is satisfactory.

15.3. Cumulative Impacts

15.3.1. While I address cumulative impacts under each of the environmental factors below I would note that the projects considered in the EIAR for the purposes of cumulative assessment are outlined in Appendix 2 (Vol 3 – Folder 1). They are at different stages of the consenting and construction process and at differing removes from the application site. The following table provides an outline of the developments in question.

Development Name	Nature of Development	Status	Distance from Application site

Bottlehill Landfill	Landfill	Constructed but not operational	Adjacent
Castlepark Windfarm	14 turbine windfarm	Constructed	c.21.8km
Knocknatallig windfarm	6 turbine windfarm	Constructed	c.24km
Boggeragh windfarm	38 turbine windfarm	Constructed	c.23km
Esk Windfarm	12 turbine windfarm	Permitted not constructed	c.21km
Turbine at Moneygorm	1 turbine	Permitted but not constructed	c.1.4km
M20 Motorway	Road project	Pre-planning	c.5.5km
M28 Motorway	Road project	Permitted not constructed	c.21km
Existing Forestry Activity	Forestry	Ongoing	Adjacent
Replant lands at Moneygorm	Replanting of forestry	Subject to Licence	1km
Replant lands at Ballard, Co. Wicklow	Replanting of forestry	Subject to Licence	170km

I would refer the Board to my consideration of the replant lands at Section 14.1.3 of this report. I would also note that the applicant states in Chapter 15 that the one permitted wind turbine located at Moneygorm, approximately 1.2km south east of T23 which was permitted in 2013 (CCC ref. 116168, ABP ref. PL 04.241037). I consider that the applicant has provided a comprehensive list of projects for consideration in respect of cumulative impacts and I would refer the Board to each of the environmental factors below.

Assessment of Likely Significant Direct and Indirect Effects

I will address the environmental factors as follows which varies from the chronology of same in the EIAR:

- Population, Human Health and Material Assets & Telecommunications and Aviation
- Air & Climate
- Noise & Vibration
- Shadow Flicker
- Biodiversity
- Land, Soils & Geology
- Hydrology & Water Quality
- Traffic & Transportation
- Archaeology, Architecture & Cultural Heritage
- Landscape and Visual

15.4. Population, Human Health and Material Assets (including Telecommunications and Aviation)

15.4.1. Environmental Impact Assessment Report

Chapter 11 of the EIAR addresses **population, human health and material assets.** The methodology used to prepare the Chapter is outlined with reference, in particular to, the data sources. The Chapter is presented by addressing six constituent elements as follows:

- Population
- Socio-Economics, Employment and Economic Activity
- Land Use
- Recreation, Amenity and Tourism
- Human Health
- Renewable, Non-Renewable Resources and Utility Infrastructure

Each element is then considered separately for: existing environment, potential impacts at construction, operational and decommissioning stages, mitigation measures, and residual impacts.

Related Appendices – None specific to this Chapter but related appendices referenced within the Chapter such as the CEMP at Appendix 3.1.

Further Information – while no specific amendments are made to this Chapter of the EIAR in the further information response it is noted that the assessment does consider factors such as noise and shadow flicker, the assessments of which have been updated (sections 2.2.2 and 2.2.4 of Appendix 1) to demonstrate all scenarios within the Turbine Range have been comprehensively assessed.

Chapter 16 of the EIAR addresses **telecommunications and aviation.** The methodology and guidance used is outlined in Section 16.3 which include consultation, data gathering and constraint mapping. The existing telecommunications links in the vicinity of the site are detailed in Figure 16.1 with Ripplecom and Vodafone having telecommunication links which traverse between the two clusters in the north-south axis. The scoping and consultation undertaken with stakeholders and transmission operators is outlined in Section 16.4 with the responses detailed in Table 16-1. The Chapter then addresses potential impacts, for both telecommunications and aviation, Mitigation measures for both as well as cumulative impacts, and residual impacts.

Related Appendices – Volume 3, Section 16.

- 16.1: Scoping and Consultation Letters Appendix
- 16.2: 2RN protocol Agreement Appendix
- 16.3: Pager Power Aviation Assessment which include:
    - Aviation risk assessment
    - ILS Calibration Flight Impact Assessment
    - Radar Vectoring Area Assessment.

Further Information Response – the following reports were included in the response.

Response to Further Information Report – Section 6

Response to Further Information Report – Appendices

Appendix 6 – Flight Inspection Report

Appendix 7 – Aviation Inspection Report

15.4.2. Consideration and Assessment of Impacts

For the Boards ease of reference, I address the cumulative impacts for the first six elements at Section 15.4.2.7 prior to addressing telecommunications and aviation.

15.4.2.1. Population

Existing Environment

The study area and the grid route are examined in relation to population change. While the study area increased its population by c.14% between 2006 and 2016, the grid route increased by 27.5% over the same period which exceeds the County and State growth rates and may reflect the location of part of same within the Rathcormac DED which is located between Fermoy and Cork City. The population density of the study area has increased from 19.4 persons per square kilometre in 2006, to 22.3 persons per square kilometre in 2016, which is lower than the population density of County Cork which increased from 48.9 persons per square kilometre in 2006 to 56.0 persons per square kilometre in 2016. The total number of households within the study area increased by 16.4% between the 2006 and 2016 Census, with the greatest growth between 2006 and 2011 where a 13.3% increase occurred and the rate of growth slowed down between 2011 and 2016, accounting for a 2.7% increase in households in the study area. It is noted that similar trends were recorded in County Cork with slightly higher increases of 18.8% between 2006 and 2016. The age structure of the population is broadly in line with that for County Cork.

Within the immediate area of the proposed turbines, 1.38km of the turbine locations, the EIAR states that there are 53 residential receptors, 35 residential/commercial receptors and 3 commercial receptors with 2 planning consents for one-off dwellings which have not been implemented. These are illustrated in Figure 11-2. I note that the response to further information includes a revised Figure 11.2 which provides an updated house survey identifying receptors– residential, commercial and residential & commercial within 1.38km of the proposed turbines including an additional residential receptor not previously shown. I consider that the applicant has provided a comprehensive presentation of the location of sensitive receptors in the area.

Potential Impacts

Construction

During the construction phase, it is predicted that many of the workers travelling to the site to undertake the works will do so from outside of the study area given the large numbers expected to be employed at the site and the limited available work force within the area leading to short-term population growth within the area during working hours which is a short-term temporary impact.

Given the nature of the grid route works, undertaken on a rolling basis these works, over an anticipated 10-month period will have an insignificant and temporary impact on population.

Operational

Imperceptible impact expected from the temporary, slight population increase in the study area during working hours as a result of operations and maintenance of the proposal.

Decommissioning

The potential impacts are considered to be similar to those associated with construction phase but of a reduced magnitude with less construction workers required with the potential for population increase within the study area while crew carry out the works albeit over a short duration.

No impacts expected on the grid route as it will remain insitu.

Mitigation Measures

As there are predicted not to be any significant impacts on population trends, density, household size of age, no mitigation measures are considered necessary.

Residual Impacts

None anticipated.

15.4.2.2. Socio-Economics, Employment and Economic Activity

Existing Environment

As outlined in the EIAR, the employment make-up of an area is an important element of its socio-economic profile with the CSO Census of Population 2016 (Small Area Population Statistics 2016) showing that employment within the Study Area is weighted towards professional services (24%), Commerce and Trade (19%), manufacturing (14%) and agriculture (13%) which is broadly in line with the figures for County Cork as is the unemployment rate to 4% (5% in County Cork).

Potential Impacts

Construction

The creation of between 126 and 168 staff during the construction phase is considered a direct short-term positive impact on the local economy with potential for local employment and use of local services.

Operational

The EIAR outlines a number of operational economic benefits. The first being the contribution of the development to achieving Ireland's energy target as set out in the Climate Action Plan 2019, which has a target of 70% electricity generated from renewable energy sources by 2030 with the onshore wind capacity target of 8.2GW by 2030 with the proposal having the potential to produce 1.3% of this total. It is predicted that there will be direct and indirect employment associated with this phase in relation to the maintenance and operation of the development. One other source of economic value to the area is the proposed Community Benefit Scheme which is set out in the terms of the Renewable Energy Support Scheme (RESS). This requires that all renewable energy projects applying for RESS will require a Community Benefit Fund prior to commercial operations of the project. I have addressed this matter specifically in Section 14.18 above as a large number of submissions sought a variety of differing interpretations of how the scheme should be applied.

Decommissioning

Similar to the construction phase but at a reduced magnitude with construction crew required but at a less intensive rate. Overall a slight positive impact to socio-economics, employment and economic activity in the study area during this phase due to the employment created.

Mitigation Measures

No mitigation measures are considered necessary given positive impact of proposal.

Residual Impacts

The overall residual impact associated with socio-economics, employment and economic activity as a result of the proposed development is considered significantly positive due to a slight positive impact with respect to employment with a slight positive economic impact from income spent by construction and operations workers in the local area, the community benefit fund associated with the Renewable Energy Support Scheme (RESS) and the rates payments and development contributions to

the Council. At a more macro level, it is suggested that a slight long-term positive impact is also envisaged in that wind energy decreases the cost of electricity.

15.4.2.3. Land Use

Existing Environment

As noted elsewhere in this report, the area within which this development is proposed is predominantly agricultural lands and forestry covering an area of approximately 443ha primarily comprising commercial forestry with small areas of agricultural pasture lands. It is stated that the site has elevations ranging from 190m to 390m above sea level. The development adjoins the Bottlehill facility which has a footprint of c.45.8 hectares which is partially complete but is not operational. Other lands uses in the wider area include agriculture forestry, one-off residential dwellings, some commercial operations and recreational areas. Landuse along the grid route and TDR comprise a mix of agricultural lands, forestry, one-off dwelling houses, commercial promises and recreational areas.

Potential Impacts

Construction

The proposal may cause temporary disruption to some landuses in close proximity with some of the agricultural land where turbines and access tracks are proposed potentially impacting access during construction. Tree felling is required impacting the forestry area. The grid connection route will necessitate temporary disruption along the road with the works required to facilitate the TDR having the potential to cause temporary disruption.

Operational

It is stated that the footprint of the proposed development will occupy a small proportion of the development site area when operational, resulting in a minimal impact/change on existing land uses in areas where access tracks, wind turbine bases, hardstanding areas, substations, met mast bases, battery storage, borrow pits, and associated drainage works are proposed with the lands impacted currently in use for commercial forestry and agriculture. This will have a slight, negative impact on agricultural land use due to the removal of small areas of grazing lands for the duration of the project but it is not considered that the proposal will negatively impact on agricultural practices on lands adjacent to the site.

As outlined in Section 14.10 of the planning assessment above, a large number of the submissions received outline concerns that the proposal would impact on the viability of livestock within the local agricultural community. The EIAR states that there are no peer reviewed studies which indicate that wind energy development has a negative impact on the health of livestock with numerous examples of renewable energy developments throughout the country and internationally where livestock coexist and routinely graze in the same fields as wind turbines. It is considered that existing land-use, such as grazing livestock or crops can continue on the site as normal with no significant impact to livestock farming practice as a result of the proposed development predicted.

In relation to the Bottlehill Landfill site which is adjacent to the proposed development, the proposed turbines and associated infrastructure have been laid out to avoid encroachment on the facility with the permitted use of the site as a functioning landfill not negatively impacted.

Decommissioning

Again, this phase is similar to the construction phase but of a reduced magnitude with above ground structures removed and foundations covered and allowed to re-vegetate with areas again available for forestry. Other structures such as the substations will remain as part of the National grid.

Mitigation Measures

- The main mitigation proposed is the design itself which seeks to prevent inappropriate land use alterations happening in the first place.
- Existing tracks have been utilised where possible.
- Cables are proposed to be underground within existing tracks/public roads.
- A detailed CEMP is proposed.
- The felling of forestry is proposed to be mitigated by the replant proposals at Moneygorm at in Co. Wicklow.

Residual Impacts

No significant adverse negative residual effects arising from the proposal on land use are predicted with positive benefits including the upgrading of access tracks throughout the site. Residual infrastructure remaining in situ are proposed to be covered over and vegetated. The on-site substations and the grid route will remain in situ and become part of the national grid.

15.4.2.4. **Recreation, Amenity and Tourism**

Existing Environment

The EIAR provides a comprehensive list of recreation and tourism amenities within the receiving environment and the distance of same to the site boundary. These are set out in the table below. It is also noted that the forestry tracks within the site are used for recreation purposes as they are open to the public with the main potential in the area trail walking and hiking.

Amenity	**Distance from site boundary (km)**
Munster Vales – (incorporating Nagle Mountains) incorporating 1110km of scenic walkway throughout Munster	0
Glenville Holy Well	2
Island Wedge Tomb	3
Killavullen Loop Trail	4
Castleblagh - Woodland Trail	4
Fermoy Rifle Club	4
The Blackwater Valley	4
Blackwater Valley Drive	4
Blackwater Outdoor Activities	5
Nano Nagle Centre	7
Mallow Golf Club	8
Mallow Castle	9
Fermoy Golf Club	9
Labbacallee Wedge Tomb	10
Corrin Wood and Corrin Wood Cross	10
Glenabo Park	10
Fermoy Red Bridge	11

Blarney Caravan and Camping Park	12
Adventure Park at Kartworld, Watergrasshill	12
Doneraile Park	13
Blarney Castle	13
Moanbaun Woods – walking trail	14
Cork City Gaol	17

Potential Impacts

Construction

The main impact during this phase is the impact on the use of the forestry tracks within the site which will be closed for the duration of the construction phase. There is also the potential for indirect impacts on other trails within the wider area from noise and dust and increased traffic on the road network. The grid connection element may cause disruption along the route to accesses to recreation facilities albeit for a limited duration.

Operational

The main impact relates to visual impact which is addressed in Section 15.X below. However, the EIAR references a number of tourist related papers in respect of visitor attitudes to wind farms in Ireland and Scotland with the review of same concluding that the majority of tourists surveyed had a generally positive view on wind energy development in the landscape. It is also considered that the design iterations undertaken altered the proposal to remove/alter turbine locations and limit exposure of those remaining from the Blackwater Valley and Blarney Castle. It is considered that given the low magnitude of impact on the Blackwater Valley high value landscape, the temporary impact on walking trails and the availability of other walking trails in the wider area, the proposal is expected to have a temporary, non-significant impact on recreation and amenity in the area.

Decommissioning

Similar to those associated with construction phase but of a reduced magnitude with increased traffic associated with the works within the area.

Mitigation Measures

- The main mitigation proposed is the design itself which seeks to prevent inappropriate development which would impact recreational or tourist amenity and high value landscape.
- The proposal has the potential to increase the amenity value of the area by making the area more accessible to recreational users than at present, providing both new and improved tracks in and around the site which can be used for walking and hiking.
- Provision for public safety such as appropriate signage and safety measures are proposed where forestry tracks are closed to the public due to construction and decommissioning activities.

Residual Impacts

It is proposed that a long-term positive residual impact to recreation, amenity and tourism arises due to the provision of new and improved tracks throughout the site which would provide improved walking and hiking infrastructure in the area as part of Coillte's open forestry policy.

15.4.2.5. **Human Health**

Existing Environment

For the Board's information I have addressed the matter of human health in the planning assessment above, at Section 14.5 as it relates to residential amenity. It is outlined that the 2016 Census shows that 91% of respondents had good or very good health. The EIAR also addresses health and safety in the workplace and major accidents. I would note for the Boards information that I address risks associated with major accidents and/or disasters separately in Section 15.15 of this EIA although it is noted that there are no Seveso sites within the vicinity of the stie.

Potential Impacts

Construction

The main impact at construction stage is health and safety of workers on the site and the delivery of abnormal loads on public roads. Other impacts in relation to air quality, noise, land and soils, hydrology and water quality are addressed in the relevant sections of this EIA.

Operational

As noted above, major accidents and disasters addressed at Section 15.15 of this EIA. The potential impacts of the proposal at operational stage include the provision of improved walking trails within the site which will positively impact human health. A matter addressed by many observers is the potential impact on human health from the battery energy storage system proposed adjacent to the proposed substation at Lacknedarragh North and specifically the risk of fire from same given its location within a forest. The battery storage units are proposed to facilitate on site energy storage and to provide ancillary services to the electricity grid. I have also addressed this matter at Section 14.4 of the planning assessment above. It is stated that lithium-ion battery storage technology is a common, globally used energy storage option utilised to provide storage services to the grid at a local level with these batteries comparable to ones found in electrical appliances from laptops to mobile phones.

Other operational impacts include health and safety of workers working at heights. Potential impacts from EMF is also addressed which is considered negligible.

Many of the submissions received outline concerns regarding the impact of the proposed development on the health of the local population from noise and shadow flicker. These matters are addressed in separate sections of this EIA below and also at Section 14.5 of my planning assessment above in respect of residential amenity.

Decommissioning

Potential impacts associated with decommissioning phase in relation to human health are similar to those associated with construction phase above.

Mitigation Measures

Health & Safety - Construction & Decommissioning

- Maintain safety and avoid health impacts on construction workers and the general public, best practice site safety and environmental management.
- Construction and Environmental Management Plan
- Site-specific Safety and Health Management Plan
- Health and Safety Mitigation Measures - Operational
- Appropriate site safety measures utilised during the operational phase by all permitted employees.
- Access to Coillte lands will remain open during the operational phase but access to the towers and the substation compound restricted with the substation and

battery storage area enclosed by palisade fencing and will be remotely monitored and equipped with intruder and fire alarms

- Adequate clearance of structures from overhead lines will be provided.

Human Health Mitigation Measures - Operational

- Rigorous statutory and engineering safety checks imposed on the turbines during design, construction, commissioning and operation will ensure the risks posed to humans are negligible.
- In certain wind conditions, turbines will run at reduced modes of operation in order to maintain appropriate daytime and night-time noise levels so as not to impact on residential amenity.
- Kill switch that can be operated at any time with an overriding manual shutdown system in case of an emergency.
- In line with the Health Service Executive's Emergency Planning recommendations, any incident which may occur at the site which requires emergency services, incident information provided in the 'ETHANE' format.
- Specifically in relation to the battery storage facility, it is proposed that batteries are located on a battery rack and sealed within a container and monitored and controlled for performance, temperature and other safety factors.
- The battery management system (BMS) is capable of detecting problems using cell and module voltage measurements and select temperature measurements within the batteries.
- Automatic disconnect of the batteries will occur if any unusual parameters are measured.
- In the event of a fault, the system shuts down.
- Battery containers are sealed, fireproof and house all the necessary control and safety systems to ensure optimum performance of the safety measure protocol.
- Battery containers comprise high-quality galvanised metal with a separate external Heating, Ventilation and Air Conditioning (HVAC) unit for each container providing climate control.
- In the extremely rare instance of a fire occurring within an individual container, the internal fire suppression technology ensures the isolation of the fire within the fireproof container.

- Firewater or extinguished contaminates are contained within the specific container that can be removed and disposed of at a later stage. The internal fire suppression technology is considered robust in nature acting as the first response in the unlikely event of a fire incident.

Residual Impacts

Negative residual impact on human health is expected to be imperceptible due to the significant setback distance from nearby dwellings, elimination of shadow flicker on neighbouring dwellings and noise control measures to reduce potential impacts on nearby receptors. Long-term positive residual impacts occur due to the provision of clean, renewable electricity resulting in the displacement of 137,371 tonnes of CO2 per annum which would otherwise be emitted through the burning of fossil fuels. The use of upgraded forest tracks for recreational activity provides opportunities for health gain through encouragement of exercise with long-term moderate positive residual impact to human health in the locality.

15.4.2.6. Renewable, Non-Renewable Resources and Utility Infrastructure

Existing Environment

Renewable resources within the area include commercial forestry. It is stated in the EIAR that the wind resource in the area is above average at above 8m/second at 100m. in relation to non-renewable resources, there are a number of operational and disused qualrries within the area which are sources of aggregates. Peat boglands to the north of the western cluster comprise another non-renewable resource. No major utilities are located within the site or along the grid route.

Potential Impacts

Construction

Non-renewable resources - estimated total of 60,460m3 of imported material required for the roads, hardstands and compound/substations and the temporary upgrade areas associated with the TDR and estimated that up to 44,800m3 of site-won material required for the construction of the proposed development with the use of existing tracks within the site proposed where possible.

Renewable resources – proposal intended to capture renewable wind resource with no negative impacts on same. Trees felled with be replanted at two locations.

Utilities Infrastructure – these relate mainly to the TDR and grid connection with potential for telephone poles to be relocated due to oversail, the construction of the cable trenches along public roads will have a slight, negative temporary impact on the roads concerned during construction, with some roads likely to require re-surfacing. Importation of materials and equipment for the proposal has the potential to increase shipping traffic at the ports being used and increase freight on the motorway, national primary routes and regional road network which has been assessed in relation to traffic as has the potential for turbine delivery to negatively impact on major road infrastructure if unmitigated. Turbine delivery could potentially cause traffic disturbance and damage to road infrastructure if not properly planned and assessed.

Operational

No operational impact other than positive impact associated with generation of electricity from renewable energy.

Decommissioning

Similar to those associated with the construction phase, but of a reduced magnitude including the removal of above ground structures, turbines, mountings, and fencing but with the turbine foundations and access tracks to be left in situ. The two proposed substation buildings are expected be taken in charge of by Eirgrid or ESB which will have a slight positive impact on electricity infrastructure as they become part of the national grid as would the underground grid cable resulting in a slight positive impact on electricity infrastructure. No significant negative impact on renewable and non-renewable sources is predicted.

Mitigation Measures

- The identification of existing services along the proposed cable route have been predicted through a desktop study proposed to be confirmed during pre-construction surveys to minimise the impact in terms of disruption or damage to existing utilities.
- Where possible, it is not intended to divert existing services, with the cable laid above or below existing services with communication with service providers proposed for the duration of the construction works where required.

- Proposed that non-renewable resources of stone and fill are sourced locally and excavated from on-site borrow pits where possible to minimise transportation distances, reducing CO2 emissions.
- Felling of 62.8 hectares of forestry is proposed to be replanted at alternative lands under a felling licence.
- A Turbine Delivery Report developed to manage potential impact to roads infrastructure.

Residual Impacts

Non-renewable resources such as aggregates, and cement required onsite during the construction phase would create an imperceptible residual impact on non-renewable resources.

A positive residual impact on non-renewable resources is predicted by offsetting the use of fossil fuels in electricity generation over the lifetime of the project.

The two proposed substations and underground grid connection are expected to be taken in charge of by Eirgrid or ESB following decommissioning, providing a slight positive residual impact on electricity infrastructure in the area

15.4.2.7. Cumulative Impacts of the Above

Potential has been identified for the proposed project to produce a cumulative impact with the Bottlehill Landfill site, if the landfill site becomes operational during the construction, operational or decommissioning phases of the proposed development in terms of construction jobs associated with the construction phase which is likely to have a positive economic impact on the study area and surrounding areas of Cork City and Cork County. If the construction phases of both projects were to proceed simultaneously there is also a potential for cumulative nuisance impacts due to increased traffic, noise and dust in the vicinity which may impact on public health and safety. Traffic plans, a dust minimisation plan will be implemented with no significant adverse cumulative impacts envisaged in terms of population and human health.

Permission exists for the development of a single wind turbine at Moneygorm with potential cumulative impacts considered with respect to construction activities and impact on residential amenity which would primarily relate to traffic and noise. In the unlikely scenario that this project is constructed at the same time as proposal, negative or adverse effects on the receiving environment associated with these

activities are considered to be short-term in duration and not significant. Potential cumulative impacts of the consented wind turbine with the proposal at the operational phase was considered with respect to noise and shadow flicker with potential impact on human health. with no potential cumulative impact of shadow flicker on sensitive receptors as a result of both nor with respect to noise and vibration. It is therefore considered that cumulative impacts of the proposed development in combination with the permitted wind turbine at Moneygorm would not have a significant impact on population, human health and materiel assets.

15.4.2.8. **Telecommunications**

Existing Environment

In order to ascertain the context of the existing telecommunications environment it is stated that following desktop analysis, the existence of several links were identified and confirmed following consultation with the various TOs. It is noted that in many circumstances, impacts can be sufficiently characterised and mitigated by implementing a separation distance and ensuring the area is free from wind turbines with the separation distance required depending on the specific parameters of each telecommunication signal. It is stated that detailed discussions were undertaken with the TO's with a required separation distance to each telecommunications link requested from each TO with the turbines that achieve this separation distance considered unlikely to cause interference and those turbines which had been proposed within this area either relocated or identified for further assessment. In respect of broadcasters, I note the comments in respect of RTE who stated in their second consultation following altering of the turbines locations that the change in turbine location has no impact to 2rn's fixed linking, but that there was still a risk of interference to DTT viewers who were receiving from Mullaghanish. RTÉ requested that a Protocol is signed should the site go ahead, a copy of which is included at Appendix 16.2. It is also noted that Novatel indicated that a small percentile of customers will be affected particularly south facing. It is stated in the EIAR that following consultation, details of links from service providers were mapped with buffer distances in order to identify any conflicts. This assessment found that there is sufficient separation distance between the turbines and all but one telecommunications links identified by the service providers. This singular exception is Novatel as refenced above. I would refer the Board to the concerns raised in many

of the submissions received in respect of interference with telecommunications particularly TV and broadband and in particular the potential impact on the ability to carry out working/businesses from home.

Potential Impacts

It is stated that in many instances impacts can be sufficiently mitigated by ensuring sufficient separation distances with the layout meeting agreed separation distances from known telecommunication links and masts. The EIAR details the type of interference which can occur which include reflection and signal scattering, obstruction and EMF.

Construction

The only identified construction related impact is on one Telecommunications operator, Novatel who have indicated that there will be a small percentile of customers affected by the erection of turbines with mitigation proposed. No impacts identified for either the TDR or grid connection.

Operational

Consultation regarding the potential for electromagnetic interference from the proposed development 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. Sufficient buffering distance between the nearest turbine and the location of this infrastructure was found to occur. The nearest telecommunications masts to the site are outlined. Again, it is noted that Novatel, has indicated that there will be a small percentile of customers that will be affected particularly south facing with mitigation measures proposed to be put in place to ensure broadband service is not interrupted. It is stated that there will be no significant effect on all other telecommunication operations due to the proposed development

No impacts identified for either the TDR or grid connection.

Decommissioning

None identified for turbines, TDR or grid connection.

Mitigation Measures

In relation to mitigation measures the following is proposed in order to address the impacts identified to overcome electromagnetic interference:

- Technology Upgrade with replacement of the existing telecommunications service equipment with another less affected type
- Diverting telecommunications links to another telecommunications tower in the vicinity can be investigated.
- Relocation of telecommunications equipment involving moving telecommunication equipment to another telecommunications tower in the vicinity can be investigated.
- Wind Turbine Tower with the turbine tower utilised as a transmitter/receiver (hop point).
- Relay Base Station deployed at a suitable location in the vicinity of the proposed development that would provide additional coverage to impacted service subscribers from an existing primary transmitter in the area.
- Combination of the above or an alternative could be explored.

No telecommunications related mitigation measures proposed for the grid connection.

In terms of Television and Radio Reception, mitigation of potential interference with TV reception could require some remedial measures in relation to television reception which are stated not to be difficult to implement and are relatively inexpensive and if necessary will be undertaken by the developer in conjunction with 2rn/RTÉ with a 2rn Protocol Agreement signed and attached by the applicant and 2rn in relation to interference on viewers television sets and broadcast radio receivers (Appendix 16.2) with the measures outlined in the protocol.

Cumulative Impacts

During the development of any large project that holds the potential to effect telecoms, the Developer is responsible for engaging with all relevant Telecoms Operators to ensure that the proposals will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the Developer for each individual project is responsible for ensuring that the necessary mitigation measures are in place. Therefore, as each project is designed and built to avoid impacts arising, cumulative impacts are unlikely.

Residual Impacts

It is considered that the implementation of a suitable mitigation strategy will ensure that local telecommunications are not adversely affected by the development and

that following the implementation of measures in the 2rn protocol that no significant residual effects are likely to arise in relation to television and radio.

15.4.2.9. **Aviation**

Existing Environment

Consultation was undertaken with the Department of Defence/Aircorps which outlines the lighting requirements for windfarm development with the applicant provided with the Aircorps Wind Farm Response Guidance which includes the restricted airspaces of concern which the proposal does not fall within.

I also note that a scoping response was received from the IAA which is referenced at Table 16-1 and Section 16.4.1 wherein on 31 October 2019 it was indicated by the IAA that it had no further objections. I also would refer the Board to Section 14.16 of the planning assessment above where the further information request and response is detailed including submissions from the IAA. I would also note that the response to further information included the most up to date versions of the Risk Assessment, ILS Calibration Flight Impact Assessment and Radar Vectoring Area (Cork) Assessment (all dated August 2020) which were presented within Appendix 6 & 7 of the FI response.

It is stated that the development is located ca. 27.4km (14.8 nautical miles) from Cork Airport. Turbine 22 is the highest elevation with the tip height altitude being 543m or 1,780 feet. There is also a permanent meteorological mast with a maximum height of 100m with a maximum altitude of ca. 450m (1,476 feet). An additional mast is also proposed with a maximum height of 100m and a maximum altitude of c. 395m (1,295 feet).

There are two potential effects of wind turbine development on aviation interests which are outlined at Section 16.5.2 and are physical obstruction and radar/air traffic services. Reference is made to the assessments completed for the proposed which comprise an aviation risk assessment, an ILS calibration flight impact assessment and a radar vectoring area assessment.

Potential Impacts

In order to ascertain potential impacts, the EIAR addresses a number of factors which have been addressed in the assessments detailed above which I outline as

follows and which inform the consideration of the potential impacts on the three different phases which I outline in the sections that follow.

Cork Airport – Physical Safeguarding

At 27 kilometres from Cork Airport the site is beyond its physical safeguarding Obstacle Limitation Surfaces (OLS) which extend 15 kilometres from the airport with no physical safeguarding risk.

Cork Airport – Instrument Flight Procedures (IFPs)

IAA have indicated that the proposed development will not affect IFPs as at this range from the airport IFPs have a minimum altitude of 3000 feet which is more than 1200 feet vertically clear of the highest turbine tip which has an altitude of approximately 1780 feet.

Fermoy Knock Airfield

At a range of 18 kilometres from the proposed wind farm no impact likely.

VFR Flights beneath Controlled Airspace

It is noted that the southern part of the proposal lies entirely within Controlled Airspace with the northern part within Uncontrolled Airspace – with Controlled Airspace above it. The base of this Controlled Airspace has an altitude of 2,500 feet which is more than 600 feet above the tip of the highest turbine which has an estimated maximum tip height of 1,890 feet. It is considered that the turbines may cause a minor restriction to VFR flights flying around the Cork Airport Control Zone in certain conditions; however, no significant overall impact is predicted because the airspace is Controlled to the south and is less restricted to the north.

Tullig More Secondary Surveillance Radar (SSR)

Under Eurocontrol guidelines SSR are safeguarded against wind turbines to a range of 16 kilometres however the distance from the centre of the wind farm to the radar is 30 kilometres which is significantly more than this 16km safeguarding distance with no impacts likely and no further assessment required.

Tullig More Primary Surveillance Radar (PSR)

The majority of the wind turbines will be at least partially visible to the PSR which means that the turbines will generate false returns on air traffic control displays in the vicinity of the wind farm. It is stated that while the wind farm is likely to cause a local technical effect the resulting operational effect may well be acceptable for a number of reasons including:

• Effects limited to the site area which is just 0.04% of the radar's coverage area;

• Commercial aircraft flying in this area will be flying in Controlled Airspace where any wind farm effects on PSR may be disregarded;

• Air traffic control.

IAA Woodcock Hill Radar Station (SSR)

Under Eurocontrol guidelines SSR are safeguarded against wind turbines to a range of 16 kilometres however the distance from the centre of the wind farm to the radar is 70 kilometres which is significantly more than this 16km safeguarding distance with no significant impacts are predicted.

Cork Airport Radio Navigation Beacons including ILS

Safeguarding requirements for radio navigation beacons are defined by the International Civil Aviation Organisation (ICAO) in publication EUR DOC 015 European Guidance Material on Managing Building Restricted Areas with all of the proposed turbines located beyond the safeguarding distances specified for the radio navigation beacons at Cork Airport with no significant impacts predicted.

ILS Test Flights

The International Civil Aviation Organisation (ICAO) Manual on Testing of Radio Navigation Aids defines how flight tests for ILS localizers should be undertaken. ILS coverage requirements are defined in ICAO Annex 10 to the Convention on International Civil Aviation – Aeronautical Telecommunications – Volume 1 – Radio Navigation Aids. A review of the above documents, the Cork Airport AIP, the IAA's comments and the relative geometry of the proposed wind farm led to the assessment undertaken concluding that there is unlikely to be any significant impact on ILS test flights and in the event that test flights were impacted it is likely that these impacts could be mitigated. Overall impacts on ILS test flights are unlikely to be significant because:

• ILS coverage is already limited below 3000 feet meaning that requirements for test flights below this altitude will be limited;

• Exact paths of test flights are not defined with international (ICAO) flying regulations and can be amended to suit any limitations arising from terrain or structures;

• Majority of testing occurs within 5 degrees of the flight path and the proposal lies beyond 5 degrees.

Obstruction Lighting

All structures that are higher than 150 metres above ground level require aeronautical lighting in accordance with national and international legislation with the turbines' nacelles fitted with red aeronautical ground lighting.

ILS Calibration Flight Impact Assessment

This assessment outlines that Cork Airport has a range of radio transmitters which pilots use to navigate - one of these systems being an Instrument Landing System (ILS). It is outlined that the IAA has raised concerns that the wind farm could affect periodic test flights that are used to calibrate and check the ILS. These test flights fly a range of trajectories which either fly towards the airport or in an arc, or orbit, centred on the runway threshold1. The IAA has provided a schedule of ILS checks and their associated flight trajectories. It is stated that the aircraft altitude (or height) has no impact on the horizontal separation between wind turbine and aircraft. Overall impact identified is that the horizontal clearance between aircraft flying the test trajectories and the turbines is more than seven times the minimum horizontal clearance distance of 150 metres applicable for VFR flights in Ireland and therefore the proposal will not affect aircraft flying ILS test trajectories and will not have a significant impact on ILS test flights.

Radar Vectoring Area (Cork) Assessment

Aircraft using Cork Airport are controlled by radar with Air traffic controllers directing pilots to ensure that aircraft are separated with no risk of collision. Cork Airport will have a published Radar Vectoring Area Chart that shows the minimum altitude that pilots can be directed to fly in the vicinity of the airport. It is stated that the proposed turbines are proposed to be located on high ground beneath airspace used to vector aircraft arriving and departing Cork with ongoing discussions with the Irish Aviation Authority (IAA) regarding the proposed development's potential impact on operations at Cork Airport. It is stated that of specific concern is the potential impact of the wind turbines on aircraft under radar control. It is detailed that the Minimum Altitude shown on the Radar Vectoring Area Chart is 3,000 feet which is more than the maximum tip altitude of 1,784 feet with a vertical clearance of 1,216 feet which exceeds the minimum required clearance of 984 feet by 232 feet providing the proposal would not adversely affect aircraft flying under radar control

Construction

It is considered that without mitigation there is potential for aviation impacts during the late construction phase of the development and prior to the commissioning of the

proposed development as the wind turbines are constructed and placed in situ. The turbines could be considered to be an obstacle to low flying craft.

No impacts envisaged from the TDR and given grid connection in public road, no aviation impacts identified.

Operational

It is considered that in the absence of mitigation that there is the potential for aviation impacts during this phase as detailed above and therefore mitigation is proposed as set out in the next section. As outlined in Section 14.16 of the planning assessment above, the IAA requested the applicant address their requirements in respect of the potential impact on the Cork ILS 16 (LOC 16) coverage area. In response, the applicant commissioned Flight Calibration Services Ltd (FCSL) to assess if the proposed development would have any adverse effect on flight inspection procedures and profiles associated with the Cork Airport Runway 16 Instrument Landing System (ILS). The report is attached as Appendix 6 of the RFI response. Overall, it was stated that the impact of the proposed development on Runway 16 ILS flight inspection procedures is expected to be minimal, with minimal cost implications, as ILS flight inspection tasks are normally planned such that they are conducted in conditions of good visibility. If however weather deteriorated during a flight inspection task or if the task had to be conducted in poor visibility for some operational reason, then aircraft crew would need to revert to instrument flight rules with the recommendation regarding flight trials outlined.

No gird connection impacts are envisaged given the location in public road. The TDR is a construction related element of the development.

Decommissioning

No significant effects identified once this stage is reached with gird connection left in situ.

Mitigation Measures

The following mitigation measure are considered to be the only required measure to address the potential impacts:

- Coordinates and elevations for built turbines will be supplied to the IAA and DAA.

It is qualified that notwithstanding that the proposal will not impede aircraft flying the test trajectories it would be prudent to ensure that pilots of test aircraft are fully aware of the presence of wind turbines, and any associated anemometry masts, before

undertaking any test flights and therefore a number of mitigation measures are recommended as follows:

- All turbines and meteorological masts having a height of 100m or more are promulgated in the Irish Air Navigation Obstacle database
- Extremities of the wind farm are lit
- Meteorological masts are lit
- Locations of meteorological masts having a height of less than 100m are promulgated to the pilots of test aircraft
- Test aircraft are fitted with Terrain Awareness and Warning System (TAWS)
- Test aircraft TAWS obstacle databases are regularly updated.

No aviation related mitigation measures are considered necessary for the proposed grid connection.

Cumulative Impacts

During the development of any large project that holds the potential to effect aviation, the Developer is responsible for engaging with all relevant Aviation Authorities to ensure that the proposals will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the Developer for each individual project is responsible for ensuring that the necessary mitigation measures are in place. Therefore, as each project is designed and built to avoid impacts arising, cumulative impacts are unlikely.

Residual Impacts

The EIAR notes that due to the low risk of impacts associated with aviation, the residual impact is deemed to be not significant following the full implementation of mitigation measures. It is therefore considered that with the mitigation measures proposed no residual impacts are anticipated

15.4.3. **Conclusion**

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, the relevant chapters of the EIAR and the response to the further information request and the submissions in response to same. I am satisfied that potential effects on population, human health and material assets including telecommunications and aviation would be avoided,

managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects on population, human health and material assets including telecommunications and aviation.

15.5. Air & Climate

15.5.1. Environmental Impact Assessment Report

Chapter 6 of the EIAR addresses air and climate. A description of the terms referenced in the Chapter is provided at the outset with the methodology used to prepare the Chapter is outlined. The Chapter then addresses the existing environment, potential impacts, mitigation measures, cumulative impacts and residual impacts. The assessment addresses the proposed windfarm, the grid connection and the turbine delivery route (TDR).

Related Appendices

Volume 3, Section 16.

Further Information Response

Appendix 1 – Section 2.2.1.

Appendix 2 – Response to Submissions and Observations.

This chapter was reviewed in the context of the range of turbines as requested in the further information request. Therefore, this assessment takes cognisance of any changes outlined in same.

For the Board's ease of reference, I address Air Quality in the first instance and then Climate following same.

15.5.2. Consideration and Assessment of Impacts

15.5.2.1. Air Quality

Receiving Environment

The EIAR outlines the relevant Directives applicable to air quality and notes that in general air quality in Ireland is acceptable but that in the short term, when compared

with WHO guideline values and EEA reference level values; ozone, particulate matter and PHAs are of concern and NO2 is expected to increase due to an increase in road traffic. It is clarified that the use of fossil fuel-based electricity generation leads to NOx and SOx emissions; however, wind generation does not produce any NOx or SOx emissions. It is outlined that given the operational phase of the development does not give rise to emissions, that impacts from emissions focuses on the construction and decommissioning phases. The methodology used is outlined in Section 6.2.1 and notes that the impact assessment methodology involved the review and assessment of the proposed energy park, grid connection and turbine delivery route to identify the potential for air emissions during construction and decommissioning with the relevant activities outlined. The EIAR provides a summary of findings for sulphur dioxide, Particulate Matter (PM10), Nitrogen Dioxide (NO2) and Carbon Monoxide (CO). With reference to Table 6-9 (also Table 6-7) where data for Carlow Town is presented, in response to a clarification on this matter in the further information request, the applicant states that this is a naming error but the data included correctly refers to Cork Harbour. This is noted. In terms of dust while there is no statutory limits for dust deposition, EPA recommends a maximum daily deposition level of 350 mg/m2/day when measured according to the TA Luft Standard 2002.

Potential Impacts

Potential construction phase impacts from the wind farm, grid connection and TDR comprise dust arising from earthworks, tree felling activities, trench excavation along cable routes, construction of new access tracks, temporary storage of excavated materials, movement of construction vehicles, loading and unloading of aggregates/materials and the movement of material around the site. The development is considered a major construction site as defined by the NRA criteria which has the potential to result in soiling effects to occur up to 100m from the source, with PM10 deposition and vegetation effects occurring up to 25m from the source. As outlined elsewhere in this report, the nearest receptor is c. 755m from the nearest turbine and will not therefore experience the soiling, deposition or vegetation effects or emissions from construction vehicles.

In terms of the grid connection and TDR are comprised of a moderate construction site, would 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. It is stated that There are approx. 51 one-off houses along the proposed grid connection route, 559 receptors along Option 1 of the TDR and 587 receptors along Option 2 of the TDR. While there is potential for some houses to experience soiling and deposition of vegetation effects and potential to increase concentrations of compounds such as NO2, Benzene and PM10 depending on how close to the road corridor they are located but given these are temporary works which move along the route, the impacts are predicted to short term, temporary and slight which I consider is reasonable.

The operational phase of the proposal is predicted to result in positive impacts on air quality as it will facilitate the displacement of fossil fuels as an energy source.

Decommissioning phase impacts are not predicted to be significant as they comprise in the main the removal of the turbines from the site with most other elements remaining in situ.

Cumulative Impacts

While there are quite a few developments within the wider area, as stated in the EIAR, unless a substantial number were to be under construction simultaneously then no cumulative impact would be likely to arise. In relation to the replant lands, the lands at Moneygorm have been completed and therefore no cumative impact would arise. The lands at Ballard in Wicklow are at too distant to have any cumulative impact. I consider that the matter has been appropriately assessed.

Mitigation Measures

Mitigation measures to address potential construction phase impacts on air quality are included in the Construction Environmental Management Plan. The measures include standard practice measures including finish of roads, wheel washing and a dust control plan. I consider that the measures are appropriate. No operational phase measures are considered necessary which is reasonable. The decommissioning measures are considered to be similar to the construction phase albeit more limited given a lot of the infrastructure would remain in place.

Residual Impacts

Following the implementation of the above mitigation measures, the proposed CGEP may result in slight to moderate residual impacts arising from fugitive dust emissions during particular construction activities. These will be localised in nature and as they will be associated with particular elements of the construction phase, they will be

temporary in nature and will not result in any permanent residual impacts. Impacts related to vehicle emissions will practically cease following construction and no significant impacts are anticipated. There will be a low level of maintenance traffic during the operational period, which will have an imperceptible impact. During operations, CGEP will result in the avoidance of emissions from fossil fuel generators which is a positive effect on air quality.

15.5.2.2. **Climate**

Receiving Environment

Global, European and National Climate Change agreements, plans and reports are referenced with key targets outlined. For the Board's reference, the Climate Action Plan 2019 referenced in the EIAR has been superseded by CAP 2023, with the lodgement of the application predating the current Plan. CAP 2023 is referenced above in Section 5. The EIAR outlines what is meant by carbon emissions and references the attention drawn in recent years to wind farms on peatlands which themselves are significant stores of organic carbon. As is noted elsewhere in this report, the subject site has limited pear habitats and is not located on active bog or fen habitat. The applicant has used the Scottish Carbon Calculator Tool to calculate carbon emissions and carbon savings as a result of the proposed wind farm over a 30 year period (appendix 6.1). The EIAR outlines current and projected carbon emissions for Ireland. In terms of climatic impact, the appraisal considered the net impact that operating the proposed development would have in terms of CO2 and its displacement of CO2 from other energy sources over the carbon losses caused by its construction using the aforementioned Scottish Carbon Calculator tool which is described in considerable detail in Section 6.2.3 of the EIAR. The response to further information addresses turbine range as it relates to carbon losses which is outlined in the next section. In terms of existing climatic conditions, Table 6.6 presents meteorological conditions from historical meteorological measurements compiled by Met Éireann at Cork Harbour weather station (approx. 21km south west of the site) for the period January 2016-September 2020.

Potential Impacts

The EIAR presents the impacts in respect of micro and macro climate. In terms of the micro climate the main change is the change of greenfield site to provide internal

tracks and hardstanding which is stated to equate to c.3.4% of the site area and the tree felling over a number of areas of the site which given its nature would be felled at some stage with or without the proposed development.
The macro-climate relates in the main to carbon balance. The EIAR as submitted based calculations on the total maximum MEC of 105MW. Table 6-12 outlines the carbon balance results looking at origin losses, emissions and energy output with a carbon payback time estimated at 1.6 years. The further information response updates Table 6-12 to reflect the potential output from the turbine range with the lowest and highest MW output from the turbine range equating to 92.4MW to 121 MW respectively. The total amount of CO2 emissions that will be offset by the proposed wind farm with the Turbine Range proposed is estimated between 3,605,970 and 4,722,120 tonnes of CO2. With 3,605,970 being the minimum amount and 4,722,120 being the maximum amount regardless of the turbine selected, constructed and operated within the turbine range.

Cumulative Impacts
No cumulative impacts are predicated which is considered satisfactory given the nature of the proposed development.

Mitigation Measures
No mitigation measures as required given the nature of the proposal with the operation of the proposal having a positive impact on climate.

Residual Impacts
Positive residual impacts from the operation of the proposed development are predicted in terms of the displacement of fossil fuel energy generation with renewable energy.

15.5.3. Conclusion on Air Quality and Climate

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR and the response to the further information request and submissions in response to same. I am satisfied that potential effects on air and climate would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed

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

15.6. Noise & Vibration

15.6.1. Environmental Impact Assessment Report

Chapter 7 of the EIAR addresses **noise and vibration.** A description of the terms referenced in the Chapter is provided at the outset with the methodology used to prepare the Chapter is outlined with reference, in particular to, the relevant guidance, the study area and the evaluation criteria. The Chapter then addresses the existing environment analysing baseline data and examining wind farm noise limits, potential impacts for each phase, cumulative impacts, mitigation measures and residual impacts. The assessment addresses the proposed windfarm, the grid connection and the turbine delivery route (TDR).

Related Appendices
Volume 3, Section 16.
Further Information Response
Response to Further Information Report – Section 3
Response to Further Information Report - Appendix 1 – Section 2.2.2
Response to Third Party Submissions – Appendix 2 – Sections 3, 4 & 5
This chapter was reviewed in the context of the range of turbines as requested in the further information request. Therefore, this assessment takes cognisance of any changes outlined in same. I would note that as outlined in the response, the hub height range is the only element of the dimensions that influence operational noise. The hub height range is from 96m to 103m. I would also note that an additional receptor was identified to the northeast of T15 but a previously identified receptor (R52) is closer to the development.

I have also addressed noise in the context of residential amenity in Section 14.5.2 of the planning assessment above as a large proportion of the submissions received raise concerns in respect of the potential impact from noise.

15.6.2. Consideration and Assessment of Impacts

15.6.2.1. **Existing Environment**

In terms of the study area, it is outlined that construction and decommissioning noise have been assessed by comparing predicted construction activity activities against best practice construction noise criteria at the nearest residential dwellings to the construction activities. The operational noise study area includes all noise sensitive dwellings within the 35 dB LA90 noise contour (Figure 7-1). I would also note that the rationale for scoping out the assessment of construction and operational vibration is considered to be reasonable. Table 7.1 sets out the threshold of potential significant effects at dwellings. In terms of methodology it is clarified that *The Assessment and Rating of Noise from Wind Farm' (1996)* published by the Department of Trade & Industry (UK) Energy Technology Support Unit (ETSU) and Institute of Acoustics' *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, (May 2013)* (IoA GPG) has been used to supplement the guidance contained within the '*Wind Energy Development Guidelines'* and '*Draft Revised Wind Energy Development Guidelines*' publication as necessary. Table 7.2 provides the impact significance criteria applied in the assessment.

I note that baseline noise monitoring was undertaken at 18 receptor locations within the study area – shown in Figure 7.2 and Table 7.3 with the rationale provided in Appendix 7.1 which I consider is reasonable. It is not possible or necessary to undertake monitoring at every receptor with the receptors chosen representative of those within an area. The rationale for the noise limits is outlined in Section 7.4.2 which outlines the three factors ETSU-R-97 consider for determining the limits. Reference is made to the noise condition included in the permission for the single turbine at Moneygorm which provides a limit of *43 dB(A) L90,10min or 5 dB(A) above existing background noise levels, whichever is the greater, at existing habitable houses* which it is noted is 3dB above the Wind Energy Guidelines low background noise upper limit of 40 dB L_{A90}. The EIAR recommends that a fixed limit of 37.5 dB L_{A90} for low background conditions should apply for the proposed development as it is considered to represent an appropriate balance between power generation and noise impact as well as being 5.5 dB lower than the single turbine permitted at Moneygorm. The derived noise limits for the 18 monitoring locations are set out in Table 7.5.

15.6.2.2. **Potential Impacts**

Construction Phase

Noise likely to arise from this phase is associated with machinery and plant. The activities include site traffic, the winning of material from the borrow pits where I note, no blasting is proposed although a crusher is proposed. The preparation of access roads, drainage and the hardstands, foundations, the installation of the turbines, the construction of the substations and the grid connection works. Tables 7.6 to 7.11 present the predicted noise levels for the various plant/machinery at the most proximate receptors for the activities outlined above with a cumulative predicted noise level provided. There is potential for the maximum predicted noise levels to be above the noise limit of 65 dB $L_{Aeq,1hr}$ along the grid connection route but I would agree that given the short duration and the limited number of dwellings the significant impact is temporary.

Operational Phase

As outlined above, the further information provides that the range of hub heights (96-103m) is considered in an updated review of the predicted noise levels. In the original assessment, the applicant outlined that for the purposes of the assessment undertaken, noise predictions are based on sound power levels provided for the Enercon E-136 EP5 / 4650 kW with TES (candidate turbine) Table 7.13 & 7.14 which the FI response clarifies has a hub height of 101m. It is clarified that the Enercon E-136 EP5 was a worst-case from a noise perspective and therefore the noise likely to arise from whatever turbine is selected would be of no greater significance that the model used for the purposes of the assessment. This is considered to be a reasonable rationale. In addition to the noise derived from the turbines, other operational noise likely to arise would come from the transformers at the substations with the predictions in the EIAR carried out based on an example transformer that being the Siemens TLPN7747 40000 / 50000 kVA with the sound power level for the transformer, 93 dB(A). The other potential noise source is the battery storage which contain HVAC's within the containers to regulate temperature with the predictions based on an example HVAC unit; Mitsubishi PUHY-P200YKB-A1 (-BS) where the sound power level for the HVAC unit is 78 dB. The A-weighted octave band data for the transformer and HVAC is set out in Table 7.15.

I would refer the Board to Table 7.16 which presented the predicted noise levels adjacent to the 18 noise monitoring locations which as clarified by the applicant are

for a worst-case scenario with noise sensitive receptors downwind of the proposed wind farm with the actual noise levels likely to be lower as the receptors will not be downwind of all the noise sources. These are for the originally proposed hub height of 101m. In terms of the noise levels derived, as is clear from Table 7.16 the predicted noise levels exceed the daytime and night-time noise levels with the level of exceedance dependent on the receptor locations with, in the absence of mitigation, a long-term moderate significance of impact on the closest dwellings to the proposed wind farm is predicted.

As outlined in Table 2.4 of the Response to Item 1.1 no change in sound power is caused by the change in hub height. As outlined in the FI response, the noise assessment model was re-run for the lowest hub height in the range 96m and the highest 103m with the results set out in Tables 2.6 and 2.7 where a number of potential exceedances of the derived noise limits set for the proposal are identified. As shown in the tables, the lower the hub height the more potential for noise impacts.

Decommissioning Phase

While similar to the construction phase impacts, the impact is expected to be less and it is notable that the grid connection cable will remain in situ.

15.6.2.3. Cumulative Impacts

I would clarify that the construction phase impacts addressed above include the cumulative impact of all the plant operating for each of the activities addressed. This is separate to the consideration of cumulative impacts with other projects. The most proximate development to be considered in terms of noise is the Bottlehill landfill facility which if it were to become operational during the construction phase of the proposed development has the potential to have a cumulative noise impact. As the facility has not been operational since its construction there is no actual operational data available, so the applicant used the predicted operational data in the EIS with the cumulative noise limit below the construction noise limit proposed for the subject proposal thereby providing a slight cumulative impact at the nearest noise sensitive receptor. The cumulative impact of noise associated with traffic could result in an increase in noise levels of at least 3dB which could exceed the construction noise limit proposed however this would only happen if the landfill was to become

operational during the construction phase of the proposed development in the absence of mitigation.

In terms of operational phase cumulative impacts, there is one permitted single turbine located at Moneygorm c.1km from the subject site and another single turbine consented at Kepak in Watergrasshill but at c.7km I do not consider it likely to have any cumulative impact. There are no other turbines within what could be considered to be a reasonable distance to create the potential for cumulative impacts. The EIAR presents Tables 717 and 7.18 which assess predicted noise levels at a number of receptors when cumulatively considered with Bottehill and Moneygorm. While there are predicted cumulative impacts with the Moneygorm turbine at 2 receptors the model assumes the receptors are downwind of all turbines which could not be the case given the location of the Moneygorm turbine. Notwithstanding, the potential for a cumulative impact is acknowledged in the absence of mitigation. I would clarify for the Board that the turbine range addressed in the further information does not change the potential cumulative impacts.

15.6.2.4. Mitigation Measures

Construction & Decommissioning Phases

The main mitigation measures include construction hours, if night time deliveries are required for turbine delivery, residents informed of same through the proposed Community Liaison Officer and no idling of vehicles outside properties. Other measures are included in the CEMP including the proper maintenance of plant and machinery. In terms of the potential elevated noise levels for short duration along the grid connection route, it is proposed to use a barrier or screen to reduce the noise levels where required.

Operational Phase

Operating turbines in noise reduced mode is one of the main mitigation measures. While the predicted noise levels were based on the worst-case scenario, Table 7.20 outlines the required turbine curtailment/mitigation to meet daytime noise limits. These are predominately down to a sound power level of 102.4 but in one instance NR06 a reduction to 100.5 is required. Even with mitigation, the operational windfarm introduces a new noise source and therefore there will be an impact on the local environment with the study area which is likely to vary from slight to moderate

depending on the location of the receptor. The mitigation proposed remains the same for the turbine range examined in response to the further information.

15.6.2.5. Residual Impacts

While the mitigation measures above provide that there will not be a significant impact arising from any of the phases, the proposed operational phase is acknowledged as introducing new noise sources into this rural area with an expected slight to moderate significance of impact depending on the location of the receptor. Given the existing environment this is not unexpected and while I note that one of the acoustic experts believes the impact would be significant rather than moderate I would refer the Board to the significance criteria (Table 7.2) where moderate is described as an impact that alters the character of the environment in a manner that is consistent with existing and emerging trends. Given the national policy supporting renewable energy I consider that the proposal would be considered part of an emerging trend and in this regard the significance impact of moderate attributed is appropriate.

15.6.3. Conclusion

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR and the response to the further information request and responses to same. I am satisfied that potential effects on noise and vibration would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects on noise and vibration.

15.7. Shadow Flicker

15.7.1. Environmental Impact Assessment Report

Chapter 12 of the EIAR addresses **Shadow Flicker.** The methodology used to prepare the Chapter is outlined with reference, in particular to, the relevant guidance, the field assessment, the extent of the assessment and the modelling parameters.

The Chapter then addresses the existing environment, potential annual and daily impacts, the potential impact of zero shadow flicker and cumulative impacts. The mitigation measures and residual impacts conclude the Chapter.

Related Appendices

Appendix 12.1 – Shadow Flicker Modelling Input Data

Appendix 12.2 – Detailed Shadow Flicker Listing

Appendix 12.3 – Moneygorm Wind Farm Shadow Flicker Report

Further Information Response

Appendix 1 – Section 2.2.4

Appendix 1.3 – Shadow Flicker Modelling Input Data and Calculated Shadow Flicker Times

Appendix 2 – Response to Third party Submissions & Observations

This chapter was reviewed in the context of the range of turbines as requested in the further information request. Therefore, this assessment takes cognisance of any changes outlined in same.

15.7.2. **Consideration and Assessment of Impacts**

Chapter 12 of the EIAR addresses **shadow flicker** with Section 2.2.4 of the RFI response updating same. I would also refer the Board to Section 14.5 of the planning assessment above which addresses residential amenity. In setting out the rationale for the study, the applicant refers to Section 5.12 of the 2006 Guidelines which states that '*at distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low*". The study area of 1380m from each of the 22 turbines was selected, the basis for which is 10 times the maximum rotor diameter of 138m, with all potential shadow flicker sensitive receptors within this area identified. The updated study in the RFI refers to the original scenario in the EIAR being Scenario 01 which is 100m hub, 138m rotor diameter and 169m tip height. Two additional scenarios are now outlined based on the turbine range in the RFI response. Scenario 02 has the following combination – 96m hub height, 138m rotor diameter and 166m tip height. Scenario 03 has the following combination – 103m hub, 132m rotor

diameter and 169m tip height. The updated study models the two additional scenarios to ensure the full turbine range is assessed.

The study area in the EIAR was 1380m which reflects the maximum area of the scenarios and this area is used for all scenarios in the interest of continuity. It is noted that to be a sensitive receptor for shadow flicker, windows must have a line of sight to the turbine rotor and the room must have the potential to be occupied. The sensitive receptors have been shown on Figure 12.1 and tabulated in Appendix 12.1. It should be noted that the methodology employed in the assessment undertaken is set out in detail as are the relevant Guidelines. It is noted that within the 2019 Draft Guidelines, a zero shadow flicker policy is proposed which encourages the use of technology to prevent it occurring at sensitive receptors. It also states in the Draft Guidelines that a shadow flicker study detailing the outcome of computational modelling for the potential for shadow flicker should accompany all planning applications and I note that this forms part of the documentation within the EIAR which states that where shadow flicker has been identified to occur at sensitive receptors that mitigation has been recommended in line with the Draft Guidelines. Within the study area in Figure 12.1, of the 115 identified, 95 are dwellings or offices, the details of which are set out in Appendix 12.1, 93 of which are residential properties (4 not inhabited) and 2 commercial properties.

In the updated report, it is noted that the 95 receptors considered in the original EIAR have been updated to identify barns, shed and derelict buildings with the number of receptors which require consideration reduced to 86. No new receptors were identified and an updated version of Figure 12.1 is provided with the receptors noted.

Appendix 1.3 of the RFI response presents the receptor locations in tabulated format.

It was stated, in the original EIAR, that only one receptor was identified within the 500m assessment area which is an admin building within the Bottlehill facility (receptor 31) which is not currently in regular use. This facility is not included in the revised receptor map. It is stated that occupied residential receptors do not occur within 750m of the proposal.

The updated report presents all times when potential shadow flicker effects may occur at each of the identified receptors. The assessment quantifies the theoretical maximum number of hours per annum where shadow flicker may occur at a property. The shadow flicker model calculates the total theoretical occurrence of shadow flicker per year which it should be noted is based on a worst-case scenario and in

reality is not likely to occur. These assumptions are that: the sky is always clear, the turbines are always aligned face-on to each window and that there is a clear and undisturbed line of sight between the windows of the receptors and the turbines (except where this is prevented due to topography). In reality, the turbines will not always be orientated as described, clouds will obscure the sun and line of sight may also be obscured (for example, from leaves on trees).

Potential Impacts

The potential impacts addressed in this section refer to the updated study which looks at the three modelled scenarios outlined above. For each scenario a full listing of the worst-case total theoretical instances of shadow flicker is presented in Appendix 1.3. These are summarised as follows:

For both Scenario 01 (assessed in the EIAR) and Scenario 03 there is the potential for some shadow flicker to occur at 71 of the 86 receptors.

For Scenario 02 there is the potential for some shadow flicker to occur at 70 of the 86 receptors.

At the remaining receptors, it is stated that the suns angle (or azimuth) relative to the turbines and receptors never reaches the required position for shadow flicker effects to occur. The calculated area over which shadows from the turbines may be cast (resulting in the potential for shadow flicker effects) is shown on Figure 12.2 for scenario 01, Figure 12.3 for Scenario 02 and Figure 12.4 for Scenario 03.

Annual Impacts

As outlined in the EIAR, the WEDG (2006) recommends a 30 hours per year threshold for each receptor and across all three scenarios 11 receptors could exceed this threshold. The conservative nature of the shadow flicker model is outlined given it does not account for weather conditions, which would have a significant impact upon the amount of shadow flicker that may actually occur. To consider the more likely effects, annual average sunshine hours for the region were presented in the EIAR and the resultant ‘likely’ levels of shadow flicker presented on this basis. To present a like for like assessment, Table 2-8, Table 2-9 and Table 2-10 of the updated study present the same adjusted calculations for Scenario 01 (Table 2.8), Scenario 02 (Table 2.9) and Scenario 03 (Table 2.10). The conclusion is that the ‘likely’ levels of shadow flicker are below the WEDG annual threshold for all

receptors for all scenarios except for a single receptor (number 6), which exceeds the 30 hours threshold for all three scenarios.

Daily Impacts

As outlined in the EIAR, the WEDG (2006) recommends a 30 minutes per day threshold for each receptor. I would note that the applicant qualifies that it is not appropriate to apply the annual average sunshine hours correction to the predicted daily totals for a number of reasons. Firstly, the annual data is based upon monthly averages that cannot be applied to daily levels with sufficient accuracy. Secondly, the infrequency of clear skies is more likely to reduce the overall number of instances of shadow flicker over the year, rather than reduce the length of each individual instance. In this regard, the assessment of daily impacts is also conservative as it can only consider the maximum theoretical amount of shadow flicker. In terms of the number of receptors that exceeded the 30-minute threshold when considering the total theoretical shadow flicker, the Base-case (original EIAR) (Scenario 01) identified 17 receptors that exceeded the 30 minute threshold which is the same for the other two scenarios - Scenario 02 and Scenario 03.

Table 2-8, Table 2-9 and Table 2-10 present the calculation of daily impacts for Scenario 01, Scenario 02 and Scenario 03.

Cumulative Impacts are considered necessary for all turbines within 2km with only one single turbine within 2km of the proposed development. The zone of influence of the proposed development and the permitted single turbine do not interact with no dwellings within the zone of influence of the permitted turbine. No cumulative impact can therefore arise which I consider is reasonable.

Mitigation Measures

As outlined in the foregoing, the principle measure to prevent shadow flicker is to prevent the operation of the turbines during periods when shadow flicker may occur so as to ensure zero shadow flicker. This is achieved by the use of control modules – light sensors and specialised software – to be installed within the turbines. When the thresholds identified and inputted are exceeded the turbines in question will cease operation until the conditions change. It is stated in the EIAR that there are standard widely accepted control modules installed in most turbines. I note that this mitigation measure is recommended in the Draft 2019 Guidelines and I consider that the

mitigation proposed is appropriate in this regard and will ensure that the potential impact will not be significant.

Residual Impacts

Subject to the mitigation proposed above, the potential for shadow flicker to occur at the identified receptors within the study area for each of the scenarios will be avoided. I agree with the conclusion reached in respect of the residual impact.

15.7.3. Conclusion

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR and the response to the further information request and submissions made in response to same. I am satisfied that potential effects in respect of shadow flicker would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in respect of shadow flicker.

15.8. Traffic and Transportation

15.8.1. Environmental Impact Assessment Report

Chapter 13 of the EIAR addresses **Traffic and Transportation.** A description of the terms referenced in the Chapter is provided at the outset with methodology used to prepare the Chapter is outlined with reference, in particular to, the relevant guidance, field surveys and consultation. The Chapter then addresses the existing environment, potential impacts, mitigation measures, residual impacts and cumulative impacts. The assessment addresses the proposed windfarm, the grid connection and the turbine delivery route (TDR).

I note reference at Section 13.1.1 to replant lands within the context of the study area. For the Boards information, this assessment considers the replant lands solely in the context of the cumulative assessment.

Related Appendices

Appendix 3-2 – Traffic Management Plan

Appendix 13.1 – Automatic Traffic Count Survey Results

Appendix 13.2 – Turbine Delivery Route Report

Appendix 13.3 – Consultation Response

Appendix 13.4 – Swept Path Assessment Results Report

Further Information Response

Response to Further Information Report – Section 7

Response to Third Party Submissions & Observations – Appendix 2 – Section 3.2 & 3.6

15.8.2. Consideration and Assessment of impacts

15.8.2.1. Existing Environment

The nearest motorway to the site is the M8 which is located approximately 10km to the east of the windfarm site. The grid connection route traverses the M8 to access the substation at Barrymore. The closest national primary route is the N20 approximately 6km from the site boundary to the west of the site with the N72 passing approximately 6km to the north of the site at Ballyhooly. The R614 is the closest regional road to the proposed site which is located to the southeast of the site. Local roads adjoin the site connecting it to the wider road network. The road network including local roads are shown on Figure 13-1.

I would refer the Board to Section 14.11 of the planning assessment above which specifically addresses access arrangements to the proposed wind farm. In summary, four accesses are proposed from the local road network. Two entrances are proposed to the west to access the Bottlehill and Mullenaboree areas of the proposal, one of which is the existing access to the Bottlehill landfill which is proposed to serve T2 – T7 for standard construction vehicles with the remaining turbines accessed via the main site access from the L-12190) which is an existing Coillte entrance. It is proposed that all oversized vehicles use this entrance to access the western area. An existing forestry access from the L-1504 at Mullenaboree is proposed once the site is operational as an access point for forestry operations and operational access to the proposed substation at Knockacullata. Two site entrances are proposed to access the eastern site area. One of these is an existing Coillte forestry entrance along the L-1501 Ballyhooly to Chimneyfield road required for

access to the turbines and associated infrastructure in the eastern cluster. A second entrance is proposed close to this to facilitate access to the proposed substation at Lackendarragh North.

The proposed development proposes the upgrading of existing tracks on site and the development of new tracks to facilitate access to the proposed turbines and site infrastructure.

Grid Connection

The grid connection, of 24.4km, is proposed to route from the on-site substation at Knockacullata between the two clusters to the substation at Lackendarragh North, crossing private lands near the Lackendarragh North substation site and then following the public road crossing the M8 and on to the substation at Barrymore near Castlelyons with c7.7km of the proposed 110kV cable laid in private lands and c16.7km laid within the public road. There are also a number of watercourse and service crossing along the route (Table 13-3) which has an estimated construction period of c.10 months. Figure 13-4 outlines the route, the proposed water crossings and the crossing of the M8.

Turbine Delivery Route (TDR)

Turbine deliveries will be from Ringaskiddy and will be delivered along two distinct routes both of which go to Dunkettle from Ringaskiddy. From Dunkettle, the western route, is proposed to use the N8 and R635 accessing the N20 at Blackpool turning off at the junction with the L-1217 towards Bottlehill Landfill. At this junction the components will travel north and enter the site at the existing Coillte site entrance off the L-1219- 0 with a temporary hard standing in Glashaboy South facilitating turning and transfer of certain elements. The second route to the east, servicing the Knockdoorty (eastern cluster) area travels north from Dunkettle along the M8 existing at Junction 14 into Fermoy and along the N72 turning southeast of Ballyhooly following local roads to the site entrance at Lackendarragh North. Accommodation works are required at a number of locations along part of the route and are detailed in the EIAR at Section 13.4.5 and above at Section 3.1.17 of this report. The proposed turbine delivery routes are presented in Figure 13-6 with the TDR nodes illustrated in overview in Figure 13.6.1 with Figures 13.6.2-13.6.15 providing further detail on the individual nodes along the routes.

15.8.2.2. Potential Impacts

Construction Phase

Traffic associated with the proposal include HGV's and LGV's transporting materials, machinery and personnel to and from the site, oversized loads transporting turbine components and the felling of approximately 61 hectares of forestry with an estimated volume of 21,000 m3 which has to be removed from the site to sawmills in the wider area.

A construction period of up to 24 months is expected based on the nature and scale of the proposed works and the number of vehicles calculated by estimating the number of vehicles required for each phase was converted to the equivalent two-way trips is estimated at 22,836 additional HGV trips (two-way) over the duration of the construction works. I note that it has been assumed following site investigations that site won material from borrow pits will provide aggregates for general fill purposes and that engineering fill and surface course stone shall be imported from local quarries which are illustrated in Figure 13.5 with haul routes shown. I note that in response to the report from Cork County Council and concerns expressed regarding the level of detail provided in Figure 13-5, that this Figure has been revised and shows additional routes extending from the national road network to the quarry locations which was not shown in the original drawing presented. I consider that the response is satisfactory.

HGV and LGV movements associated with the construction of the development indicate an average daily increase of 44 HGV trips per day over a construction period of 24 months. An average workforce of 50 persons is anticipated, increasing to 75 persons during peak periods giving rise to an increase of LGV traffic of 68 trips per working day and rising to 100 during peak construction periods with the combined HGV and LGV average daily increase at 113 trips per day. I would refer the Board to the further information response where complete copies of Table 13-4 & 13-5 have been provided.

I note the request from the Planning Authority in terms of daily trips and the breakdown of how HGV trips/daily trips are calculated and the applicant's response, in the response to further information to same which outlines what is within s.13.6.1 of the EIAR and includes extracts from same and the construction programme outlined in Table 3-1 which is based on the construction programme described in Chapter 3 of the EIAR. The Council also query quantities to be imported and

exported from the site and the potential impact on HGV movements and the applicant responds to same providing a table (Table 3-2) which provides a quantity of HGV trips for a range of activities associated with the proposed development.

Given that the windfarm is proposed in two distinct clusters, the applicant has provided succinct traffic generation calculations for both. It is estimated that the construction phase for the western cluster would generate 15,434 additional HGV trips (two-way) over the duration of the construction works, an average daily increase of 30 HGV trips per day over a construction period of 24 months and an increase of LGV traffic of 35 trips per working day and rising to 52 during peak construction periods which when combined would generate an average daily increase of 66 trips per day. It is estimated that the eastern cluster would generate 7,360 additional HGV trips (two-way) over the duration of the construction works with an average daily increase of 14 HGV trips per day over a construction period of 24 months and an increase of LGV traffic of 34 trips per working day and rising to 48 during peak construction periods. The combined HGV and LGV average daily increase is estimated at 48 trips per day. I note the concerns referenced by Cork County Council and responded to by the applicant in their response to submissions report. This relates in particular to the timing of deliveries to the site and I note the applicants to the Traffic Management Plan which, I agree, is the most suitable vehicle to address these concerns.

I note the concerns raised by Cork County Council about the accuracy of HGV movements in the absence of detailed investigations of the borrow pits. In response I note the applicant's response to support the figures and reference to the detailed investigations as outlined in Chapter 9 of the EIAR. I consider the response is satisfactory and the HGV movements calculated are robust.

Table 13-4 outlines the predicted AADT volumes with the construction phase traffic at 4 key locations on the road network with Table 13-5 outlining the figures for the peak month of construction.

Construction activity along the TDR is limited with two areas noted in the EIAR as the most significant. These are the proposed offsite turning and transfer area at Glashaboy South and the hardstanding area proposed at East TDR Node 2.8 south of Ballyhooly although the estimated HGV trips per hour would not exceed 5 trips at each location. In relation to the report from Cork County Council and in particular the

two locations along the TDR – N8/R635 junction and N20/New Bottlehill Road junction where they suggest mitigation is required, the applicant has outlined that no works have been determined to be necessary at these locations from the survey work undertaken. I would agree with the applicant that they have undertaken considerable investigation in respect of examining the suitability of the TDR and I would concur with their conclusions that no works are required at the junctions referenced.

Given the low traffic levels on the public roads within which it is proposed to lay the grid connection cable the impact arising from temporary road works is considered to be limited. I note the concerns expressed by Cork County Council with regard to the timing of these works and endeavouring to avoid conflicts with works on the windfarm site itself. While that it is reasonable, I consider that the applicant's response that the construction stage CEMP and TMP will ensure no conflicts is reasonable. The Council's request that a Traffic Management Co-ordinator is appointed prior to Board approval. As outlined by the applicant, such an appointment is not possible when a project start date is not available. I concur with the applicant and do not consider it is reasonable to expect such an appointment pre-approval. The applicant has I note agreed with the Council that the TMP shall be prepared in consultation with the Council although, quite reasonably in my opinion, they do not agree that a detailed timeline for same should be provided prior to Board approval, for reasons similar to the appointment of a co-ordinator above.

The following table summarises the impacts predicted from the elements of the proposed development during construction without mitigation.

Element of Project	**Duration**	**Quality of Impact**	**Significance**
Wind Farm	Short-term	Negative/Adverse	Slight to Moderate
Tree felling	Short-term	Negative/Adverse	Not significant to Slight
Met Masts	Short-term	Negative/Adverse	Imperceptible
Grid Connection	Short-term	Negative/Adverse	Slight to Moderate
TDR	Temporary	Negative/Adverse	Not significant to Slight

Operational Phase

The operational phase is estimated to require a small number of full-time personnel with infrequent attendance by routine environmental monitoring/compliance staff. In the unlikely event that a turbine component has to be replaced, a reinstallation of parts of the TDR may be required. Trip generation for the operational phase is stated to be minimal and given the amount of personnel proposed this is considered to be reasonable.

Decommissioning Phase

This phase would require cranes to disassemble the above ground turbine components which would be removed off site for recycling. It is stated that traffic impact associated with this phase would be significantly less than the construction phase. Negative or adverse effects associated with the windfarm site and TDR are short-term/temporary in duration and slight in significant. The grid connection is proposed to remain in situ, so no impacts arise.

Table 13-6 in the EIAR summarises the impacts for each phase and is reasonable in my opinion.

15.8.2.3. **Mitigation Measures**

The main mitigation measures proposed for the Construction phase of the constituent elements of the proposal are as follows:

Main Windfarm site (Incl. Met Masts)

A detailed Traffic Management Plan is included with the EIAR (Appendix 3-2). The Plan which it is proposed will be developed further at construction stage includes: the carrying out of a road condition survey, road reinstatement, site inductions, emergency contacts, traffic management guidance, letter drops, signage, road sweeper, temporary crossing point and abnormal load deliveries – permits.

Grid Connection

Measures outlined by the applicant in the EIAR include: road opening licence, route proofing, maintaining local access, road cleaning, reinstatement of trenches and surface overlay and avoidance of HGV's bringing aggregates to the site.

Specifically, I note the submission received from the TII to the original application where they outlines their concerns at what they perceive to be limited details in

relation to the M8 motorway crossing. The applicant in response, outlines that the M8 Motorway crossing was addressed within Chapter 13 of the EIAR as relates to the grid connection route, which I confirm is the case. Section 7c of the main RFI Response Report includes a detailed assessment of the proposed HDD path (response to 7c pg 39 of RFI report) under the M8 Motorway with detailed drawings of the HDD (Appendix 4 of RFI report). I consider that the detail provided is appropriate in the context of the TII concerns with the methodology outlined and a profile provided in Figure 7-5 and launch and exit locations shown in Figure 7-6.

In terms of cable construction which may affect services, the applicant proposes to agree in writing with the Planning Authority as to the location of trenches on roads to ensure that no damage will be caused to storm water drains, water mains or any other services and that the exact location of cables within the road is proposed to be agreed in writing prior to construction with the Planning Authority. I consider that the matter has been satisfactorily addressed.

Turbine Delivery Route

One of the main mitigation measures for the delivery of the turbine components is the delivery of same during off-peak times or at night. Other measures include: programme of deliveries with dates, times and route; specialist heavy haulage company, Garda escort, consultation with local residents and the reinstatement of areas affected by the works at the nodes identified.

Tree Felling

Measures for this element of the proposal are included in the CEMP and TMP.

In terms of the decommissioning phase, it is proposed that all works to be carried out during this phase would be carried out in accordance with a decommissioning plan to be agreed with the planning authority with traffic management measures to form part of same and will be largely the same as those identified above for the construction phase albeit the traffic impact would be less.

15.8.2.4. **Cumulative Impacts**

No significant cumulative impacts are expected on the receiving environment as a result of other projects during the construction, operation and decommissioning of the proposed development for the projects highlighted by the applicant including the replant lands, one site of which is located in County Wicklow. While the proposal

includes use of the Bottlehill landfill access there is no details available as to when it might become operational however given that use by the applicant of this entrance is limited to ordinary HGV's for 6 turbines only the impact would be limited if the landfill was to become operational. The EIAR examines a worst-case scenario impact and I consider this is reasonable.

If the M20 motorway upgrade were to take place at the same time as the proposed development, temporary negative or adverse effects on the receiving environment would be likely to be significant without mitigation. With the implementation of mitigation measures described in the EIAR, the cumulative temporary adverse or negative impact would be reduced to 'moderate'. As described in 13.9.4, expected impacts associated with the M20 development would have a considerably greater adverse effect on the existing road network than the subject proposal as it would form the vast majority of the overall cumulative impact. I would however note that the M20 project is currently at feasibility stage and therefore is not likely to coincide with the subject construction phase, if the Board are minded to grant permission for the subject proposal.

15.8.2.5. **Residual Impacts**

Residual impacts associated with the proposal are considered to be slight or imperceptible. Trip generation associated with the operational phase is likely to be minimal. I consider that this is reasonable.

15.8.2.6. **Conclusion**

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR and the response to the further information request and submissions in response to same. I am satisfied that the proposed development would not give rise to a traffic hazard or endanger the safety of other road users, subject to the full implementation of the EIAR mitigation measures and compliance with any recommended planning conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in respect of traffic and transportation.

15.9. Land, Soil & Geology

15.9.1. Environmental Impact Assessment Report

Chapter 9 of the EIAR addresses **Land, Soil and Geology.** The methodology used to prepare the Chapter is outlined with reference, in particular to, relevant guidance, Directives, Consultation, the impact appraisal methodology which outlines the evaluation criteria employed, desk study, site investigations and field surveys/site walkovers. The Chapter then addresses the existing environment, potential impacts, mitigation measures, cumulative impacts and residual impacts. The assessment addresses the proposed windfarm, the grid connection and the turbine delivery route (TDR). For clarity the replant lands are not assessed as part of this chapter other than as part of the cumulative assessment.

Related Appendices

Appendix 9.1 – Geotechnical Report

Appendix A – Figures

Appendix B – Slope Stability Assessment

Appendix C – Ground Investigation Factual Report

Appendix D – Geotechnical Risk Register

Further Information Response

Response to Further Information Report – Section 5

Response to Third Party Submissions & Observations – Appendix 2

15.9.2. Consideration and Assessment of impacts

15.9.2.1. Existing Environment

Quaternary Deposits

Figure 9.1 illustrates the quaternary geology of the area with the proposed site layout overlain. This shows that the majority of turbines and associated infrastructure are located within areas classified as Till derived from Devonian Sandstones. It also outlines that areas of bedrock outcrop or sub crop (Rck) are identified at the locations of the following turbines - T2, T5, T14, T20 and T21. In terms of the proposed grid connection route, the majority is underlain by Till derived from Devonian Sandstones

with limited areas of bedrock sub-crop or outcrop indicated along the proposed route. In relation to peat/peaty topsoil, site walkovers uncovered limited areas of such deposits which are noted as being limited in extent and thin with typical thicknesses of between 0.1 – 0.4m. Figure 9.2 illustrates the bedrock geology of the site and surrounding area with the site underlain by the Devonian Ballytrasna Formation and grid connection route underlain by same for most of its length with the eastern extent underlain by the Gyleen Formation and Waulsortian Limestones.

Hydrogeology

Figure 9.5 illustrates groundwater vulnerability across the site of the windfarm and grid connection route which is classified by the GSI as ranging from 'High' to 'Extreme' with areas of exposed bedrock also present within the site. The eastern extent of the proposed grid connection has a vulnerability classification of 'Moderate'. Based on the GSI aquifer vulnerability mapping, it is stated that overburden deposits are (generally) between 3 and 10m deep in the central portion of the site; 3 to 5m deep in the north, east and south-east of the site; and <3m deep in the extreme west and northeast of the site. The site of the proposed wind farm and the majority of the proposed gird connection is located within the Glenville Groundwater Body (GWB) with the eastern extremity of the proposed grid connection route traversing the Tallow GWB. There are three Source Protection Area for public water supply schemes within the vicinity – Carrignavar (10km south); Grenagh (7km west) and Coolroe (2.3km north of GCR). There is one public water supply (Coolroe – Fermoy) and seven Group water schemes within the area (Figure 9.4 locates all of the above). The EIAR states that there are 8 groundwater wells/springs within 1km of the development site. In terms of economic geology, it is pointed out that there is an historic borrow pit associated with the construction of the existing Bottlehill Landfill located to the south west of the landfill site which is not currently active. The nearest active quarry is a sand and gravel operation at Lyrevarrig located between the two clusters.

In addition to site walkovers and pear stability assessments, intrusive and non-intrusive site investigations were undertaken at the site of the borrow pits, selected turbines and at the 3 HDD water crossing locations. As outlined in the EIAR,18 trial pits to a maximum depth of 4.4m below ground level (BGL) and 3 cable percussive/rotary boreholes to a maximum depth of 15m BGL at the proposed HDD locations at water crossings locations W06, W08 and W19 along the proposed grid

connection route. The topsoil encountered ranged from soft, peaty topsoil to loose loamy topsoil with peaty silt and gravelly silt deposits encountered to a maximum depth of 0.6m BGL. In terms of peat deposits, it is stated that these were generally noted to be limited in extent and thin with typical thicknesses of between 0.1 – 0.6m. Underlying this were glacial till deposits with weathered bedrock encountered between 1.3 - 3m BGL. A site assessment summary is presented in Table 9-10 for the proposed elements of the development.

Slope Stability

From a review of the GSI Landslide Susceptibility database, the proposed development and proposed infrastructure locations are generally located within areas of 'Low' susceptibility. The exceptions are T20 and T21 (Moderately High) and T22 (Low to Moderately Low). A summary of the GSI landslide susceptibility with respect to the proposed development is provided in Figure 9.10. Site investigations undertaken at T20 encountered bedrock at 1.3m BGL and 1.9m BGL at T22. As outlined, given the absence of significant deposits of soft ground and the shallow depth of bedrock, safety ratios for potential slope failures for drained conditions ranged from 2.735 to 3.558 at proposed turbine locations T20, T21 and T22 with a safety ratio of greater than 1.0 indicating that the slope is considered stable in long-term drained conditions.

Peat Stability

While slope stability is addressed under potential impacts below, in respect of peat stability, I would note that I have addressed this in Section 14.14 of the planning assessment above, I note the reference to the presence of small areas of peat deposits and peaty soil within the site which are illustrated in Figures 9.11.1-9.11.4. The peat survey carried out found peat deposits were generally relatively thin (maximum 0.6m thick, average thickness 0.3m) and limited in aerial extent. Soft Peaty Topsoil deposits were noted at proposed infrastructure locations, but these were generally very thin (0.1 to 0.6m thick) and were not considered to constitute Peat Deposits but rather a highly organic Topsoil with Peaty appearance. The applicant has undertaken a review of the published checklist for peat landslide hazard and risk assessment in accordance with Scottish Executive – Peat Landslide Hazard and Risk Assessments (2017). In accordance with the Guidance where peat deposits <0.5m are encountered a peat stability assessment is not required.

Potential Impacts

Construction Phase

I would note for the Boards ease of reference that a summary of potential unmitigated impact significance on land, soils and geology attributes is provided in Table 9-12 of the EIAR. I will address each in turn.

Tree Felling – Approximately 62.8ha of the site area is proposed for felling which will be subject of a felling licence application, and which has the potential to create soil erosion and increase sediment in surface waters. This is considered in further detail in the next Section of this EIA which deals with hydrology and water quality. This potential impact has a magnitude of moderate significance in the EIAR which is considered reasonable.

Earthworks – these works include the removal of overburden and excavation of areas of the site for turbine foundations and hardstandings, compounds, substations, trenches, internal roads and met masts. These works have the potential for direct impacts on geological regime from soil compaction, contamination from fuels and oils from plant and machinery and exposure of imported engineering fill. There is also potential impact on the hydrogeological regime from groundwater pollution, silt infiltration to ground water and reduction in ground water levels from dewatering. The predicted magnitude of both is of moderate significance.

Borrow Pits – Three borrow pits are proposed with each having a footprint area of approximately 6,400 m2 providing a potential volume of approximately 12,800m3 of site won general fill based on an aggregate resource thickness of 2.0m at borrow pits BP01 and BP02. At borrow pit (BP03) an aggregate resource thickness of 3.0m will provide a potential volume of 19,200m3 of general fill. There is potential for groundwater pollution from these works with the vulnerability of the aquifer to groundwater pollution particularly during the construction stage will be increased as overburden is removed thus reducing the level of protection from groundwater pollution. There is also potential for silt infiltration to groundwater from increased surface water run-of and received protection of the aquifer. In addition, there is the potential for reduced groundwater levels from dewatering of excavations. The predicted magnitude of both is of moderate significance.

Slope Stability – while I note the slope stability assessment undertaken above wherein, it is concluded safety ratios for potential slope failures indicates that the slopes are considered stable in the long-term drained conditions. In terms of potential

impacts, slope failures have the potential to impact existing geological conditions from removal and deposition of landslide/slope failure material and the exposure of underlying overburden deposits and bedrock to an increase in surface water runoff and subsequent increase in erosion. A slope failure also has the potential to result in the influx of acidic waters into downgradient surface waters. The predicted magnitude of both is of moderate significance.

Internal Access Roads and hardstandings – 15km of new track and 10km of upgraded tracks are proposed with hardstands proposed at each turbines with aggregate from the proposed borrow pits and imported from identified suppliers. Direct impacts include soil compaction leading to increased surface water run-off due to reduced infiltration. Potential for spills and leaks from plant and machinery and exposed of imported fill to wind and rain depositing silt on surface waters. The predicted magnitude is of moderate significance.

Internal Cabling and Grid Connection – cabling works both within the site and along the grid connection route requiring the excavation of trenches to bury cables and joint bays. The direct impacts include the trenches creating pathways for movement of groundwater although the subsoil is predominately glacial till with low permeability, exposed soils and rocks in trenches can be eroded and finally, excavated material not suitable for reuse has to be deposited to a waste facility. The predicted magnitude is of slight significance.

Horizontal Directional Drilling (HDD) – This technology is proposed at 4 locations along the grid route with the potential for contamination to groundwater from spills/leakages from plant/machinery during construction phase earthworks and HDD operations. There is also potential for overburden collapse at the proposed HDD locations at water crossings W06, W08 and W19 during the advancement of the HDD bore. The magnitude predicted is moderate significance.

Turbine Delivery Route (TDR) – while there are some excavation of overburden in respect of localised road/junction widenings, the impacts are considered to be slight in terms of significance which seems reasonable.

Operational Phase

The potential direct impacts at operational phase related to accidental leaks or spills form traffic related to the maintenance of the operation and potential leaks from the

Battery Energy Storage System both of which have a significance prediction of slight which I consider is reasonable.

Decommissioning Phase

It is considered that the potential impacts during this phase are similar to the construction phase which are outlined above, but of reduced magnitude.

Mitigation Measures

The applicant outlines in the EIAR that the design of the proposal accords with best practice with the primary mitigation measures the design of the proposal, siting of the project elements and the design of the surface water management system with extensive work undertaken at the preliminary design stage. I will address the main mitigation measures but refer the board to Section 9.4 where they are outlined in detail.

Construction phase

While the mitigation measures are presented in turn in respect of the potential impacts identified and outlined above, there is some overlap so I will present the measures together.

The measures are contained primarily in the Construction Environmental Management Plan (CEMP) (Volume 3, Appendix 3.1) which defines the work practices, environmental management procedures and management responsibilities and describes how the contractor will implement a site Environmental Management System (EMS) to meet the specified contractual, regulatory and statutory requirements including the requirements identified as part of the environmental impact assessment process. Measures related to spills and fuel storage are also central to the protection of groundwaters.

Operational Phase

Specific mitigation measures relating to the management of hydrocarbons are outlined.

Decommissioning Phase

The mitigation measures during this phase are similar to those proposed for the construction phase which are outlined where relevant to this phase which is of reduced magnitude.

Cumulative Impacts

The cumulative impacts likely to arise relate to the potential for the Bottlehill facility to require imported aggregate which is unlikely to arise given its dormant state. I note reference to the replant lands within the Chapter but as I outline above, I am not assessing these lands other than the potential for cumulative impacts. Given the Moneygorm site is replanted and therefore complete and the Ballard site is in County Wicklow there is no likelihood of cumulative impacts.

Residual Impacts

The EIAR at Tables 9.14 (Sensitive Geological Attributes) and 9.15 (Sensitive Hydrogeological Attributes) outline the potential residential impacts and highlight that post mitigation any impacts would have an imperceptible significance. I consider that the examination outlined is satisfactory.

Conclusions

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR and the response to the further information request and submissions made in response to same. I am satisfied that potential effects in respect of land, Soil and geology would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in respect of land, soil and geology.

15.10. Hydrology & Water Quality

15.10.1. Environmental Impact Assessment Report

Chapter 10 of the EIAR addresses **Hydrology & Water Quality.** The methodology used to prepare the Chapter is outlined with reference, in particular to, legislation, guidance and local policy, desk-based assessment, field assessment and consultation. The Chapter then addresses the existing environment, potential impacts, mitigation measures, residual impacts and cumulative impacts. The assessment addresses the proposed windfarm, the grid connection and the turbine delivery route (TDR).

I note reference at within the Chapter to replant lands within the context of the study area. For the Boards information, this assessment considers the replant lands solely in the context of the cumulative assessment.

I would refer the Board to Section 14.12 & 14.13 of the planning assessment above where I address Water Quality & Mitigation for Negative Impacts and flood risk respectively.

Related Appendices

Appendix 10.1: Recorded Water Quality Monitoring Data

Appendix 10.2: Photographs of Existing Hydrological Features

Appendix 10.3: Preliminary Culvert Sizing and Flood Risk Assessment Calculation

Appendix 10.4: Details of Silt Trap and Silt Fence

Further Information Response

Response to Further Information Report – Section 7

Response to Submissions – Appendix 2 – Sections 3, 4 & 5

15.10.2. Consideration and Assessment of impacts

15.10.2.1. Existing Environment

The site is located within Hydrometric Area No. HA 18, Blackwater (Munster), of the Irish River Network System, within the South Western River Basin District (SWRBD), within four sub catchments and eight sub-basins as defined by the WFD.

Surface runoff from T2, T3, T4 and T5 drains to the Coom River, from T6, T7, T8, T9, T10, T11, T12, T13 and T14 drains to the Toor River, T15 and T16 drain to the Lyravarrig stream, T17, T18, T19, T20, T21 and T22 drain to the Bride River and T23 drains to the Bunnaglanna River. The Toor River is a tributary of the Coom River. The Coom River and Inchinanagh and Bunnaglanna watercourses and Lyravarrig stream are tributaries of the Bride River. The Bride River is a tributary of the Blackwater River. WFD water quality status and waterbody risk are presented at Table 10-3 with all seven waterbodies have a good status. A programme of water quality monitoring was established by the applicant within the study area.

Flood mapping indicates that the proposed turbines, hardstanding areas and substations are within 'Flood Zone C', -Low risk of flooding (less than 0.1%). The access road between T9 and T13 and grid route approximately 740 m northwest of the existing 110kV Barrymore substation cross indicative floodplain 'Flood Zone A' with OPW flood data presented on Figures 10.3.1 – 10.3.6.

Internal Site Drainage - Lands upon which turbines in forestry are proposed are drained by forestry drains with 'over the edge' drainage of varying width and depths in existence along existing access tracks. Handmade forestry drains, which are mostly 0.2m wide and shallow, were identified west of T23 and are proposed to be connected to interceptor drains. Five crossing points over streams, drains and watercourses were identified (Table 10-5 and Figure 10-5).

Cable Route Drainage - The grid connection route from the proposed Knocakcullata substation via the proposed Lackendarragh substation to the grid at Barrymore has 13 stream crossing (Table 10-6, Figure 10-5). The grid connection trench is proposed as 850mm wide and 1500mm deep with the applicant proposing to install above or below any culverts which might be encountered.

Turbine Delivery Route - No modifications have been identified as being required to stream crossings along the proposed turbine delivery routes. While temporary accommodation works are required to widen the road bends but no significant hydrological impact due to the distance of bends to streams are anticipated.

Potential Impacts

Construction Phase

Wind farm site including met masts - there is potential for an increase in surface water run-off from tree-felling, new access tracks and upgrade of existing tracks, hardstandings and hard surfaces associated with new substations and other hard surfaces and borrow pits. The estimated increase in runoff due to development is provided in Table 10-7 of the EIAR with the overall estimated increase in the runoff due to the development is 0.234 m3 /s (or 0.06 %) which is considered not to be significant. Notwithstanding that the increase is not considered to be significant, potential impacts arising from the activities mentioned at the outset of this section, include soil erosion and sediment release into watercourses including nutrient rich sediments, suspended solids and waters polluted by fuel spills/leaks. There is also the potential for grid connection and internal cable trenches becoming a conduit for surface water flows.

Grid Connection & HDD – similar to the internal trenches, there is also the potential for grid connection to become a conduit for surface water flows with other potential impacts including erosion and sediment release into watercourses including nutrient rich sediments, suspended solids and waters polluted by fuel spills/leaks as outlined above.

TDR – No potential impacts of any significance have been identified which is reasonable given the minor extent of the works proposed.

Operational Phase

It is outlined that due to the insignificance of the increase in runoff from the development, the grassing over the drainage swales and revegetation of other exposed surfaces, and the non-intrusive nature of site operations, there is a negligible risk of sediment release to the watercourses during the operational stage. This is considered to be a reasonable prediction.

Decommissioning Phase

It is considered that the impacts would be similar to the construction phase above, although at a much lesser degree given most of the proposed development is proposed to remain in situ.

Table 10-8 provides a very useful summary of unmitigated potential impacts for each phase.

Flooding

A flood risk assessment has been undertaken for the development which concludes that the proposed development has a minimal impact on flooding risk in the surrounding area. As outlined in the EIAR, the access road between T9 and T14 crosses the indicative flood zone as does part of the grid connection route. It is proposed that in order that flood flows would not be obstructed, the proposed new water crossings are sized to convey a 1 in 100- year flood with a 20% allowance for climate change. A hydraulic analysis of the crossing structures was undertaken. It was found that highest estimated increase in water (5 mm) is at the location WC043, and the lowest estimated increase in water (3 mm) at the location WC045. The impact of development on the increase in water depth reduces, the further downstream the location of the analysed crossing which is consistent with hydrology characteristics.

As discussed in Section 10.4.2,1 of the EIAR, the increased surface water runoff due to development is negligible and these flows are further reduced with the proposed drainage system which is an inherent part of the site layout and design. Increase in the water elevation at the locations of crossing, as discussed in Section 10.5.4, is also negligible. The proposed development has a minimal impact on flooding risk in the surrounding area. According to flood mapping the grid route crosses the flood zone as shown on Figure 10-3. The increase in runoff due to grid cable installation is not expected because the finished surfaces are not changed. Therefore, no impacts on the flood risk are expected

Mitigation Measures

Construction Phase

Drainage of the Development

The first and arguably most important mitigation measure proposed is the drainage design for the site which forms part of the overall layout and design. Other mitigation measures support the drainage design and follow best practice and are set out in the Surface Water Management Plan (SWMP) and Construction Environmental Management Plan (CEMP).

Other measures include:

Use of interceptor drains where required to collect overland flows on the upslope side of the access tracks and hardstanding areas.

SuDS design approach to ensure that existing drainage patterns are maintained throughout the site.

Tracks & Surfaced Roads

Inclusion of silt traps in the new roadside swales, with the swales 0.3 m deep with a bottom width of 0.5 m and side slope of 1 in 3.

Where roadside drains are laid at slopes greater than 2%, check damns are proposed.

Site drainage, including silt traps and stilling ponds, will be put in place in parallel with or ahead of construction

The stilling ponds are proposed to remain in place during the construction phase, draining diffusely overland, over existing vegetated areas and are proposed to be filled in and the swales that were connected to them re-connected to the outfall once construction is completed.

Silt fencing will be provided at strategic locations to further protect watercourses during the construction phase.

Watercourse Crossings

Existing crossing WC028 is proposed to be replaced with box culvert of minimum 1200 mm width and 400 mm height, with additional height required for embedment and freeboard.

Table 10-11 outlines the proposed crossings of existing streams with culvert dimensions/other proposed methodology outlined.

Section 50 applications required in some instances for OPW consent.

Substations

Proposed to drain the substation using shallow swales, with a stilling pond at the end of the swale run with the stilling pond to remain in place following the construction period with a suitable permanent petrol and oil interceptor.

At the upslope side of the substation, interceptor drains are proposed with runoff from roofs to be collected to water harvesting tanks.

Temporary Site Compounds

Drains around the hardstanding areas of the site compound are proposed in the form of shallow grassed swales to minimise the disturbance to sub-soils with surface water runoff from the compounds to be directed through a Class 1 Full Retention Oil Interceptor before discharge to the ‘dirty’ water drainage system for the site which flows to a stilling pond before final discharge over land.

Borrow Pits

borrow pits are set back a minimum 320 m from any streams and at the upslope of the borrow pits, interceptor drains are proposed with the borrow pits draining to stilling ponds.

Other Mitigation Measures for all Elements of Proposal

The CEMP and SWMP include other specific mitigation measures which are outlined as are the measures outlined above in respect of the drainage design.

The principal measures include:

buffer of 50m from watercourses (one exception at Chimneyfield Stream where specific measures are outlined in the CEMP); Stilling ponds, silt fences, silt traps, swales, interceptor cut-off drains, cross drains, fencing of open water bodies, water

quality monitoring programme and Environmental Manager with water sampling to include measurements of specific parameters (Table 10-12), suitably qualitied person to manage maintenance of drainage, pumping of excavation areas, shallow drains around hardstandings, removal of surplus material with no stockpiling. Appropriate bunded storage of fuel/oils is also critical to ensuring no leaks to watercourses. Tree Felling to follow Forest Service Guidelines.

Operational Phase

The insignificant increase predicted in run-off provides for negligible release in sediment to watercourses post-construction with same mitigated by the proposed drainage system which is proposed to be left in-situ for the operational phase of the development.

Maintenance of the site is stated to include maintenance of the drainage system with visual inspections and water quality testing at outfalls proposed as suitably measures to address what are considered to be negligible risks.

Mitigation for potential flooding events int the access tracks between T9 & T13 which is in flood zone A, have been incorporated into the design of the proposal with stream crossings to be conveyed in suitability designed culverts (1 in 100 year flood with 20% climate change allowance).

Decommissioning Phase

Mitigation measures are similar to those in the construction phase given similarity although the magnitude would be much reduced given most of the site infrastructure is to remain in place.

Cumulative Impacts

No significant cumulative effects are predicted. This consideration is based on the 'Not significant' significance of runoff from the proposed development, as outlined above, and the hydrological distance between the proposed development and the most proximate wind farms within the wider area. The adjoining Bottlehill Landfill has its own drainage system which is separated from the proposed drainage system with no significant cumulative hydrological impact envisaged. Given the positive impact replanting has on reducing greenfield velocities and reducing peak runoff and consequently soil erosion, the most proximate site at Moneygorm, Co. Cork is likely to have a positive impact. The distance between the subject site and the site at Ballard, Co. Wicklow would cause no cumulative impact. No other significant

developments in the vicinity of the proposed development are identified or could be likely to have cumulative impacts.

Residual Impacts

I note that Table 10-13 summarises the predicted residual impacts for each phase under the range of activities discussed above. After mitigation the magnitude/probability of all potential impacts are negligible with the significance ranging from imperceptible to not significant. I consider that this is a very reasonable representation of the documentation and examination presented.

15.10.3. Conclusions

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR and the response to the further information request and submissions made in response to same. I am satisfied that potential effects in respect of hydrology and water quality would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in respect of hydrology and water quality.

15.11. Biodiversity

For the Board's information it should be noted that I have addressed the topic of ecology in Section 14.8 of my planning assessment above. I have also undertaken an Appropriate Assessment in Section 16 of this report below. There is therefore some overlap between the three assessments, but I have endeavoured to avoid same where possible.

15.11.1. Environmental Impact Assessment Report

Chapter 8 of the EIAR addresses **Biodiversity.** The methodology used to prepare the Chapter is outlined with reference, in particular to, the relevant legislation, polices, guidance, scoping, consultations and desk studies. Table 8-2 provides a useful summary of the biodiversity scoping evaluation undertaken outlining the

rationale for the scoping in of the various receptors. Details of the field assessments undertaken including methodology is provided in Section 8.2.3 and I would refer the Board to the related appendices detailed below as they relate to habitats and flora, avifauna, terrestrial mammals, other species and fisheries and aquatic ecology. I would also note that the report addresses the proposed windfarm, the grid connection and the turbine delivery route. The Chapter also outlines the evaluation criteria used to inform the conclusions and the constraints and limitations.

A table of contents for the chapter was requested at further information which has been provided but the pages are not correctly numbered which provides that it is of little use. I would also note that the figures referenced in the Chapter which had not been included have been submitted in response to the further information request and are within Appendix 4 of the RFI response.

In terms of cumulative impacts (section 8.6) for the Board's ease of reference, Table 8-92 outlines the relevant projects identified with the potential to result in cumulative effects with the justification for the inclusion provided. Table 8-93 then provides an evaluation of the potential cumulative impacts on each of the biodiversity receptors, including a specific consideration of the hen harrier, which I list in the next section. Tables 8-94 to 8-98 address each one in more detail. Section 8.6.1 then assesses the potential construction phase cumulative impacts, Section 8.6.2 potential operational phase cumulative impacts, and section 8.6.3 potential cumulative decommissioning phase impacts.

For ease of reference the Chapter addresses the following in turn

- Designated Sites
- Habitats and Flora
- Avifauna
- Terrestrial Mammals (Excl Bats)
- Bats
- Other Species
- Fisheries and Aquatic Ecology

within each section of the Chapter as follows:

- Existing Environment (Section 8.3 – pg. 39)

- Potential impacts (Section 8.5 – pg. 170)
- Cumulative Assessment (Section 8.6 pg. 227)
- Mitigation Measures (Section 8.7 – pg. 260)
- Residual Impacts (Section 8.8 – pg. 285)

Related Appendices - (Volume 3 – Folder 2)

Appendix 8A – Avifauna Survey Data
Appendix 8B – Aquatic Ecology, Fishery & Freshwater Pearl Mussel Report
Appendix 8B – (Appendix A) Coom Fisheries Report 2020
Appendix 8B – (Appendix B) Margaritafera Survey Report
Appendix 8C – Turbine Delivery Route EcIA Report 2020
Appendix 8D – Habitats and Flora Data
Appendix 8E – European Sites Data
Appendix 8F - National Sites Data
Appendix 8G – Non-Volant Mammal Data
Appendix 8H – Bat Survey Data
Appendix 8I – Ecological Appraisal Replant Lands
Appendix 8J – Hen Harrier CRM Report 2020
Appendix 8K – Conservation and Habitat Management Plan

Further Information Response

Response to Further Information Report - Section 4

Response to Further Information Report – Appendices

Appendix 1 – Section 2.2.3

Appendix 1-2 – Revised Collision Risk Model

Appendix 2 - Response to Submissions Report –Sections 3, 4 & 5,

Appendix 4 – Figures

Appendix 5 – Conservation and Habitat Management Plan

Changes resulting from Further Information Request

As outlined in Section 2.2.3 of the Response to Further Information Report Appendix 1, the limited range of turbines comprised within the Turbine Range have no effects on the footprint of the development and therefore will not change the conclusions of the EIAR with respect to terrestrial and freshwater habitats and species. Note that the original EIAR assessment involved the longest turbine blade at the highest hub height combination. As a result, the area that required to be buffered with regards to possible impacts for bats was the greatest within the proposed turbine range (a 92m buffer was assessed). All alternate rotor lengths and/or hub heights of a turbine within the Turbine Range, will result in a reduced buffer area, and as a result reduced associated impacts arising to bats and other biodiversity. The buffer area per turbine for the range of options set out is provided.

The Collision Risk Model has been reviewed and updated to assess the turbine range. It is outlined that a precautionary approach is used whereby all flights over 20m and under 200m were included in the model to ensure outputs offer a robust estimate of collision risk. The specified Turbine Range results in a rotor swept area of between 27m and 169m depending upon the final options being used.

The Biodiversity chapter was reviewed in the context of the range of turbines as requested in the further information request. Therefore, this assessment takes cognisance of any changes outlined in same.

15.11.2. Consideration and Assessment of Impacts

To facilitate an assessment of a large volume of material I propose to address the subject under the receptor types looking at potential impacts. Mitigation, cumulative and residual impacts under each topic as opposed to the way they are addressed in the EIAR Chapter. As outlined above, the receptor types are addressed as follows:

- Designated Sites
- Habitats and Flora
- Avifauna
- Terrestrial Mammals (Excl Bats)
- Bats
- Other Species
- Fisheries and Aquatic Ecology

15.11.2.1. **Designated Sites**

The biodiversity chapter also addresses designated Nature Conservation Sites, both European sites and sites of national importance. The study area for both is 15km from the development boundary, grid connection and TDR. The replant lands are considered only as part of the cumulative assessment. I would also refer the Board to Section 16 of this report below where I have undertaken an Appropriate Assessment.

Existing Environment

Table 8-19 details the European sites within 15km of the development and grid connection although a number appear to be in excess of 15km. Table 8-20 outlines the European sites within 15km of the TDR. The pNHA's within 15km of the windfarm and grid connection are detailed in Table 8-22 with the pNHA's and NHA's within 15km of the TDR set out in Table 8-23.

Both the European and National sites are sensitive to hydrological changes to groundwater and surface water quality and encroachment by invasive species. The EIAR in its review of relevant assessments of habitats and species, is that most Irish habitats listed on the Habitats Directive are in Unfavourable status and almost half are demonstrating ongoing declines. However, the majority of species listed on the Habitats Directive are in Favourable status in Ireland, and stable, with a small number are considered to be in Bad status and continue to require concerted efforts to protect and restore them

Potential Impacts – Construction

Windfarm & Grid Connection

No *direct impacts* given distance from European and National sites.

Indirect impacts

European Sites – proposal could potentially affect hydrologically connected aquatic habitats and species of the River Blackwater SAC resulting in significant effects to the species, their habitats and food sources.

The spread of invasive species to European sites could arise through the movement of soils and machinery and surface water runoff causing invasive species to become established and reproduce there degrading the receiving habitats and, indirectly, cause significant effects to the SCIs of the SAC. Hydrocarbons spills and the release of cement-based materials at the proposed development, given the hydrological connectivity with the SAC, has the potential to give rise to significant effects to the

SAC QI's. Mobile QIs (e.g. otter) have the potential to be affected by the works of the proposed development. Direct deaths and habitat disturbance (e.g. holts) could represent significant effects to these Qis. The potential negative indirect impacts on the River Blackwater SAC identified here are considered likely to occur in the absence of mitigation due to the identified downstream connectivity and proximity of the SAC to the proposed CGEP Project.

The works have the potential to result in short-term significant negative effects.

Potential Indirect Impacts on the Blackwater Callows SPA are similar to those outlined for the site above but given the separation distance any impacts would be likely to be of imperceptible significance. Similarly, while there is connectivity to the Cork Harbour SPA and Great Island SAC, the distance to these site would mean no measurable effects are likely.

National Sites – Potential for slight, short term indirect impacts, with potential impacts as per European sites above, given downstream connectivity.

Construction Phase – TDR

Potential for sediment inputs from node upgrades, asphalt run off (Node 2.1) and spread of invasive species on a number of sites, given the distances, the limited quantities of material and lack of potential for conservation interest to be impacts, in the absence of mitigation the potential impact is considered to be imperceptible. There is limited potential for hydrological connectivity with a number of National Sites with an impact of imperceptible significance predicted.

Potential Impacts – Operational Phase

No direct impacts given absence of overlap of the subject site with designated sites. No significant indirect impacts identified given the low intensity of the operational phase which focuses on maintenance of the site with an imperceptible significance anticipated which is reasonable.

Potential Impacts – Decommissioning Phase

No direct impacts anticipated. In terms of indirect impacts, it is considered that this phase has the potential to impact water bodies by reason of increased sediment release in the vicinity of access tracks with potential for hydrocarbon contamination also arising.

Cumulative Impacts

I would refer the Board to my consideration of in-combination effects in Section 16.4.11 of my AA below, which similar to my considerations on commutive impacts herein, concludes that the absence of overlap of site boundaries there is no direct impact and the likelihood of indirect impacts with other projects listed including the replant lands is negligible given the distance to the sites, the absence of impacts on designated sites from the proposed development or the other developments which are listed in Table 8-93. I note as outlined in this table, the developments referenced had an AA screening or NIS undertaken which concluded that no significant or adverse effects, respectively were likely to arise.

Mitigation Measures

Given that the potential construction phase impacts related to the connectivity of the site with downstream designated sites, the mitigation measures presented in Section 15.11 above as they related to hydrology and water quality are relevant. These all form part of the CEMP and SWP and with the proposed appointment of a Project Ecologist, it is considered that the proposals are acceptable.

Residual Impacts

No residual impacts have been predicted which given the examination and assessment undertaken herein is reasonable.

15.11.2.2. **Habitats and Flora**

Habitat surveys undertaken utilises the Fossitt habitat classification and mapping surveys included searches for Invasive Alien Species (Figures 8.12 – 8.23).

Baseline/Receiving Environment

As outlined in the surveys, terrestrial Habitats within the Study Area of the proposed development comprise a mix of agricultural grassland, large amount of commercial forestry plantations, broadleaved woodland, heathlands, hedgerows, wet grassland, private roads and public roads. Table 8-26 details the habitats recorded within the study area, the Fossitt code and the total area within the study area and % of same within overall habitat. At 74.56% conifer plantation is by far the most prevalent.

The grid connection is proposed primarily within the public road which passes through lands characterised by a predominance of agricultural grassland and coniferous forestry plantation, as well as other habitat types associated with the public road e.g. roadside hedgerows, treelines, earth banks, dwellings, farm buildings and associated gardens, amenity grassland, hedges and lawns. Table 8-25 outlines

records of Invasive species providing its common name, year of last record and the invasive impact. Table 8-27 details the habitats recorded within the grid connection study area, the Fossitt code and the total area within the study area and % of same within overall habitat. Improved grassland at 39.7% and conifer planation at 33.9% make up the majority of the habitat.

The EIAR describes each of the main habitats recorded (Section 8.3.2.5.1) and I would note that none of the habitats within the windfarm or grid connection study areas are considered to be of international, national or county importance, including habitats listed in Annex I of the EU Habitats Directive.

Tables 8-30 to 8-32 provide a summary of the habitats and details those selected as important ecological features all of which are within the windfarm site which I have summaries in the following table:

Fossitt Code	**Area (Ha/m) to be lost**	**Evaluation**
WD1 Mixed Broadleaved Woodland	0.03 ha	Local Importance (lower value)
WS1 Scrub	1.64 ha	Local Importance (higher value)
GS4 wet grassland	0.34 ha	Local Importance (higher value)
WS1 Scrub (linear)	136m	Local Importance (higher value)
WL2 Treelines (linear)	70m	Local Importance (higher value)

A standalone Ecological Impact Assessment is submitted for the TDR at Appendix 8C which I have assessed as part of this EIA. Typical habitats of note at the nodes where accommodation works are required along the route include hedgerows, treelines and woodland edge. Grassy verges are oversailed at some locations. Section 8.3.2.5.2 of the Main EIAR outlines the habitats along the TDR at the different nodes.

Potential Impacts – Construction

Direct Impacts - Reduction in terrestrial habitat & Severance of hedgerows and treelines

No Annex 1 habitats likely to be directly impacted. Permanent land take is estimated at 38.6ha limited to fifteen non-linear habitat types (including habitat mosaics) of which six are evaluated as being of Local Importance (Higher Value) with a combined area of 2.3ha with remaining 36.3ha of permanent land take will consist of habitat types evaluated as being of Local Importance (Lower Value). 206m of learn habitat comprising hedgerow and linear scrub is required which also has a local importance (local value) evaluation. It is stated that felling operations required on lands outside permanent infrastructure are considered temporary impacts. No habitats evaluated as being of County, National, or International Importance are affected by permanent land use change. Table 8-78 summarises the loss per habitat type.

The grid connection requires the reeling of 0.21ha of conifer at the only location where it is not on the public road. In relation to the TDR, a reduction in terrestrial habitat along the proposed route is proposed at 13 locations due to landtake associated with road widening, lowering of section of stone wall and earth banks. Of the habitats potentially impacted by the TDR, eight locations with proposed upgrade works support habitats evaluated as being of Local Importance (Higher Value), comprising of three habitat types (mosaics); Dry Siliceous heath/Dry meadows and grassy verges (HH1/GS2), Mixed broadleaved woodland (WD1), Scrub /Dry meadows and grassy verges (WS1/GS2). However given the limited extent of habitat involved, the impact predicted is slight.

Indirect Impacts - Habitat degradation and Introduction or spread of invasive species.

Construction works proposed in the vicinity of sensitive habitats may have indirect effects on water regimen resulting in degradation of groundwater and surface water dependent habitat. Given the separation distance to the nearest area of upland blanket bog (1.3km) and the absence of hydrological connection no impact is expected. An area of cutover bog in vicinity of T11 has been planted and is considered to be heavily degraded. No habitats of importance are located along the grid connection. Given the limited extent and temporary nature of works the impact is considered not to be significant.

Potential exists for construction activities to introduce new infestations or spear existing. Two infestations of a Medium Impact invasive species, Pheasant Berry

(Leycesteria formosa) were recorded within the development boundary, both adjacent to the existing paved access road to the Bottlehill landfill facility, approximately 485m apart. Invasive species have been recorded along the grid connection route including two high impact species with the potential impact of invasive species within the grid connection study area considered to be significant. Similarly for the TDR, invasive plant species were recorded at six locations along the route with the impact considered to be significant negative in the absence of mitigation.

Potential Impacts – Operational Phase

Table 8-84 outlines the impacts included and excluded and the justification for same. The only direct impact considered to be of sufficient significance to include is the introduction or spread of invasive species on the site of the wind farm with the potential for maintenance activities to introduce or spread the relevant species, however it is not considered to be significant. No other operational phase impacts are considered to be of any significance which I consider is reasonable given the nature of the proposed developments and its elements which are subject of this EIA.

Potential Impacts – Decommissioning Phase

In terms of direct impacts, the turbine foundations will be exposed upon removal of the turbine and allowed to revegetate. The revegetation is considered to have a positive impact.

In terms of indirect impacts, the movement of machinery to move the disassembled turbines has the potential to spread invasive species. This is addressed in the construction phase above, with potential impacts similar.

Cumulative Impacts

Four types of development considered, replant lands at Moneygorm, existing agricultural activities, existing forestry activities and the single turbine proposed at Moneygorm. No cumulative impacts are predicted for this receptor which is considered reasonable given the nature of the proposed development and the projects considered.

Mitigation Measures

These are considered at Section 8.7.1.3 of the EIAR and comprise generic and best practice measures in the main. These relate to ensuring invasive species are not spread with the applicant proposing to follow a number of specified Guidelines. Section 8.7.1.3.2 addresses a range of species identified and the measures

proposed. The removal of vegetation will take cognisance of the Wildlife Acts with removal to avoid bird breeding season. Measures are also outlined in respect of general site remediation with the principle of natural revegetation proposed around turbine bases. Measures are also proposed to mitigate the reinstatement of access tracks, cable trenches and borrow pits as well as settlement ponds particularly in the context of the potential impact of stockpiles of materials. The loss of 206m of hedgerow/linear scrub habitat is proposed to be mitigated by its replacement of equal length around the new substations.

Residual Impacts

While the total predicted habitat loss is 38.6ha; of this almost the entire landtake is classified as habitat of low ecological value. The permanent loss of 206m of linear scrub/ hedgerow required which will be replanted using locally sourced native species. Some landtake is temporary, with the borrowpits proposed to be reinstated with 30.4 ha of new semi natural habitat (low scrub/ wet grassland) proposed to develop naturally around the buffer zone at each turbine with the area subject to ongoing management to prevent taller trees growing. Mitigation measures proposed to protect water quality ensure no significant loss of aquatic habitat. In terms of invasive species, measures are proposed and methods of working subject to Guidelines will ensure any residual impacts would be imperceptible which I consider is reasonable.

15.11.2.3. **Avifauna (Other than Hen Harrier)**

I propose to address Bird Species other than Hen Harrier in the first instance and then address the Hen Harrier. The surveys undertaken are outlined in Section 8.2.3.3.1 of the EIAR with the details contained in Appendix 8A. The surveys include vantage point flight activity surveys over four consecutive breeding seasons, general breeding bird surveys, wintering wildfowl surveys, general winter bird surveys, hen harrier winter roost surveys, and surveys of the following: breeding merlin, dipper, kingfisher, kestrel and Goshawk. (Figures 8.24-8.32), (8.47-8.55). it should be noted that a standardised Breeding bird transect survey (BirdWatch Ireland, 2012) was used along seven 1-km transects.

Bird Species other than Hen Harrier

Receiving Environment

Table 8-33 outlines the study area for general bird species and the rational for same with Table 8-34 providing a desktop review of bird records within the area which notes presence of Annex 1, red and amber species and a high number of Hen Harrier. The survey results are outlined in 8.3.3.3 for general breeding birds, general wintering birds, buzzard, whooper swan, goshawk, golden plover, snipe, woodcock, Eurasian curlew, barn owl, short-eared owl, kingfisher, kestrel, merlin, peregrine, skylark, dipper, grey wagtail, meadow pipit, Eurasian sparrowhawk. The species were recorded in varying numbers or not recorded either in terms of inflight or nests. Table 8-35 summarises the evaluation of the species (excluding the hen harrier) outlining the conservation status for each, whether or not they are an important ecological feature and providing a sensitivity impact assessment. It is noted that the only species listed with high sensitivity is the Goshawk.

Reference is made in a submission from the Irish Raptor Study Group (IRSG) to the Goshawk and reference to same in Table 8-35 of EIAR being 'in the vicinity'. They outline that there is consistent evidence of Goshawk in suitable habitat in all years of survey work and sufficient evidence to warrant further survey to inform the impact assessment. It is outlined that species surveys of Goshawk were undertaken in April 2018 only with no follow up survey in July which is a significant omission for this species and the methodology used for survey not stated with details provided not sufficient. They consider that the assessment for Goshawk is inadequate, and they question the rationale for the conclusions reached in relation to direct impact

The IRSG also raise concerns with regard to the adequacy of the impact assessment on Merlin which were detected within the site boundary suggesting occupancy of territorial birds. In response, the applicant outlines that the information presented in the EIAR clearly indicates that Goshawk (flightlines Figure 8.33) and Merlin (flightlines Figure 8.36) surveys, following established Best Practice Survey methods, were undertaken. It is further stated by the applicant that additional surveys in the 2021 breeding season have similarly concluded that no breeding Merlin or Goshawk were found in the locality. I consider that the matter has been adequality addressed by the applicant. While the Irish Raptor Group in their response to the further information remain of the belief that the information is inadequate, as they consider the applicant avoids explanation of why further survey work during years where the species where observations made was not undertaken, I consider that the matter has been appropriately addressed with the surveys undertaken following best practice

methods. Concern was also expressed that the Whooper swan was excluded from the evaluation as the Nagle mountains are an important migratory route to the SPA where this species is an SCI. Reference is also made in a number of submissions to the barn owl with the EIAR noting this species roosting at a location over 2km north of the proposal with no breeding sites recorded within the site. Reference is also made to the red grouse and to a grouse rehabilitation project in the area with habitat protection vital to its survival. Other species mentioned by observers include Woodcock, Grasshopper Warbler and Crossbill and I note that woodcock was not observed in the surveys. The crossbill is not included in any of the survey data and neither it or the Grasshopper Warbler are included in Table 8-34 (species recorded historically within 10km squares). I note that the Grasshopper Warbler, a wetland species, was recorded in Table 25 (Appendix 8A) in 2016 along transects T1-T7 but does not appear in subsequent surveys which would indicate it does not use the area.

Potential Impacts Construction

No direct impacts are considered likely so the following relates to potential indirect impacts.

Table 8-79 outlines the impacts included and excluded and the justification for same. I consider that the rationale for the exclusion of potential impact is satisfactory. In terms of how the birds are evaluated I note that some birds are specifically mentioned by name in respect of potential impacts and where impacts apply to a multitude, reference is made to 'general birds'. In terms of the potential impacts arising I would note the following:

General Birds

Disturbance/Displacement - through noise, visual intrusion, clearfelling, vegetation clearance and movement of soil from operating machinery, construction/trenching works near and at watercourses.

Loss of Habitat - through removal of vegetation including trees and movement of soil during construction works.

Secondary habitat degradation through water quality degradation – it is outlined that the Kingfisher, Grey Wagtail and Dipper and their nests can be affected by the instream works on existing culvers and other watercourse crossings. Construction works on the riparian zone have the potential to disturb/destroy nests and/or impact habitats used by these species.

Impacts considered to be not significant.

Goshawk

Disturbance/Displacement - through noise, visual intrusion, clearfelling, vegetation clearance and movement of soil from operating machinery.

Loss of Habitat - through removal of trees during construction works which would directly reduce the availability of habitat.

Impacts considered to be of high and low significance respectively.

Skylark and Meadow Pipit

Loss of Habitat – through permeant loss of c.0.45ha of suitable foraging/nesting habitat which comprises wet grassland and wet grassland/heath mosaic.

Disturbance/Displacement – as suitable foraging and nesting habitat occurs within the zone of influence of the windfarm and gird connection.

Impacts considered to be low.

Kestral

Loss of Habitat – through permeant loss of c.0.45ha of suitable foraging/nesting habitat which comprises wet grassland and wet grassland/heath mosaic. Clearfelling of forestry will result in loss of suitable nesting habitat.

Disturbance/Displacement – as suitable foraging and nesting habitat occurs within the zone of influence of the windfarm and gird connection.

Impacts considered to be low.

Kingfisher, Grey Wagtail & Dipper

Secondary effects through habitat degradation - precautionary basis, this potential impact was included for further assessment due to hydrological connectivity to River Bride.

Impacts are considered to be not significant.

Species considered not to be impacted.

I would refer the Board to the specific exclusion of Merlin, barn owl, woodcock, golden plover and whooper swan for this stage as, in the main, the site does not provide suitable foraging, suitable habitats or infrequent use of the site. In terms of the whooper swan, it is stated that there is no evidence to suggest that the development site lies on a commuting or migratory route for the species.

Potential Impacts – Operational Phase

Direct Impacts

The EIAR outlines research in respect of the impact of operational wind farms on bird species. The primary cause of direct impact during this phase is collision risk to bird of prey – direct collision with moving turbine blades. I note that for the original appraisal in the EIAR a potential turbine rotor envelope of 20m-200m is used with aviation lighting also included in the appraisal. I would refer the Board to Table 8-86 which addresses the potential for direct impact on the key bird of prey which I will address as follows:

Buzzard

Stated that a total of 82,106 seconds or 39.8% of all flight activity was within the predicted rotor envelope (30-169). While this species has been recorded as fatalities in European context, number is low compared to estimated population and it is stated that best available knowledge suggests mortality due to wind farms is not sufficient to cause significant population declines. Significance in the absence of mitigation – Low probability of collision with significance low.

Goshawk

Outlined that a total of 996 seconds of all flight activity was within the predicted rotor envelope with it possible but unconfirmed as having bred within the study area or wider hinterland. Significance in the absence of mitigation – Low risk of collision as numbers recorded through surveys was low.

Kestral

100% of recorded flight activity was below the predicted rotor envelope. Significance in the absence of mitigation. Collision risk predicted to be lower at the site due to predicted rotor envelope in relation to hunting technique of species (hovering at 10-40m) – Magnitude of effect of collision is low with significance low.

Merlin

Recorded flight activity at the subject site exclusively below predicted rotor envelope. Significance in the absence of mitigation – Low probability of collision with significance low.

Peregrine

Recommended avoidance rate (by SNH) for collision risk modelling is 98% which suggests this species has high micro-avoidance capabilities. Significance in the absence of mitigation – Low probability of long-term collision with significance low.

Barn Owl

This species is known to forage up to 3m above round reducing collision risk. Significance in the absence of mitigation – Low probability of collision with significance low.

No indirect effects are predicted for these species or others other than Hen Harrier (next section).

Potential Impacts – Decommissioning Phase

No direct impacts are likely but there is likely to be disturbance/displacement occurring in the vicinity of the hardstands as turbines are removed but the impacts are considered likely to be insignificant which is reasonable given the limited nature of the works.

Cumulative Impacts

A consideration of construction phase cumulative impacts for avifauna considers the proposed development in the context of the replant lands, the single turbine at Moneygorm and existing agricultural and forestry activities (Table 8-95). The most likely cumulative impact would arise if forestry operations e.g clearfelling take place in adjacent lands within the timeframe of the proposed construction stage as there is potential for the occurrence of cumulative impacts to avifauna receptors identified as being potentially affected by disturbance during the construction stage of the proposed development. Given the short duration of felling activities and the medium magnitude of such activities, a cumulative impact of medium significance is predicted which appears reasonable in the context of the potential for such impacts to arise. It is suggested that should the construction stage of the turbine at Moneygorm coincide with the proposal there is a potential for cumulative impacts but given the nature of a single turbine construction the impact is likely to be insignificant.

In terms of the operational phase, I note the reference in the EIAR to compulsive impacts with the Moneygorm turbine but as is stated in the EIAR, given the overall impact significance for mortality of avifauna receptors assessed has been evaluated as having negligible to low significance during the operation stage, significant negative cumulative effects resulting from avifauna mortality are not anticipated i.e

the potential direct impacts remain at imperceptible. No decommissioning stage cumulative impacts are predicted which is reasonable given the absence of potential impacts for the proposal at this stage.

Mitigation Measures

Construction Phase

- Confirmatory surveys and pre-construction monitoring surveys prior to site clearance
- No works to take place where evidence of possible nesting is recorded and a minimum 500m buffer will be retained between all works areas and possible nest areas or subject to advice from a competent adequately experienced ornithologist
- No works conducted between March 1st and August 31st within buffers identified or as advised by the site ornithologist and depending on breeding status, tree removal and clearance of any other vegetation likely to hold nesting birds will be undertaken outside of the bird breeding season, i.e. not during the period of March to August, inclusive. In the eventuality of this not being possible, these works/activities will not take place before a confirmatory survey of the affected area (i.e. aerial and ground-based nests) is undertaken by the Project Ecologist.
- Any works to be undertaken on existing culverts or other types of water-crossings must be preceded by a confirmatory nest survey by the Project Ecologist or an experienced Ornithologist
- Sections of hedgerow/ treelines scheduled for removal and/or trimming and containing mature trees suitable for nesting Barn Owls will be surveyed prior to construction for occupancy by Owls.
- Any re-instated habitats will include native species where possible to enhance diversity of birds.
- Toolbox talks shall be held with construction staff on disturbance to key species during decommissioning.

Operational Phase

- Post construction monitoring programme to confirm the efficacy of the bird diverters with the results of this programme submitted annually to the competent authority and NPWS.

- Comprehensive fatality monitoring programme undertaken following published best practice and an annual report submitted to the competent authority and copied to NPWS for each of the first three years of operation.
- While post-construction mortality is considered unlikely to be significant, in the event of significant fatalities during post-construction monitoring, the following adaptive management techniques are to be considered and an appropriate approach implemented – curtailment or feathering of turbine blades at specific times, use of bird deterrent system such as DTBird, use of ground observers, avian radar system
- Flight activity surveys with an annual report to competent authority and NPWS.
- Goshawk surveys

Residual Impacts

Impacts are considered likely to be imperceptible with the mitigation outlined.

15.11.2.4. **Hen Harrier**

Receiving Environment

Section 8.3.3.7 of the EIAR deals with the Hen Harrier. A large number of submissions raise concerns that the proposal will have a significant impact on this species. A submission from the Irish Raptor Study Group (IRSG) provides a detailed consideration of the potential impact on the species. The NPWS also outline a number of issues in respect of this species. Other submissions reference projects within the wider area which aim to improve habitat availability for the species.

It is outlined that in Ireland the Hen Harrier is confined largely to heather moorland and young forestry plantations, where they nest on the ground. The current national breeding population is estimated at 108 - 157 breeding pairs (Ruddock et al., 2016) with the most recent estimate of the national wintering population, from Irelands Article 12 submission to the EU, 269-349 individuals. Characteristics of the species include that they are considered as ‘central-place’ foragers with most foraging taking place during the breeding season within a ‘core range’ of 2km from nests with studies showing high nest fidelity. It is stated that the site of the proposed development is located within an upland area of north Cork known to have supported breeding Hen Harrier on a recent and historical basis with habitats within the area generally suitable for breeding however it is noted that in recent years, agricultural

intensification and forestry maturation may have resulted in reduced availability of foraging and nesting habitat.

Table 8-36 outlines the study area for the hen harrier and the justification for same. For the Board's information the study area was defined using the following parameters:

1. Proposed rotor swept area and lands within 500m of the turbine locations for flight activity, and collision risk modelling

2. Within 2km of proposed site, for breeding sites (confirmed nest site or centre point of observed evidence of breeding behaviour identified during the breeding season), territories, and communal winter roost sites;

3. Suitable habitat within 2km of grid connection construction works area, for breeding sites (confirmed nest site or centre point of observed evidence of breeding behaviour identified during the breeding season), territories, availability of foraging (hunting) habitats and communal winter roost sites;

4. Within 2km of identified nests in relation to the availability of suitable breeding and foraging Habitat

5. Within 150m of the construction works area boundary in all directions- in relation to disturbance displacement to foraging Hen Harrier during the breeding season, and effective habitat loss as a result.

6. Within 150m of the construction works area boundary in all directions in relation to secondary effects via reductions in Prey Item availability.

7. Within 50m of the grid connection construction works area boundary in all directions in relation to habitats proximal to the general settings of works.

<u>Connectivity with SPA's</u>

I have addressed this matter in Section 16.4.5 below of the appropriate assessment. In context of this EIA, in relation to connectivity with proximate SPA's the EIAR refers at 8.3.3.7.3 to the Guidance available from Scottish Natural Heritage (SNH) to assist in establishing levels of connectivity to designated SPA's where it is recommended that "*in most cases the core range should be used when determining whether there is connectivity between the proposal and the qualifying interests*". A core foraging range of 2km from nests sites during breeding is presented for Hen Harrier in this Best Practice Guidance (SNH 2018). It is stated that the proposed development is not located within the boundary of the SPA designated for Hen Harrier, nor within

2km of any site designated for Hen Harrier, with the nearest such site being at a distance of ca.30km (Mullaghanish to Musheramore Mountains SPA). It is concluded that the proposal does not include core habitat for breeding hen harrier in any SPA and no significant connectivity is likely. Despite observations refuting this matter, no evidence has been presented to determine connectivity.

Surveys – Nest Sites, Flight Activity and Nesting Habitat

Nest Sites - The results of desktop surveys are provided in Tables 8-37 & 8-38 which are based on results of surveys associated with the development of the landfill facility. In relation to the results of the surveys of Nest Sites, it is stated that the results of present studies to inform the current EIAR have been combined with information obtained on historical nests (2014-2015) within a 2km radius of the proposed development. Table 8-39 summaries the hen harrier breeding attempts (nest attempts A-M) within 2km of the proposal from 2014-2019. It should be noted that within this table the results for the distance to the site boundary and nearest turbine is stated as 'Confidential'. It is stated that full details are presented in Appendix 8-K (Conservation and Habitat Management Plan) with the confidential results presented in the final table. The nearest nesting attempt to a turbines is just over 500m. It is outlined that no probable or confirmed hen harrier nest sites were recorded in 2020. It is stated that surveys were also conducted during April to June (inclusive) 2020 to determine nesting activity of hen harrier focussed on the site and 2km buffer with no nest sites determined providing that the best-case scenario was that just one nest territory was occupied temporarily in 2020 c.a. 1km north of T23 (Knocknascagh townland). It is summarised that a total of 13 nesting attempts, across 6 breeding seasons are described with no breeding attempts taking place within 500m of any proposed turbine location, however 1 nesting attempt (Nest ID G in 2015) did occur inside the development boundary for the subject application. Location of nests (2014-2019) and winter roosts are outlined in the figures provided.

Flight Activity - The flight activity surveyed from 2016-2019 regardless of distance to turbine, and across all seasons totalled 44781s from 437 observations. It is noted that 70% of all flight activity recorded (31496s in total) occurred at heights below 30m (the proposed rotor envelope is 30m-170m), whilst 30% (13285s) occurred at heights above 30m. The spatial context within which such activity was monitored is stated as representing a viewshed area covering 69km2 in total, within which only ca.8% is comprised of lands within the application boundary. The EIAR states that it is

therefore not to be taken as representative of flight activity solely within areas where turbines are proposed to be located. In terms of general flight activity, potential pathways for collision risk to Hen Harrier are considered to be of greater likelihood during the breeding season (flight activity at heights of 30m or greater is highest within the breeding season), dependant on the proportion of flight activity at rotor height which also occurs in proximity to rotating turbine blades (for the purpose of the appraisal taken as within 1000m of turbine location).

Nesting Habitat - All habitats within 2km of the identified nesting attempts (i.e. within 2km of a confirmed nest site or centre point of observed evidence of breeding behaviour identified during the breeding season), were evaluated for their suitability as nesting habitat for Hen Harrier. The EIAR sets out at Table 8-40 the habitat classifications used for nesting habitat. Table 8-41 then outlines the amount and percentage of the breeding habitat which is suitable within 2km of nesting attempts A-M. A similar exercise was undertaken to examine foraging habitat, with Table 8042 providing the habitat classifications used for foraging habitat and Table 8-43 detailing the amount and percentage of the foraging habitat which is suitable within 2km of nesting attempts A-M. It is stated that at least 30% suitable habitat is required for an area to be attractive to Hen Harrier. It is deduced from the foraging habitat analysis that there is foraging habitat greater than this threshold available within the core foraging range comprising a 2km radius of nests B (occupied 2019) & L (last known to be occupied pre-2015), whilst nest M (last known to be occupied pre-2015) is at 29.1%, marginally below the 30% threshold.

Winter Roosting – it is outlined that hen harrier generally roost communally in the winter months with potential roosting habitats, typically reed beds and heather/bog, not widely available within the application area. Three specific roost locations are detailed two of which (A & C) are within 2km of the site with the third (B) 3km from the site boundary. These sites were identified through local expects or prior surveys although it is stated that no birds were observed roosting at Roost C although it remains available.

Importance - Hen Harrier is listed on Annex I of the EU Birds Directive 2009/147/EC. Based on the findings of the desktop and field surveys conducted to date at the application site and its environs, both breeding and wintering Hen Harrier present are evaluated as Nationally Important and assigned a sensitivity rating of **High** for the purpose of evaluation.

Potential Impacts – Construction

The potential impacts during the construction phase for the Hen Harrier are outlined in Table 8-79. The impacts included for examination are addressed in the first instance and in the interest of ensuring the Board are aware of all potential impact I will address the impacts which the applicant considered could be excluded.

The following potential direct impacts were included for evaluation.

Habitat Loss

This impact relates to the removal of ground vegetation & trees, clear felling, turbine and infrastructure construction, and the movement of soil during construction works.

Direct Mortality at Nest Locations

Removal of vegetation including trees, clear felling and movement of soil during construction works

The following potential indirect impact was included for evaluation.

Disturbance/Displacement

Noise, visual intrusion (clear felling, vegetation clearance) and movement of soil from operating machinery, construction/ trenching works.

I would note that in their submission the DAU do not agree with the statement at page 188 of the EIAR that "*given a distance of at least 500m from known breeding areas displacement and disturbance are unlikely*" as hen harriers are known to regularly hunt 4 km from their nest sites, particularly in landscapes such as this, where there is a relatively low availability of suitable habitat. In response the applicant clarifies that the statement relates to disturbance or displacement to Hen Harriers at the nest and does not include Hen Harriers foraging during the nesting season. It is stated that this is based on peer reviewed studies. Wider disturbance or displacement impacts on Hen Harrier are stated to be acknowledged and addressed in the EIAR.

The following potential impacts were excluded from evaluation in the EIAR. I also outline the rationale for each exclusion.

Direct Mortality at Winter Roosts

This is excluded as no works are stated to occur in sufficient proximity to identified roosts for mortality to be reasonably foreseeable. This is supported by construction works being conducted during daylight hours only.

Secondary habitat degradation through water quality degradation.

It is outlined that while the Hen Harrier may forage on wetland habitats such as bog or wet grassland, outside of direct habitat loss, there is little likelihood of secondary habitat degradation of sufficient magnitude to alter the carrying capacity of these habitats for Hen Harrier prey items.

Reductions in Prey Item density from direct mortality

This relates to the potential for the construction works to result in the inadvertent mortality of small mammals or birds thereby reducing the potential prey density available to the Hen Harrier. It is outlined that as construction works will be conducted predominantly during daylight hours only, with ground-based vegetation clearance outside the bird nesting season (March-August), any impact on prey items is considered of negligible magnitude & unlikely to impact the Hen Harrier.

I consider that the rationale provided to exclude the potential impacts above is rationale and reasonable.

Potential Impacts – Operational Phase

Direct Mortality

The main direct impact arising is direct mortality by way of direct collision with moving turbine blades. As outlined in Table 8-86 a collision risk analysis was conducted for hen harrier and was included at Appendix 8-J. It is stated to be based on the extensive 4 years of flightline data collected during the breeding season. A total estimate of 11,610 seconds flight time was recorded within the predicted worst-case rotor envelope (20 -200m), actual estimated at (30 – 169m). The model indicates an overall risk of Hen Harriers colliding with the rotors of 0.0055 birds/season. This equates to approximately one Hen Harrier collision every 180 years. Despite this very low estimate and given the significance of the local breeding Hen Harrier population (c.a. 1% national population), a precautionary approach is advised as the collision risk model provides an estimate only of collision and it is still possible that hen harrier collisions could arise. In terms of the significance of the potential impact, the EIAR outlines that without mitigation, based on the collision risk assessment model and professional judgement, including consideration of available information of recorded hen harrier collisions, typical flight patterns of hen harrier (below the lowest level of the rotar swept area), the expected magnitude of effect of collision is Low and overall significance is therefore low.

In response to the further information request as outlined above, a revised Collision Risk Model (appendix 1-2) was submitted to address the revised turbine range proposed in the response. The turbine specifications used in the revised CRM is outlined in Table 1.1 and Hen Harrier biometrics are outlined in Table 1.2. It is stated that due to the variation in VP coverage, two collision risk models are presented for the pre-July 2017 (old) data and the post-July 2017 (new) data. It is stated that for both models, the same probability exists in relation to a collision with a turbine as the same species and same turbines are involved. It is the number of Hen Harrier flight paths passing through the rotor swept area that changes due to differences in the areas surveyed and the flight lines recorded. The ratios of data contribution between the two are combined to provide a single metric for collision likelihood with the risk of collision for hen harrier passing through the turbine swept areas provided at Table 3.1. It is also outlined that it has been well documented that Hen Harriers demonstrated avoidance of wind turbines. This includes macro-avoidance, where Hen Harriers avoid the whole wind farm area, as well as micro-avoidance, where birds fly within the wind farm but avoid the turbines and blades. The documented level of avoidance for Hen Harriers is 99% (SNH, 2018) and this is included in the modelling. Table 3.2 provides the risk of collision for Hen Harrier passing through the turbine swept area with the removal of forestry habitats with a worst case (Turbine B) providing a collision likelihood of 1 in 59 years. I consider that this matter has been satisfactorily addressed.

Indirect Impact by displacement from suitable forage habitat

It is stated that the Hen Harrier may theoretically be excluded from operational turbines up to a radius of 250m, the rationale for the selected 250m distance relates to the recorded displacement of foraging and flight behaviour close to wind turbines as reported in the referenced literature (100m for foraging and 250m for flight). I would note that the area of suitable and unsuitable forage habitat has been mapped (northern and southern nests) around each proposed turbine location and is detailed in Appendix 8-I. Based on estimates an area up to 170.82ha may exclude hen harrier to some degree. It is stated that such exclusion would be unlikely, given that hen harriers do use areas close to turbines and an improvement in forage habitat due to woodland clearance within a buffer zone around all turbines would be expected to add some forage habitat value compared to what is available currently (mature forest). In a worst case scenario there may be some reduction in usage of suitable

habitat within 250m of turbines which would be considered a medium magnitude as this area would include areas of suitable habitat within 2km of the most recent hen harrier nest locations.

Potential Impacts – Decommissioning Phase

The only tangible impact anticipated at this phase is disturbance and displacement for the duration of the works which are limited to the removal of the turbines. This is reasonable given most of the site infrastructure is to remain on site.

Cumulative Impacts

The consideration of cumulative impacts for the Hen Harrier is as per the consideration outlined above in respect of avifauna and I do not consider it is necessary to repeat same. I would not that Tale 8.93 looks specifically at the hen harrier as a distinct receptor and in addition to the cumulative impacts considered above, a number of windfarms are addressed (Caslepook and Boggeragh). It is stated that as the assessment undertaken for those windfarms did not determine any significant residual effects to Hen Harrier, then there can be no cumulative impacts. I consider that this is reasonable.

Mitigation Measures

I would refer the Board to the mitigation measures proposed in respect of avifauna above, which include measures which would be equally applicable to the Hen Harrier and which it is not considered necessary to repeat. In this section I propose to address those measures additional to the aforementioned which are specific to the Hen Harrier.

Breeding Hen Harrier survey

It is proposed that a breeding Hen Harrier survey, following methods used in the baseline survey to be repeated yearly March – July (inclusive) with the aim of assessing any displacement effects for an initial period of 7 years to allow for annual variation and cumulative effects. Dependant on results further monitoring to be agreed with NPWS. The overall density of the species to be recorded annually.

Conservation Habitat Management Plan

As outlined above, the EIAR calculated the potential loss of hen harrier habitat within a circle of 250 m radius around each turbine with a total habitat loss of 148.8 hectares (Table 4.1 CHMP). In the EIAR as originally submitted, Section 4.2 of the CHMP outlined that to achieve an ecological net gain the CHMP proposed the

management of 5 areas, in the vicinity of the proposed CGEP where landowner consent has been achieved, which would amount to a total area of 170.82ha (Figure 4.2). Of the total area, 99.62% (170.16ha) are habitats favoured by Hen Harrier, representing a total net gain of 22.02ha. However, concerns were raised in respect of the CHMP by the NPWS and the IRSG in respect of the type of habitat proposed and the consent arrangements which were considered to be unclear and the statutory oversight with no performance-based measure of mitigation or enhancement success.

In response to concerns raised in submissions received from the NPWS and the IRSG, a revised CHMP was submitted with the further information response (Appendix 5). I have referred the CHMP to Dr Maeve Flynn, Ecologist with An Bord Pleanala for her review and comment and I would refer the Board to her memo attached as Appendix Three of this report. Dr Flynn outlines that the CHMP requires monitoring to determine if the objectives of the plan are being achieved and whether modifications on any element are required. This is set out in Section 8 of the CHMP including monitoring or habitats, additional bird survey across the six-enhancement areas, auditing of the management prescriptions and review of same on a 5-year cycle. She states that there is no detail presented on how to measure any increase in ecological integrity of habitats under management or how this could be related to increased foraging rates for Hen Harrier beyond general statements. She proposes that in order to bolster the monitoring programme, that the habitat and bird survey could be enhanced to provide greater clarity on improvements in the ecological integrity of the six management areas. In addition to the habitat monitoring described, she recommends that a detailed habitat evaluation programme be established based on the parameters for open habitats as set out in chapter 3 of the Hen Harrier conservation Objectives supporting document (copy in pouch) to ensure that habitat management measures achieve their aim. She concludes that in addition to the bird surveying proposed which appears to be focused on breeding Hen Harrier, a wider bird survey (breeding bird survey) should be undertaken to monitor any increases in other bird species, in particular prey species such as meadow pippet across the six management areas. I would recommend that if the Board are minded to grant permission that the conditions proposed are included as included in my recommendation below.

Residual Impacts

It is considered that overall residual impacts to hen harrier are considered to be imperceptible. This is based on the assessment that displacement and or disturbance impacts are considered unlikely in the mid to longer term. A reduction in impacts to forage habitats through avoidance and provision of new potentially suitable forage habitat onsite and proposed offsite habitat enhancement measures. I would refer to the memo prepared by Dr Maeve Flynn (Appendix Three) where she considers that a low to medium residual impact on foraging areas for Hen Harrier is likely as a result of the proposed development and that this impact should be viewed in the context of a Nationally important but declining population of the Nagle Mountains. She states that while the proposed conservation and habitat management plan will go some way to ameliorating these impacts, the evidence presented doesn't fully support the conclusion that that the measures could reduce impacts to an imperceptible level.

The maintenance of a minimum 500m buffer from all recently identified nesting areas for hen harrier means nesting areas are distant from the proposed turbines. The post construction monitoring proposed and the use of bird deterrent systems are considered to further minimise operational collision risks. On the basis of the information presented to the Board I consider that the assessment of residual impacts is reasonable.

15.11.2.5. **Terrestrial Mammals (Excl Bats)**

Survey work included general mammal surveys comprising walkover surveys and camera trapping (Figures 8.64 - 8.70). Table 8-44 sets out in the study area for the windfarm site, the grid connection and the TDR and provides a justification for same.

Receiving Environment

Results from a desktop review of data held by the National Biodiversity Centre (NBDC) are set out in Tables 8-45 - 8-52. In relation to otter, three locations within the wider extent of the wind farm and Grid Connection study area were found to be "positive" for Otter. Baseline surveys indicate that on the wind farm site and wider area, there is recorded evidence of Otter, Badger, Fox, Deer species, Rat, Stoat, Hare, Greater White-toothed Shrew, Bank Vole and Squirrel species but it is noted that there is evidence of breeding or resting sites. No active breeding or resting sites for Badger (setts) or Otter (Couches and/or holts) were recorded within the wind farm turbine locations. One inactive outlier Badger sett was recorded 60 metres from the

construction works boundary. Within the area of the proposed grid connection, evidence of mammals is stated to be limited to mammal pathways/runs. A Red Squirrel was observed within a hedgerow along a track but no protected sites in respect of Badger and other general mammals were recorded within this study area. Section 8.3.4.3 of the EIAR provides the site survey results for otter, badger, red squirrel and other mammals with Table 8-53 outlining details of field signs observed. Table 8-54 outlines the details of the badger sett encountered c.60m from the construction works boundary and which is not considered to be above. In relation to invasive species, fallow deer and European rabbit were encountered. The invasive Greater White-toothed Shrew is known to occur in the wider area and is considered as present within suitable habitat (grassland and woodland) with two observations of deceased remains of this species recorded within and outside of the wind farm study area. It is stated that no other invasive mammal species as outlined in Table 8-49 were recorded in field surveys but it is noted that American Mink are likely to be widespread, as are bank vole which is an important prey item for hen harrier. It is outlined that all native mammals are protected by legislation under the Wildlife Act, 1976 and the Wildlife (Amendment) Act, 2000 with the evaluation for each and their sensitivity outlined noting that in addition to being sensitive to the direct effects from disturbance/displacement from breeding and foraging ranges as a result of noise and visual intrusion and they are also sensitive to habitat loss and additive mortality from inadvertent contact with operating machinery or vehicles.

Potential Impacts – Construction

There are a number of potential direct and indirect impacts during this phase which arise for a number of mammals in terms of the windfarm, grid connection and TDR elements.

Disturbance and Displacement from noise, visual intrusion, clear felling and movement of soil has the potential to impact the otter, badger, red squirrel, pine marten.

Habitat Loss from removal of trees, scrub and creation or hardstanding from habitats has potential to impact badger, red squirrel, pine marten,

Mortality from vehicle collision and/or vegetation clearance and felling has the potential to impact the otter, deer, Irish hare, Irish Stoat, hedgehog, badger, red squirrel, pine marten.

Potential Impacts – Operational Phase

No impacts at operational phase are predicted with a justification provided in Tables 8-87 and 8-88 which I consider is reasonable.

Potential Impacts – Decommissioning Phase

There is the potential during this phase that disturbance could occur to species such as the red squirrel and pine marten if any tree felling is required to facilitate the phase. Machinery on site during this phase also has the potential to accidentally collide with these species causing mortality.

Cumulative Impacts

There is potential for some minor cumulative impacts of forestry operations were to be undertaken at the same time as the proposal. Similarly, if the permitted turbine at Moneygorm was to be constructed at the same time. A similar impact could arise during the decommissioning phase. No cumulative impacts are predicted during the operational phase which I consider is reasonable given the nature of the proposal.

Mitigation Measures

Measures proposed during construction include carrying out of works during daylight hours, confirmatory surveys pre-construction to re-confirm the present/absence of mammals. No mitigation measures are specifically required for the operational phase given the absence of impacts. For the decommissioning stage on site it is proposed that a project ecologist would be on site which seems reasonable given the passage of time.

Residual Impacts

As outlined in the EIAR, residual impacts on Badger, Pine Marten, Otter and Red squirrel are considered to be imperceptible upon implementation of mitigation measures. In relation to the Otter, the potential secondary indirect effects through habitat degradation through water pollution are proposed to be mitigated for by the suite of water protection measures detailed in the EIAR with the significance of impacts considered to be imperceptible in the presence of these mitigation measures. In the presence of mitigation measures and best practice measures no residual effects on all other terrestrial mammal receptors are likely.

15.11.2.6. **Bats**

Receiving Environment

The desktop review undertaken of bats within and adjacent the site is presented in Table 8-56 to 8-59. Transect surveys were undertaken in 2016, 2017 and 2020.

Automated detector surveys over four years from 2017 to 2020 with Table 8-3 outlining the habitat type at each turbine location and the level of surveying undertaken. (Figures 8.64 - 8.66 & 8.94-8.98). A count of bat passes in each survey is presented in Table 8-60, and the results are standardised in relation to the distance covered. Common pipistrelles were the most abundant species (1,006 passes, 57% of all records), followed by soprano pipistrelles (389 passes, 22%), Myotis bats (135 passes, 8%) and Leisler's bat (142 passes, 8%). It is stated that there is a clear seasonal trend to activity, with a peak of activity for most species in July, August and September, and lower counts in May, June and October. Leisler's bats had a slightly different trend, with a peak in June, moderate numbers in May, July and August, and low counts in September and October.

The EIAR outlines the results of the automated detector surveys. In 2017, six detectors were spread across the study area (Figure 8-94) and left in position for at least eight nights on three occasions. In total, 11,197 bat passes were recorded over the 28 sampling nights, which is equivalent to 66.6 bat passes per sampling location per night, on average. A full table of results is provided in Appendix 8 – H with summary at Table 8-61.

In 2018, eight detectors were spread across the proposed grid connection route (Figure 8-96) and left in position for five nights on three occasions. In total, 13,115 bat passes were recorded over the 15 sampling nights, which is equivalent to 109.3 bat passes per sampling location per night. A full table of results is provided in Appendix 8 – H. In 2019, fourteen detectors were placed at proposed turbine locations, and left in position for ten nights in spring, summer and autumn months with details outlined in Appendix 8-H and Table 8-62 noting greatest activity in the Spring months.

Evaluation of potential bat roosts was undertaken which included a preliminary evaluation followed by follow up surveys. Three bat roosts were recorded in derelict buildings within the survey area, all of which supported multiple small roosts. Natterer's bats were present in all three buildings (maternity and hibernation roosts), while small numbers of brown-long-eared, common pipistrelle and soprano pipistrelles were also recorded. All roosts are located more than 250 m from the proposed turbine locations. Details of roosts are presented in Table 8-63 including distance of same from the nearest proposed turbine.

It is outlined that both survey methods conform to the expected pattern of bat activity, albeit with some variation between species. Leisler's activity peaked in May and June, with lower levels in mid-summer months, and low counts in September and October. Activity of common and soprano pipistrelles was more consistent throughout the year, with a peak between May and August, and sporadic activity in September and October. Other factors addressed include the time of night with the highest levels of activity often occurring immediately after sunset with a smaller peak in activity in the hours before sunrise. This activity pattern is thought to be influenced by the activity patterns of insect prey, which also peak during the sunset and sunrise periods. Weather conditions, wind speed and temperature effects on bat activity are also addressed. I note that the EIAR outlines some constraints with the bat surveys. However, I consider that the rationale to address same is reasonable.

For the Boards information, the SNH 2021 guidance referenced was updated following the submission of the subject application which would refer to the previous 2019 version in the original documentation. I consider that the matter has been appropriately addressed.

Potential Impacts – Construction

Impacts are addressed under foraging and commuting bats in the first instance and bat roosts in the second. In terms of foraging and commuting bats, a considerable change to the habitat in many areas of the site will result from site clearance works including the removal of vegetation including conifers in a radius of 92m around each turbine and narrow linear paths for new access tracks. The EIAR outlines potential negative and positive impacts arising from this as there is the removal of habitat, but the removal creates new edges not previously existing. However, given the overall availability of habitat within the area provides that there will not be a significant change and the bats will adapt.

In terms of roosts, no modifications are proposed to buildings that contains bat roots with all located more than 250m from proposed turbines and main commuting routes to an from roosts are not proposed to be modified.

No impacts are predicted in relation to the grid connection or TDR as no significant vegetation removal is proposed for the grid connection and the TDR route has been planned to avoid possible roost features.

Potential Impacts – Operational Phase

Prior to addressing the potential impacts, I would refer the Board to a large-scale study by researchers at Exeter University that was published by Mathews et al 2016 which is referenced by the applicant in respect of bat fatalities in the British and Irish Isles. The study was based on bat activity and corpse searches at 46 operational wind farms throughout the British Isles with bat corpses found at two-thirds of the sites with a relationship found between weather conditions and bat fatalities, but it is outlined that there was not a clear relationship between recorded bat activity levels and the number of fatalities recorded at a site. As per the SNH Guidance, the species recorded in significant numbers at the proposed development site – common pipistrelles, and to a lesser extent Leisler's bats and soprano pipistrelles – are all considered to have a high collision risk from wind turbines. Table 8-89 outlines the habitat type and the bat activity (with species type noted) at each of the turbine locations (automated detector surveys 2019) and in the interest of clarity I will address the species as they are outlined in the EIAR.

The Common Pipistrelles is stated that have been the most frequently recorded species during the baseline surveys, with highest activity levels along forest edge habitat, particularly roads and clearings. While the proposal would change many of the existing habitats it is expected that common pipistrelle bats will adapt to these changes, for example by foraging along the new forest edge habitat on the margins of the cleared area. It is stated that depending on the distance of the new edge habitat from the turbine-swept area, it is possible that common pipistrelle bats may forage within areas that would put them at risk of collision providing that some bats could be struck by operational wind turbines. Reference is made by the applicant to the high activity by common pipistrelles recorded in some areas of open habitat, notably around the area of proposed T11 which did not have any hedgerow / treeline habitats. Considering the high levels of common pipistrelle activity throughout the site, and that some may fly in relatively-close proximity to operational wind turbines, a risk of significant impacts would arise. The applicant does acknowledge that the Mathews (2016) report outlines that pre-construction activity surveys do not provide an accurate estimate of post-construction mortality levels. It can be deduced that the worst-case scenario, is that significant numbers of common pipistrelle bats could be killed, and that there could be an impact of local significance on the populations of this species.

In relation to the Soprano Pipistrelles species, surveys found this species was present in much lower numbers than common pipistrelles, but appeared to follow a relatively similar pattern of activity, i.e. foraging along forest edge habitats. A worst case scenario is predicted as a significant numbers of soprano pipistrelle bats being killed, which would, in the applicants opinion, comprise a moderate impact of local significance on their populations.

The Leisler's species was recorded in significant numbers at several of the proposed turbine locations, including both edge habitats and open areas which is expected given this species typically feed in open air or around the tops of trees, usually at heights of >5 m above ground level with activity levels generally higher around the locations of T17-T23. Similar to the previous species, given the moderate to high levels of Leisler's bat activity throughout the site, and its broad habitat requirements, a risk of significant impacts would arise and in a worst-case scenario significant numbers of Leisler's bats could be killed at some locations with the potential for a significant impact of local significance on the populations of this species.

As outlined in the EIAR, I would refer the Board to the protections afforded to bats under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), under which it is an offence to kill, injure or disturb any bat species.

In terms of Bat Roosts, as outlined above in relation to the construction phase, there are no proposals to modify or disturb any of the known bat roosts during the operation of the development. While it is stated that some of the bats using these roosts may forage near the proposed turbine locations, the primary species of interest – Natterer's bats – are considered to have a low collision risk from wind turbines, so it is stated that they are highly unlikely to be affected.

In relation to lighting, as outlined, some artificial lighting may be required during the operational phase, e.g. around the site compound and depending on the intensity, direction and duration of lighting, it could displace bats from roosts, foraging areas or commuting routes, with the potential for a slight to moderate impacts on local populations.

It is outlined that the aviation warning lights which are often fitted to turbine nacelles to improve visibility are not considered to be a concern for bats, as they typically face horizontally and they are high above potential bat feeding areas.

No significant adverse effects are predicted from the grid connection route or TDR during this phase.

Potential Impacts – Decommissioning Phase

Other than the potential requirement for artificial lighting duing this phase there are no other predicted impacts. In terms of the lighting depending on the intensity, direction and duration there is potential to displace bats from roosts, foraging areas or commuting routes having a temporary slight to moderate impact.

Cumulative Impacts

No construction phase cumulative impacts are predicted in respect of the replant lands, forestry activity or the permitted single turbine. There is a potential significant cumulative impact with the single turbine. No cumulative impacts during the decommissioning phase of any significance are predicted which is considered reasonable.

Mitigation Measures

Construction phase mitigation relates principally to the carrying out of works in daylight and use of lighting. No decommissioning measures are considered to be necessary.

In relation to operational phase measures the EIAR provides a very detailed suite of measures. As outlined above, the Mathews et al study which outlines that pre-construction bat surveys do not provide an accurate prediction of bat activity post-construction given the habitat removal required and it is advised that such sites should incorporate an adaptive mitigation strategy based on post-construction data.

The EIAR refers to three techniques which are adopted for the initial strategy – are vegetation buffers, curtailment and feathering - using a precautionary approach based on pre-construction data. It is proposed to reassess bat activity following the completion of the development, and the mitigation strategy will be revised. It is also outlines that the approach to mitigation differs at each turbine location depending on the relative activity levels for the three species of high collision risk with the pipistrelles having different feeding behaviours to the Leisler.

Vegetation Clearance/Buffers

The risk of impacts for bat species that typically forage along linear habitat features (e.g. pipistrelles), this can be reduced by increasing the distance between the turbine and the surrounding linear vegetation features, i.e. by clearing a larger area of forestry around each turbine with a 50m buffer between turbine blade tip and nearest woodland (or other key habitat features) recommended in the SNH Guidelines and it was calculated that buffer zones of up to 92 m are required around all turbines. It is

proposed that during the site clearance phase, all trees and shrubs would be cleared within this radius and the buffer zone is proposed to be kept clear throughout the operational phase.

Operational Curtailment

Reference is provided to studies which outline the effectiveness of curtailment. The objective of curtailment is stated as limiting turbine activity during periods of highest risk to bats which can involve a range of parameters, including the time of the year, time of night, and weather conditions. It is also noted that it is important to identify the periods in which there is little or no risk to bats, in order to avoid curtailing turbine activity unnecessarily, and thus reducing the productivity of the development. The EIAR outlines a number of potential curtailment parameters. On this basis, there is a specific initial curtailment proposal in recognition of the risk to Leisler's bats, based on pre-construction data, at three specific locations, whereby some turbines will be curtailed on a precautionary basis during the operation phase in April, May and June, throughout the night (starting 30 minutes prior to sunset, and ending 30 minutes after sunrise), when wind speeds are below 6 m/s, and when air temperatures are above 9°C. Two turbines locations at which Leisler's activity was frequent – T11 and T18 – and an additional turbine – T21– which while it was not sampled in 2019, was considered to be most similar to T18. As outlined above, this is based on pre-construction data and post construction monitoring to be undertaken may adapt this strategy.

Feathering of Turbines

The EIAR outlines that when wind speeds are insufficient for power generation, the blades of wind turbines continue to rotate slowly, referred to as 'idling' and it is understood that a significant number of bat fatalities occur when turbines are idling, because the tips of blades can maintain relatively high speeds even the centre of the turbine is rotating slowly. In order to reduce the risk of impacts on bats 'feathering' all turbine blades during low wind speeds can be incorporated which provides that turbine blades rotate the parallel to the wind such that turbines continue to rotate very slowly, but at speeds that pose much less of a risk to bats.

Other mitigation measures include restrictions on lighting with the implementation of proposed bat sensitive lighting techniques. In terms of monitoring, due to the clearance of forestry around wind turbines, it is considered highly likely that bat activity will change following the construction phase with post-construction monitoring

required to confirm that it is effective. The monitoring strategy is outlined in the EIAR and involves two components: surveys of bat activity and searches for bat carcasses around the base of each turbine. The monitoring strategy is outlined in the EIAR and depending on the results of the monitoring, the initial mitigation strategy may be revised. This is considered reasonable.

Residual Impacts

While the proposed avoidance and mitigation measures is predicted to substantially reduce the risk of collisions to common pipistrelle, soprano pipistrelle and Leisler's bats form the turbines, confirmatory monitoring is proposed after the completion of construction works, and the mitigation strategy may be adapted further following same. It is stated that this approach follows current best practice as outlined in the SNH (2019) guidelines (now updated to 2021 as referenced above) and the Mathews et al (2016) report.

15.11.2.7. **Other Species**

Surveys for birds, mammals and habitats recorded other species such as Amphibians, Newts, Reptiles and any invertebrates. The Marsh Fritillary butterfly was surveyed using a habitats-based appraisal technique along the proposed Grid Route in 2018 due to the suitability of areas along the route for this species. It is stated that surveys for Marsh Fritillary were not carried out within windfarm study area due to the absence of suitable habitat within the site. It is also stated that there is a known Marsh Fritillary colony (IEC, unpublished) within 4km of the proposed development which was also considered when determining the likelihood of significant effects/pathways for effects to this receptor.

Receiving Environment

Marsh Fritillary - Marsh Fritillary is the only butterfly species resident in Ireland that is listed in Annex II of the EU Habitats Directive 92/43/EEC. I have also addressed this matter Section 14.8.5 of the planning assessment above. Table 8-69 sets out the records held by the National Biodiversity Data Centre for the four 10km grid squares within the which the windfarm site and grid connection are located. A total of 21 Marsh Fritillary records were retrieved for W68, with the majority of these concentrated within a single locality in the townland of Coom West, approximately 2.7km west of the windfarm development boundary. No Marsh Fritillary larvae, larval food webs or adult butterflies were recorded during the survey of the windfarm or grid

connection route. It is considered that habitat within the site is very limited being predominantly forestry. The known population/habitat extent recorded from the wider area is evaluated as of County Importance.

Amphibians & Reptiles - All amphibian and reptile species are protected under the Wildlife Act (1976, amended 2000) with the Common Frog also listed on the Annex V of the Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC), meaning that the removal of this species from the wild is restricted by European law. Table 8-70: outlines the desktop results of amphibians and reptiles within the proposed development 10km grid. Site surveys did not record smooth newts but suitable breeding habitat occurs. In relation to common frog, it was recorded during surveys with suitable habitat occurring. All amphibians and reptiles present are evaluated as of Local Importance (Higher Value).

Potential Impacts – Construction

Direct Impacts

In terms of the Marsh Fritillary Butterfly, there is no potential for direct impacts as no suitable habitat has been found to exist on the site of any of the project elements. In terms of amphibians and reptiles, while some foraging or breeding habitat will change, given the low occurrence of such species the impact is considered to be imperceptible. The removal of forestry and revegetation of areas would lead to more habitat for these species. No potential indirect impacts are considered likely.

Potential Impacts – Operational Phase

No potential impacts are predicted.

Potential Impacts – Decommissioning Phase

While there is potential for direct mortality of amphibians and reptiles during decommissioning operations, these impacts on Common Frog and Smooth Newt are considered to be potentially greater during the breeding season (frogs: January-March and newts: March-May) when these species congregate at breeding sites such as ponds and ditches. It is outlined that the works would be limited to the existing site infrastructure including roads and hardstands, and will be of low intensity, of short duration, and therefore would not be considered to be significant. I consider that this is reasonable.

Cumulative Impacts

None predicted given no significant impacts on other species on the subject site are predicted.

Mitigation Measures

In relation to the Viviparous lizards, a confirmatory survey is proposed within the likely habitats prior to commencement with further review required on whether or not reptile proof fencing is required which is proposed to be a responsibility of the Ecologist on a location-specific basis. Depending on the timing of works proximate to areas suitable for the common frog and newt, confirmatory surveys following standardised methodologies are proposed at those locations to confirm the presence/absence of breeding adults and/or spawn with areas fenced off and signage provided as required. It is outlined that it is essential that the Ecologist/ECoW should have an understanding of the drainage characteristics of wet areas such as ponds and pools which support breeding amphibians. This is a matter which should be made clear by the applicant in respect of future appointments. Given no significant impacts are predicted to the other species outlined during the operational or decommissioning phases, mitigation measures are not required.

Residual Impacts

No residual impacts are predicted.

15.11.2.8. **Fisheries and Aquatic Ecology**

Receiving Environment

The EIAR outlines that in addition to the field surveys and sampling for the fisheries and aquatic biodiversity receptors, which were undertaken at selected sampling sites within the study area, watercourse crossings throughout the study area were visited and field notes made in relation to upstream and downstream conditions identified at each crossing point. It is stated that full aquatic ecology, fishery and specific Margaritifera margaritifera surveys were conducted of all relevant downstream receiving waters in September 2020 with sampling undertaken between September 2017 and October 2018. It is stated that the 2020 survey report provides the key information informing the report as it is the most up to date but that relevant information from previous surveys in 2017/2018 was also considered such as records of invasive species. Surveys undertaken included electro fishing, fish stock assessment, fish habitat survey, freshwater pearl mussel survey, aquatic

macroinvertebrate community survey. It is noted that given the absence of pathways along the TDR that aquatic ecology surveys were scoped out.

The details of the fisheries surveys for each of the sites are provided in detail in Section 8.3.7.3 with the full results presented in Appendix 8-B. The fish species recorded at each of the 25 sites is outlined and charted. The Fisheries and Aquatic Habitat results outlined in Section 8.3.7.4 noting that salmonid habitat ranges from poor to excellent across the sites, with four sites offering excellent habitat. Lamprey habitat was considered of poor to moderate quality.

In terms of invasive alien plant and fish, the surveys found at two sites that Himalayan balsam (Impatiens glandulifera) was the only invasive plant species recorded during this survey, which was widespread and abundant along both banks of channel. None of the three species, roach, dace or common carp, listed on the Regulations were recorded.

In relation to the Freshwater Pearl Mussel Survey undertaken, Table 8-74 provides a summary of the findings of the FPM surveys within the study area in 2017 & 2018. It is stated that no live freshwater pearl mussels were found at any of the sites surveyed in 2020 or in previous surveys outside known populations which are located an extensive distance downstream of application site. No empty shells were found and there is no indication of the current presence of freshwater pearl mussels in the River Bride, the River Martin or the Clyda River. It is also stated that there are no freshwater pearl mussels records farther downstream of the stretches surveyed in the Rivers Bride and Martin. It is outlined that freshwater pearl mussels are known to occur in the Munster Blackwater River, downstream of the Clyda River confluence.

In relation to the Aquatic Macroinvertebrate Community Survey undertaken, it is outlined that Q-samples were collected and analysed from n=12 riverine sites in the footprint of the proposed development and associated cable route. A total of n=46 species across n=33 families were recorded in the kick samples with a summary of results is presented in Appendix 8-B

Evaluation: A total of eleven aquatic survey sites were considered of local importance (higher value) given the presence of moderate to good salmonid, lamprey and or European eel habitat. A further eleven sites were considered of local importance (lower value) due to their small size, low fisheries value and absence of good status Q4 water quality. A total of three sites (B10 (Inchinanagh River) and B11 & B15 (River Bride)) were considered of international importance given they form

part of the Blackwater River SAC (002170). Table 8-75 provides a summary of the evaluation.

Potential Impacts

Construction – Direct

Changes to flow regime at locations instream where construction work is proposed is likely to impact aquatic species. These species rely on instream habitat, peak flow flushes, flows for upstream/downstream migration and avoidance of barriers to passage and avoidance of channel constriction during low flow. The potential to create such changes come from the proposed instream works at three crossing points with permanent changes proposed. The potential changes to the flow regime while short term are considered to have a moderate significance.

The works proposed within or adjacent to waterbodies also have the potential to cause direct disturbance or displacement of salmonid fish and aquatic species. The impact on fish populations is considered to be moderate as the disturbance caused by the human activity will displace the fish populations for the duration of such activity although it is temporary.

The other potential direct impact considered is the degradation of the riparian habitat along the watercourse. This can affect the stability of the banks and species along same as well as indirect impacts on water quality due to sediment and nutrient loading.

Construction – Indirect

As noted above, the main indirect effect predicted is the potential to impact the water quality status by way of increased siltation/contamination which is considered significant in the absence of mitigation. This matter is addressed in detail in Section 15.10 above which specifically addresses hydrology and water quality.

As outlined in the EIAR, aquatic invasive species have the potential for significant ecosystem disturbance, disrupting the predator/prey balance or causing habitat disruption within aquatic systems. The spread of aquatic invasive species is not restricted in extent to the footprint of construction/instream works, but can be transported both upstream (mobile species and 3rd party transport) and downstream (hydrological transport) within a watercourse, potentially extending throughout the catchment. Therefore, the potential for the works to spread invasive aquatic species also arises which is considered to be significant.

Potential Impacts – Operational Phase

No potential direct impacts predicted. In terms of indirect impacts, in the absence of mitigation a number have been predicted and are related to the wastewater generation at the welfare facilities, silt control and flow rate changes via the drainage system on the site and the potential spread of invasive alien species by virtue of the maintenance activities within the subject site.

Potential Impacts – Decommissioning Phase

No direct impacts are predicted but the increased movement of equipment and machinery has the potential for increased sediment release to water bides with the potential to affect water quality of waterbodies and thereby impact fisheries and aquatic ecology.

Cumulative Impacts

The only project identified where the is potential for cumulative impacts with the subject proposal is the alteration proposed to the Mallow Sewerage system with Table 8-98 evaluating same. While the EIAR outlines in detail the potential cumulative impacts, they would only arise if both projects were in construction at the same time and as indicated in the EIAR, this is not likely to arise. As the EIAR was completed some time ago, I would note that works on this project are anticipated to be complete in Spring 2023. No cumulative impacts at decommissioning phase have been identified.

Mitigation Measures

In terms of the construction phase, Section 8.7.1.8.2 of the EIAR outlines in detail the mitigation measures proposed in respect of instream works, culverts, excavation works proximate to surface water bodies and the management of invasive species. I consider that the information provided is very robust and comprehensive.

I would note in particular the submission from Inland Fisheries Ireland who outline the need for the effective employment of proposed mitigation measures to address potential impacts on fisheries. I consider that the protection of water quality and the mitigation measures proposed to address same are satisfactorily addressed particularly as it relates to the protection of watercourses in the aforementioned sections of this EIAR. I consider that the mitigation measures proposed in the EIAR which seek to mitigate against any potential effect on water quality are satisfactory.

One further matter raised by the IFI relates to the potential impact of works to watercourse crossings which may impact the free passage of migratory fish and state that no interference or alterations to watercourses should be undertaken without prior

consultation with the IFI. The applicant refers to Section 10.2.5 of the EIAR where consultations were held with an IFI representative prior to the application submission where inspections of crossing points were undertaken and design solutions and construction methodologies agreed. Notwithstanding same, the applicant has stated that no interference or alterations to watercourses will be undertaken without prior consultation with the IFI.

For the operational phase, maintenance of drainage systems is effective permanent mitigation. In terms of welfare facilities, wasterwater generated is proposed to be tankered off-site and therefore would not be directed towards watercourses on site.

For the decommissioning phase, measures relating to the protected of water quality and management of invasive species are outlined as the main mitigation. These are outlined elsewhere in this report and are outlined in detail in Section 8.7.3.8.2. They are considered to be robust.

Residual Impacts

No residual impacts anticipated which I consider is reasonable given the mitigation measures proposed.

15.11.3. Conclusions

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR and the response to the further information request. I am satisfied that potential effects on biodiversity would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects on biodiversity.

15.12. Archaeology, Architecture and Cultural Heritage

15.12.1. Environmental Impact Assessment Report

Chapter 14 of the EIAR addresses **Archaeology, Architecture and Claustral Heritage.** The methodology used to prepare the Chapter is outlined with reference, in particular to desktop research, field surveys and the relevant guidance in respect of assessing impacts.

The Chapter then addresses the existing environment, potential impacts including cumulative impacts. The mitigation measures and residual impacts conclude the Chapter.

Related Appendices

Appendix 14.1 – Figures

Appendix 14.2 – Photographic Record

Further Information

Appendix 2 - Response to Third Party Submissions & Observations

15.12.2. Consideration and Assessment of impacts

Existing Environment

The EIAR outlines that a study area extending to 1km from the proposed locations of turbines, access roads, compounds, borrow pits and substations within the site was reviewed in order to assess the potential for direct impacts on the cultural heritage resource. In order to assess the potential for indirect impacts on National Monuments and other extant recorded monuments with potential visual alignments across the landscape, including megalithic tombs, stone circles and stone rows a wider area of 5km from the proposed development was reviewed. In terms of the grid connection route and TDR, a study area comprising a 100m wide corridor centred on the grid connection route through the existing public road network was also assessed (Figure 14-10) as was the turbine delivery route.

It is outlines that there are seven recorded archaeological sites within the 1km study area around the proposed development, the closest of which is a possible barrow site (CO043-001----) located within forestry approximately 215m from the T11 (Table 14-4). There is one recorded archaeological site located within the 100m wide study area centred on the grid route connection, a levelled enclosure site (CO035-042----) in Glanakip townland (Table 14-9) and there are two examples within the environs of a turning-head turbine delivery node to the south of the proposed development within Glashaboy South townland (Table 14-11), extant standing stone (CO051-166----) and the recorded location of an ogham stone (CO051-039----). None are included in the national list of monuments with Preservation Orders (NMS June 2019).

It is stated that there is one National Monument located within this study area and this comprises Island wedge tomb (Nat. Mon. ref. 502; RMP CO042-056001-) which is 2.3km to the west of T2 and which is pictured in Figure 14-11.

I also note that LiDAR imagery of the site area found no potential unrecorded archaeological sites or architectural heritage sites. There are no buildings or structures within 1km of the site listed on the RPS or on the NIAH nor are there any historic settlement centres, extant vernacular structures or demesne lands located within the proposed development. None of the road bridges along the grid connections route (outlined in Table 14-10) are listed in the RPS or in the NIAH.

I note a number of submissions refute the statement in the EIAR that there are not visitor facilities or access features at the Island wedge tomb which is a National Monument. While a number of submissions outline the ownership and access arrangements to same I would suggest that the reference in the EIAR is to formal facilities and it does not state that the monument is not accessible.

Table 14-12 usefully outlines each element of the wind farm element including individual turbines and notes the approximate distance of same to the nearest archaeological site.

Potential Impacts

Construction Phase

Wind Farm - Given the distance of elements of the proposed development to recorded sites, no direct impact is predicted. While it is considered that there is a low potential for the presence of unrecorded, archaeological sites within the forestry plantations, the survival of elements of unrecorded archaeological remains cannot be completely discounted with the potential for ground works to impact unrecorded archaeological sites. No indirect impacts are predicted. Tables 14-13 and 14.16 to 14-17 provides a summary of potential impacted with none predicted.

Grid Route Connection and TDR – No direct impacts are predicted given the distance to recorded sites, the nearest site is c.30m to the east of the grid connections route but with no visible surfaces.

In terms of the operational phase of the proposal, a slight impact is predicted on the Island Wedge Tomb which is a national monument and which is located 2.3km west of T2 as outlined in Table 14-15. This relates to the setting of the structure however

the magnitude of the impact is predicted as being low and as stated the significant is slight. Therefore, I consider that this is acceptable impact.

No direct or indirect decommissioning phase impacts are predicted.

Cumulative Impacts

No cumulative impacts are predicted.

Mitigation

I note that the EIAR highlights that the extensive forestry plantation that dominates the lands within the site precludes advance archaeological site investigations such as geophysical survey and test trenching. Therefore, any archaeological site inspections to be undertaken within all development areas will have to await pre-construction tree felling to assess whether there are any surface traces of any potential unrecorded archaeological or architectural heritage sites within the forestry plantations. This is reasonable given the existing plantations on the lands. Following the felling of the trees, it is proposed to undertake archaeological monitoring of ground excavation works during the construction phase (under licence by the National Monument Service) and in the event that any archaeological sites are identified during these site investigations they will be recorded and cordoned off while the National Monuments Service are consulted to determine further appropriate mitigation measures, which may include preservation by avoidance or preservation by record through a systematic archaeological excavation. I consider that this is reasonable.

Residual Impacts

The grid connection and turbine delivery routes will not result in any residual impacts on the cultural heritage resource. The proposed wind farm is predicted to result in a slight, indirect, long term, negative residual impact on Island wedge tomb, a National Monument in State Guardianship located 2.3km to the west of the nearest element of the energy park (Turbine 2) but this is reversible given the timescale of the proposal.

15.12.3. **Conclusion**

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR and the response to the further information request and submissions in response to same. I am satisfied that potential effects on archaeology, architecture and cultural heritage

would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects on archaeology, architecture and cultural heritage.

15.13. Landscape and Visual

15.13.1. Environmental Impact Assessment Report

Chapter 15 of the EIAR addresses **landscape and visual.** At the outset it clarifies that the landscape impact assessment relates to the assessment of effects of development on the landscape as a resource in its own right whereas the visual impact assessment relates to assessing the effects of a development on specific views and on the general visual amenity experienced by people. In relation to the zone of theoretical visibility (ZTV), as the blade tips are up to 169m, the minimum ZTV recommended as per the Guidelines is 20km form the outermost turbines in the proposal. The Chapter refers to the Central Study Area which is the landscape within 5km of the site and the Wider Study Area which is the area between 5-20km of the site. The methodology used to prepare the Chapter is outlined with reference to desktop studies, fieldwork and appraisal. The assessment criteria is also outlined for landscape and visual impacts in respect of value and sensitivity, magnitude and significance.

Related Appendices

Volume III

- Appendix 15.1 – Large Scale Mapping
- Appendix 15.2 – TVI Methodology

Volume IV

- LVIA Viewpoint Photomontages Book 1
- LVIA Viewpoint Photomontages Book 2

Further Information

A number of matters were raised in respect of this environmental factor in the request for further information which are addressed within this assessment.

The following documentation submitted with the FI response is relevant.

Response to Further Information Report - Section 4

Response to Further Information Report - Appendix 1 – Section 2.2.5

Response to Third Party Submissions & Observations – Appendix 2

Photomontages - Appendix 1.4

This chapter was reviewed in the context of the range of turbines as requested in the further information request. Therefore, this assessment takes cognisance of any changes outlined in same.

It should also be noted that Section 14.6 of the planning assessment above addresses landscape and visual predominately from a policy perspective.

15.13.2. **Consideration and Assessment of Impacts**

For the Boards ease of reference and having regard to the turbine range now proposed in response to the further information request, the applicant has provided some clarity on how the EIAR and response to further information addresses the now proposed turbine range. It is outlined that in the case of the landscape and visual assessment, an evolving best practice approach to addressing variable turbine dimensions within the potential envelope is to include a sample of potential alternative hub height and rotor diameters to achieve the same or slightly lower blade tip heights as the specimen turbine used in the photomontages as the basis for the visual impact assessment. (i.e. 'lowest and highest hub heights as well as largest and smallest rotor diameters'). This it states uses the extreme rotor diameter / hub height dimensions within the given turbine envelope to determine whether any particular scenario results in higher or lower visual impacts than the others. By using this methodology (the extreme dimension range in combination with the median (specimen)), it is not necessary to use all intermediary dimension possibilities as the differences between them will be fractional and very unlikely to result in noticeably different impacts. It is outlined that for the LVIA in the EIAR, the specimen turbine used the highest blade tip envelope (169m) with the largest rotor diameter and a hub height that is only 3m lower than the highest hub height scenario in the now

proposed range It is stated that the critical dimension is the overall tip height as it defines the vertical visual envelope of the development. The rationale for this approach is explained by the applicant. It is stated that when it is the same tip height being considered, the proportional variation within the overall vertical envelope is extremely subtle and is very unlikely to manifest as a difference in the overall visual impact from any particular viewpoint. By way of illustration, the applicant has provided comparative photomontages at three of the previously selected viewpoints to represent short and mid-distance views of the development in differing contexts. These viewpoints are VP6, VP9 & VP14 and are considered below in respect of the residual impacts. Variation in turbine dimensions were considered unlikely to be discernible at longer distances long distance views (10km+). The comparative scenarios used include;

- Base-case Scenario – 100m hub, 138m rotor diameter, 169m tip height (as used in the project LVIA)
- Scenario 1 - 96m hub, 138m rotor diameter, 165m tip height
- Scenario 2 - 103m hub, 132m rotor diameter, 169m tip height

The comparative photomontages (Appendix 1.4) illustrate that the variation in turbine dimensions are very difficult to discern across the three scenarios even with considerable scrutiny which is not considered to be surprising given the range is heights is minimal. I would concur with the applicant in this regard, one could not differentiate the difference between the scenarios as I outline in my assessment below.

The applicant considers that it has therefore been determined that the submitted LVIA is deemed to comfortably cover the now proposed Turbine Range and it is not considered necessary to prepare separate photomontages/assessments at all viewpoints for all possible turbine dimensions within the range as the variations within the range would be indiscernible. I consider that this is reasonable particularly having regard to the three viewpoints examined for the 3 scenarios. They conclude that it is considered by the applicant that the full range of scenarios within the turbine range have been comprehensively considered and assessed in the EIAR. Having regard to my assessment below, I would concur with this conclusion and consider that the information before the Board is sufficient to undertake this section of the EIA.

15.13.2.1. **Landscape**

Existing Environment

The EIAR provides a description of the landscape context of the proposed development site and the wider study area noting that the site spans the southern and southwestern extents of the Nagle Mountains, south of the Blackwater River Valley. Knocknaskagh Mountain is the highest peak within the Nagle mountains at a height of approximately 420m AOD with the Nagle Mountains to the north of the site descending into the valley of the River Blackwater, which flows in an east-west direction. South of the Nagle Mountains, the terrain comprises rolling hills within which there is a number of smaller river valleys including that of the River Bride. The site is located within two landscape types – transitional marginal landscapes and hilly and flat farmland with the EIAR outlining the guidance for both included in the (2006) Guidelines. The local planning policy related to landscape is set out in Section 5.3 above. The landscape character areas within the vicinity of the site are set out in Figure 15.5 with the location on the turbines on same. Figure 15.14 illustrates the map of route screening analysis 'open visibility' which indicates the number of turbine blade sets visible along the roads within the study area. The EIAR outlines the visual receptors within the wider area. These include the centres of population varying in size from Cork City 15km to the south of the most southern turbine, Mallow and Fermoy to the northeast and northwest. Smaller rural villages within the central study area include Bottlehill, Burnfoot, Glenville, Killavullen and Ballyhooly. Transport routes within the study area are outlined. Amenity and heritage locations including the Blackwater Way and other walking trails, Doneraile Wildlife Park, Blarney Castle and Village. Heritage features within the central area include the Island Wedge Tomb c.2.5km west of the nearest turbine which it is stated is located on private property and not publicly accessible.

While there are a number of designated scenic routes within the wider study area as illustrated in Figure 15.16, two of these adjoin the proposal, S11 & S12.

Potential Impacts

Figure 15.10 provides the ZTV map for the study area (Appendix 15.1 provides large scale map with viewpoints included) which shows the potential visibility of the proposed turbines in the absence of any existing vegetation. The EIAR outlines the key points garnered from this study. The theoretical visual intensity (TVI) Map is attached as Figure 15.11 with the key points from the study outlined which notes the

greatest visual intensity is within the site itself and in the immediate vicinity 1-2km, especially in the area between the two clusters where both sets of turbines are potentially visible in relatively close proximity. The route screening analysis map is included as Figure 15.12 which shows open visibility and partial visibility noting that unsurprisingly, the majority of open view classes occur between the two clusters.

The EIAR outlines that the results of the ZTV analysis provide a basis for the selection of Viewshed Reference Points (VRP's), which are the locations used to study the landscape and visual impact of the proposed development in detail with a variety of receptor locations was selected that are likely to provide views of the proposed development from different distances, different angles and different contexts. Six categories of receptor types are used which relates to the visual receptors outlined above – key views, scenic routes, local community views, centres of population, major routes and amenity & heritage features. The selected viewpoints are outlined in Table 15-8.

The EIAR does not differentiate between, construction, operational or decommissioning impacts but deals with all phases under residual effects. I will address the Construction Stage Impacts prior to addressing the operational/residual impacts as they are very different.

Construction Stage Impacts

The construction stage comprises the new tracks, improvement of existing tracks, the hardstandings, the substation compounds and drainage and watercourse crossings which remain for the operational life and beyond with other temporary elements such as the cable trenching, construction compounds and borrow pits. Given the extent of the site area the construction stage impacts would be limited and minor in significance.

As outlined at section 15.5 of the EIAR it is considered that potentially significant landscape and visual impacts have the potential to occur in the following ways.

Landscape Impacts

a) Irreversible physical effects on sensitive landscape features

b) Disruption of existing land use patterns

c) Incongruous change to areas of sensitive landscape character

Visual Impacts

a) A combination of visual and spatial dominance as seen from highly sensitive receptor locations, most likely to occur within 2-3km of the proposed development

b) Visual clutter and ambiguity as seen from highly sensitive receptor locations which can occur at any distance, but tends to occur beyond 2-3km as turbines can become stacked in perspective and a more two dimensional layout is perceived.

c) A combination of both of the above effects

In terms of the most sensitive receptors the following is outlined:

Landscape

Blackwater Valley and particularly heritage features and demesne landscapes contained within it that contribute to its tranquil heritage landscape character.

Visual

Designated scenic routes and views identified in the Cork County Development Plan and the top of Blarney Castle.

It is these considerations that are addressed in detail in my assessment below.

Mitigation Measures

The mitigation measures put forward comprise firstly, mitigation by avoidance and design using what is referred to as reverse ZTV technology which it is stated can identify areas within the site in which turbines can be placed so as not to be visible from a particular location, or visible to a particular degree with particular regard to the Blackwater Valley and Blarney castle. These are specifically addressed in Views, 2, 20 and 23 below. The second stated mitigation measure set out is the buffering of residential receptors with the nearest residential receptor 750m from a turbine.

Operational/Residual Impacts

Given the nature of the proposed development it is the residual impacts of the proposed development which are most critical to the consideration of landscape and visual impact and in this regard, I address landscape impact, and then visual impact with particular consideration of the viewpoints chosen by the applicant to consider visual impact and also views which were not specifically addressed but raised in the submissions received from the Planning Authority and Observers. I will also address the key receptors addressed above which include: key views/scenic routes, local community views, centres of population, major routes and amenity & heritage features

Impacts on Landscape within Local Area (Central Study Area - <5km)

The EIAR, quite appropriately, I would suggest states that there is little in the way of overt naturalistic or heritage value within the immediate area of the site. It is stated that the scenic value is most evident on elevated ground where broad vistas to the south and west are available which is reflected in the scenic route designations attributed to several of the upland roads. It is considered that the scenic value of these designated views mainly relates to their extent rather than the presence of dramatic or naturalistic landscape features. On the far side of the Nagles Mountains ridgeline the Blackwater Valley below has strong heritage and scenic value. The landscape character of these areas is reflected in the landscape designations included in the County Plan which is addressed in Section 14.6 above.

The EIAR considers that the proposed development site and its immediate environs is deemed to be of a Medium-low landscape sensitivity, albeit with those northern slopes of the Nagle range (southern side of the Blackwater Valley), that are contained within the Central Study Area, increasing to High-medium. This is a reasonable assessment of the context in my opinion.

Impacts on Landscape within Wider Area (5km-30km)

Landscape Character, Value and Sensitivity

The EIAR outlines that the Wider Study Area can be divided into northern and southern halves either side of the Nagles. To the south low rolling terrain leads to the urban areas and road corridors to the south with the most notable features an area of high value landscape on the northern periphery of Cork City and Blarney Castle and Gardens. The northern area of the study area includes a large area designated as high value landscape with the most notable and sensitive landscape features within this area, the River Blackwater and the numerous demesnes and stately houses with the southern foothills of the Ballyhoura Mountains further north. Other notable features, although not designated is the Doneraile Wildlife Park and Demesne within the northern extents of the Study Area and the Labbacallee Wedge Tomb to the north of the site. The contrasting landscape sensitivity leads to low/medium landscape sensitivity to the south and high value, very high sensitivity to the north.

Magnitude

The EIAR, in the context of magnitude outlines the extent of the proposed development acknowledging that there will be physical impacts on the land cover of the site as a result of the proposed development. However, it is considered that the impact would be relatively minor in the context of what is described as a productive

rural landscape which accommodates sizable commercial forestry activities. It is considered that the scale of development proposed can be comfortably assimilated into this rolling landscape context without undue conflicts of scale with underlying land form and land use patterns and therefore it is considered that the magnitude of the landscape impact is 'Medium' within the Central Study Area to the south of the Nagles ridgeline where the turbines are a more prominent and extensive feature within the same physical and visual catchment and Medium-low to the north of the Nagles ridgeline with the magnitude of impact reducing as there are no physical landscape effects and the impact on landscape character is limited by the partial visual exposure of around three turbines from the adjacent landscape unit.

Within the Wider Study Area (greater than 5km of the site) the magnitude of landscape impact is considered to reduce to Low and negligible at increasing distances as the wind farm becomes a proportionately smaller component of the overall landscape fabric. I consider this is a reasonable consideration and is supported by the photomontages taken from the wider area referenced.

Significance of Landscape Effects

The significance of landscape impact is considered to be Moderate-slight throughout the Central Study Area which is based on differing considerations for the landscape context to the north and south of the Nagle Mountains ridgeline. This comprises High-medium sensitivity/Medium-low magnitude for the northern (Blackwater valley) side and Medium-low sensitivity/Medium magnitude on the southern side.

For the Wider Study Area (beyond 5km of the site), landscape impact significance is not considered to exceed Slight as the highest order combination of sensitivity and magnitude is High-medium/Low and this relates to the Blackwater River Valley where there is very limited intervisibility indicated. For the vast majority of the Wider Study Area, outside of the immediate confines of Blackwater River valley, the significance of residual landscape impact will be Slight-imperceptible or Imperceptible, particularly at greater separation distances. The following table provides a summary of the landscape impacts referenced above in the context of the elements of the study area and I consider that it is a rational and logical interpretation.

Summary of Landscape Impacts

	Value and Sensitivity	**Magnitude**	**Significance**

Central Area North	High-medium	Medium-low	Moderate-Slight
Central Area South	Medium-low	Medium	Moderate-Slight
Wider Area Blackwater Valley	High-medium	Low	Slight
Wider Area Elsewhere	Medium-Low	Low-Negligible	Slight-imperceptible or Imperceptible

Visual Impacts

In terms of visual impacts, the applicant has prepared and presented 42 montages takes at viewshed reference points both within the central study area and the wider area. I would also note that montages have been presented in relation to cumulative impact and these are considered separately.

Viewpoints Presented in EIAR

While much of the information in the following table is presented at Table 15-9 in the EIAR, the following table includes the location of the viewshed to provide more context. I would note that Book 1 & 2 within Volume IV include additional details in respect of each view. After each of the views I provide my assessment of the conclusions reached. I have also indicated which views are representative of scenic views/routes within the site and wider area.

I would also note that the classifications provided in the EIAR for sensitivity, and magnitude of impact are set out in Tables 15-1, Table 15-3 respectively. The classifications relating to significance were submitted in response to the further information request at page 34 of the RFI report. Table 4-1 provides an EPA definition for the categories of impact. My assessment below considers the potential significance and whether the classification of significance provided by the applicant to the views is reasonable. For ease of reference, I will reproduce what the definitions are as per the FI response to inform my assessment in Table 15.13.2 below.

Table 15.13.2

Project LVIA Significance Category	EPA Category	Corresponding EPA definition
Profound	Profound	An effect which obliterates sensitive characteristics
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Substantial	Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Moderate	Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Slight	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Imperceptible	Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
	Imperceptible	An effect capable of measurement but without significant consequences

(Turbine nacelles are centrally located within the blades at the top of the tower and house the generating components and are c.100m from GL with the now proposed range varying from 96m to 103m)

As outlined above in the introduction to Section 15.13.2 above, in order to demonstrate that the now proposed turbine range does not impact the assessment undertaken in the EIAR, the applicant has revisited 3 of the photomontages and undertaken same in the context of the now proposed turbine range. I have referenced the 3 relevant photomontages below (VP6, VP9 & VP14).

Table 15.13.3

No	Location	Km to nearest visible turbine	Turbine nacelles* visible	Sensitivity	Magnitude	Significance of Impact
1	Local Road adj. to Labbacallee Wedge Tomb SE of Glanworth	11.2	0	High Medium	Negligible	Imperceptible
While a number of blades (3) are visible in the view along the ridgeline, I would agree that they are imperceptible and do not disturb the view.						
2	N72 W of Ballyhooly (Scenic Route S10)	None visible	0	High	Negligible	Imperceptible
The development is not visible from this view.						
3	Caislean an Easaig estate SW of Castletownroche	8	3	Medium Low	Low	Slight Imperceptible
While limited the ridgeline is broken by three of the turbines with the nacelle and three blades clearly visible in one. given the view includes other infrastructure and buildings the impact is not significant. However, I consider that the significance is slight rather than slight/imperceptible.						
4	N72 SW of Castletownroche	7.2	3	Medium	Low	Slight
Similar to V3, the ridgeline is broken by three of the turbines with the nacelle and three blades clearly visible in one with blades in the other two, however I agree that the significance is slight.						
5	Chapel St, Killavullen	None visible	0	Med/Low	Negligible	Imperceptible
The development is not visible from this view.						
6	**Local road at Commons (Scenic route S11)**	**1.4**	**21**	**High/Med**	**Medium**	**Substantial Moderate**
Presented in two elements – VP6i & VP6ii – the views from this road located between the two clusters on the more westerly road of scenic route S11. The view is substantially changed by the proposal but the open nature of the view remains with no particular element of the landscape significantly altered. However, I consider that the impact is substantial rather than						

substantial – moderate. While there is some stacking of the turbines to the left of the view, this is the worst-case scenario and as per VRP7 below, the effect is not pervasive along the route.						
This is one of the views which was reviewed to ascertain any changes to the impact from the turbine range now proposed. The original base scenario is provided as are the two other options and it is quite clear that there is no discernible difference between the visuals provided.						
7	Local Road at Knoppage (Scenic route S11)	0.7	16	High/Med	Medium	Substantial Moderate
As per VP6 above, this view is taken from Scenic route S11 (eastern road), presented in three elements – VP7i, VP7ii & 7iii – the first two represent the view towards the eastern cluster which cannot be seen with the third showing the western (Bottlehill Cluster) with the view substantially altered by the turbines but again, the open nature of the view remains with no particular element of the landscape significantly altered but I consider that the impact is substantial rather than substantial-moderate. The visual stacking occurring in VP6ii does not occur in this view.						
8	Local Road at Carrig (1)	1	6	Med/Low	Medium	Moderate slight
Presented in 3 parts – VP8i, VP8ii & 8iii - south of Scenic route S11 between the two clusters. Turbines are most visible within the first, less so in second and not visible in third. While the turbines clearly disrupt the view (VP8i) the separation between them provides that the impact is not significant.						
9	Local Road at Carrig (2)	1.1	21	Medium	Medium	Moderate
Slightly south of VP8 and also presented in 3 parts – VP9i, VP9ii & 9iii – again between the 2 clusters, while a number of turbines in the eastern cluster are visible in the first one set within the forestry, only the blades are visible in the second. The third elements pans over to the western cluster with 14 turbines visible. While the view is significantly altered, the impact I agree is reasonably proposed as moderate.						
This is one of the views which was reviewed to ascertain any changes to the impact from the turbine range now proposed. The original base scenario is provided as are the two other options and it is quite clear that there is no discernible difference between the visuals provided.						
10	Local Road at Moneygorm	0.6	1	Medium	Low	Slight

Sitting above the belt of the forestry the single visible turbine in this view is clearly visible but given the absence of features within the view apart from forestry, I agree the impact is slight.						
11	Local Rd N of Powers Bridge	0.7	1	Med/Low	Low	Slight Imperceptible
Located in the higher elevations east of the most north-easterly turbine, the view is quite heavily forested with part of one turbine visible but not of significant impact to the view.						
12	Local Road at Toorgarrife	1	6	Med/Low	High/Med	Moderate
Presented in two parts - VP12i & VP12ii – the images show turbines within the views, particularly VP12ii where the view northwest includes 4. I would agree that there is a moderate impact on VP12ii where the turbines disrupt the view however there is substantial vegetation.						
13	Glenville GAA club	4.2	7	Med/Low	Low - Negligible	Slight Imperceptible
The two views and the cumulative view demonstrate that the turbines in the eastern cluster will be visible looking northwest from the viewpoint. While visible they are well spaces and do not abruptly alter the view.						
14	Doonpeter Holy Well	2.4	16	High-Med	Med-Low	Moderate
Views to the north from the graveyard, a local heritage site, of the eastern cluster and northwest across the open farmland of the western cluster show that turbines are visible and while there is a substantial visible change in the visual context I agree that it has a moderate impact in terms of significance given the distance of the structures from the viewpoint.						
This is one of the views which was reviewed to ascertain any changes to the impact from the turbine range now proposed. The original base scenario is provided as are the two other options and it is quite clear that there is no discernible difference between the visuals provided.						
15	Local Road at Doonpeter	2.4	22	Med-Low	High-Med	Moderate
West of the burial ground, these views to the north and west of the viewpoint show both clusters with the view altered while there is a dramatic change to the view, the distance from the turbines would suggest a moderate significance.						
16	Local Road at Glashaboy E	3.3	16	Medium Low	Medium	Moderate slight

This view encompasses both clusters, with the blades and nacelles of most of the western cluster and varying extents of the seven turbines in the eastern cluster visible. While the view is altered substantially, I agree that the impact is slight to moderate.						
17	L6956 SE of Bottlehill	2.3	6	Medium Low	Medium	Moderate
While varying amounts of a number of turbines are visible, predominately the blades, the view includes infrastructure common to the rural environment such as electricity poles so the turbines do not present a stark intrusion. I would agree that the impact is moderate.						
18	Local Road at Gortaneelig (Scenic Route S12)	0.8	3	Medium	Medium Low	Moderate Slight
This view is taken along Scenic Route S12 and is presented in three pans, the first two are screened by mature vegetation along the roadside with a turbine close to the first pan. The third pan shows the nacelle and blades of a single turbine above the top of the belt of forestry. While the turbine is clearly visible in part of the view, I would agree that in terns of significance that it is slight to moderate and without the vegetation for the first pan would be moderate.						
19	Local Road at Knuttery	0.8	21	Med/Low	Medium	Moderate
This view encompasses two views from the same point on a local road located between the two clusters, one to the east (i) and one to the southwest (ii). Turbines are visible within both views, a number of which appear in close proximity. While I would agree that the landscape value is not significant, I consider that the impact would be more appropriately substantial/moderate.						
20	N72 at Inchinpallas (Scenic Route S9)	7.7	1	Medium	Low Negligible	Slight Imperceptible
Taken along the scenic route along the N72 the nacelle and blades of one turbine are visible however they are screened by the lattice tower from the electricity line and effectively appears as an extension of this structure. I would consider the significance is slight.						
21	M8 overbridge of River Blackwater	14	0	Medium	Negligible	Imperceptible
A blade of one turbine is visible on the ridgeline within the centre of the view but given that the view is an urban context it is not significant and while not imperceptible I consider it is slight.						

22	N72 W of Mallow (Scenic Route S14)	12.7	0	High Medium	Negligible	Imperceptible
The tip of one blade is visible but I would agree it is imperceptible within the view.						
23	Blarney Castle	14.1	1	Very High	Negligible	Imperceptible
A number of blades are visible along the ridgeline but given the location of the housing which climbs the hill within the urban area, the existing urban infrastructure and vegetation they are not easily identifiable from the existing urban fabric. However, given the sensitivity of the view (very high) I consider the significance is more appropriately slight rather than imperceptible.						
24	R639 N of Fermoy (Scenic Route S3 & S4)	13.3	3	Medium	Low Negligible	Slight - Imperceptible
Varying elements of a number of turbines are visible on this view which is a scenic route. While I do not consider that there is a significant impact on the view which has a medium classification in terms of sensitivity, I do not agree that it is slight - imperceptible. The turbines are distinct within the visual context and I consider that the impact is more appropaitey moderate/slight.						
25	L1239 at Ballintlea South (Scenic Route S13)	19.7	3	High Medium	Low – Negligible	Slight - Imperceptible
Three turbine nacelles are visible above the skyline along this scenic route however at a distance of almost 20 km I would suggest that the impact on the view is slight. I do not consider that this could be considered slight – imperceptible as the turbines do hover over the ridgeline in a high medium sensitive landscape along a scenic route. However, given the distance I consider that the impact would be slight.						
26	R522 W of Clogher Cross	15	8	Medium	Low	Slight
Similar to View 25 above although in closer proximity to the site, the same three turbines are visible hovering over the ridgeline with turbines in the western cluster also visible to the right of the view although screened by a tree. While the landscape sensitivity is less than the previous view I would consider that the impact is also slight.						
27	Doneraile Wildlife Park	15.6	5	High Medium	Low – Negligible	Slight - Imperceptible

Similar to the two previous views, elements of three of the blades in the eastern cluster are visible with those in the western cluster screened from view by vegetation. I consider the impact is slight rather than slight/imperceptible.						
28	Corrin Wood Coillte Trail	10.9	14	High	Low	Moderate - slight
Located east of the eastern cluster, a large number of turbines, within both clusters, are visible on the higher ground central within the view and the lower ground to the west. The larger cluster to the west is slightly visible mainly comprising blades, two of the most eastern turbines within the eastern cluster are more visible. I consider that the overall impact is moderate.						
29	R614 overbridge of M8 SW of Rathcormac	9.8	2	Low	Negligible	Imperceptible
Further south of the previous view there is no impact from this view.						
30	Glen Corrin estate N of Watergrasshill	10.8	22	Medium	Low	Slight
There is a wide panoramic view from this location with both clusters clearly visible. While there are lattice angle masts within the view, the proposed turbines are very visible, particularly the eastern cluster and I consider the impact is moderate rather than the proposed slight.						
31	Local road overbridge of M8 NE of Cork City (Scenic Route S41)	19.3	2	Low	Negligible	Imperceptible
No impact						
32	R616 N of White's Cross	14.1	18	Med/Low	Low Negligible	Slight - Imperceptible
Turbines from both clusters are visible from this location but while visible, the distance and particularly, the elevation of the viewpoint itself provides that the turbines are lower in the viewshed than from less elevated viewpoints. I consider the impact is slight.						
33	Local Road W of Mackey's Cross (Scenic Route S39)	16.4	17	High Medium	Low	Slight

Similar to view 32 while most of the turbines are visible and particularly the western cluster, the elevation of the viewpoint provides that the view is across to the turbines rather than them being elevated above the view. I would consider that the impact is slight.						
34	Local road NE of Whitechurch	8	19	Medium	Medium Low	Moderate Slight
Almost all turbines visible, in varying degrees. Unlike previous views the elevation of the viewpoint is lower than the site so the impact is greater. The view is considerably altered and I consider the impact to be moderate.						
35	L2950 SW of Bottlehill	3	1	Med/Low	Low	Slight
Blades from Two turbines visible in what is a view dominated by predominately recently constructed one-off houses. I would agree that the impact is slight.						
36	Gleann Aras View estate Grenagh	6.9	5	Med/Low	Low	Slight
The viewpoint itself is relatively elevated providing that the view is towards the ridge with just the blades/part of 5 turbines in view. I agree that the impact is slight.						
37	N20 at Lissard	4.9	1	Low	Negligible	Imperceptible
No impact						
38	Burnfort Cemetery	3.5	18	Medium Low	Medium	Moderate Slight
Looking east from a point west of the western cluster there is a considerable alteration to the view with a number of turbines very visible in the view while the blades of others are visible. I consider the impact to be moderate.						
39	Local Road at Ballyfillibeen	7.9	20	Medium	Low	Slight
Further west of the previous view, the impact is mitigated by the elevation of the view itself but I consider that the impact would be more appropriately considered to be moderate.						
40	Local Road NW of Bweeng	13	21	Medium	Low	Slight
Further west again than the previous two views, while the view is altered considerably the effect of the impact is mitigated by the distance but the change is still distinct and for that reason I consider the impact would be moderate/slight						

41	Mourneabbey GAA Club	6.3	6	Med/Low	Low	Slight/Imper
While there is visibility of the blades of a small number of turbines the context within which the view is read, with poles and other related infrastructure provides that the impact is slight.						
42	Megalithic Tomb at Island	2.5	2	High/med	Low	Slight
West of the western cluster, much of the view to the east is screened by vegetation. Two turbines are visible above the ridge line of the forestry, one more prominent than the other but I would agree that the overall impact is slight.						

15.13.2.2. **Additional Views in response to Further Information**

The further information request sought an additional view from receptors 36/37 and the applicant has provided same which is explained in Section 4.2 of the RFI response report (RFI2). In response to a number of additional receptors referenced by Cork County Council but not included in the further information request, namely receptors 83, 84 & 85 and receptor 9, the applicant prepared additional montages (RFI1 and RFI3 which are examined in the Response to third party submissions report (pg30/31). The photomontages are presented in Appendix 1.4.

Table 15.13.3

No	**Location**	**Km to nearest visible turbine**	**Turbine nacelles* visible**	**Sensitivity**	**Magnitude**	**Significance of Impact**
RFI1	Local Road at Tooreen Sth	0.9	2	Med	Med/Low	Moderate - Slight
This represents receptors 83, 84 & 85. While there is visibility of a number of turbines with the blades of one turbine prominent, there is significant local screening with the views from the property facing away from the development.						
RFI2	Local Road at Coom	0.9	15	Med/Low	High	Substantial - Moderate
This VP represents receptors 36 & 37 with the Bottlehill cluster visible from this area with a wide open view but the spacing and the areas of forestry break up the cluster of turbines with						

the panorama of the setting allowing the structures to be integrated. I would agree that the significance of the impact is substantial/moderate.						
RFI3a	Local Laneway at Toorgarrif	1	2	Med/Low	Low	Slight
Receptor 9. This area is heavily enclosed with screening with no open views with only partial views of two turbines. I would agree that the impact is slight.						
RFI3b	Local Road at Moneygorm	1	5	Med/Low	Medium	Moderate - Slight
This is close to VP12 above and demonstrates the impact on this road from the higher turbines on the Nagles with blades visible above the forestry with the viewpoint presented in two viability splays (i&ii). I would concur with the moderate/slight impact analysis. The turbines will be visible, but they do not dominate given the extent of forestry.						

Impact on Scenic/Designated Views

I have indicated in the table above, where the selected viewpoints have been taken from designated scenic routes. The EIAR considers these in terms of the northern area, the southern area and the central area. I would note in particular the scenic views to the north of the site which occur within the Blackwater Valley. These include VP24 which represents S3 & S4, VP20 which represents S9, VP2 representing S10, VP25 representing S13 and VP22 representing S14. The EIAR outlines how the assessment undertaken by the applicant finds the impacts to range from slight-imperceptible to imperceptible. I note the PA consider that the current proposal addresses earlier concerns regarding the location of turbines on the northern ridges and attendant impact on the views from the Blackwater Valley, I would concur**.** While there is a slight impact on Scenic Route 13 (VRP25) with the blades hovering above the ridgeline, given the distance from the viewpoint, the impact I would agree is slight. The assessment undertaken in terms of the potential impact on this landscape is very thorough and the design iterations undertaken have addressed this important consideration.

In relation to the southern area, I would agree that the distance from the designated views to the site helps to dilute any tangible impact. In terms of the central area which includes S11 (VP6 & 7) and S12 (VP18 and RFI1) which the EIAR considers

provide similar vistas over a similar landscape context of rolling farmland and forestry. The argument put forward in the EIAR is that it is considered that their main visual amenity value relates to the extent of views rather than any sense of the naturalistic or the presence of distinctive / unique landscape features. It is also stated that the relevant sections of scenic routes S11 and S12 do not pass through a 'High Value Landscape' and according to section 13.7.2 of the Cork County Development Plan they are afforded a lesser degree of protection than those scenic routes that do. I would agree with the applicant that while intruding on the view they do not block the view, with the long ranging views still available albeit with distinctive structures forming part of the view. Furthermore, they are cross valley views rather than views towards ridgelines of mountains.

The Planning Authority in their submission, raise concerns in respect of visual stacking of turbines as outlined in VP6ii which represents S11. They consider that the turbines to the left of the montage and referenced by the PA as T5, T6, T10 and T14 create visual clutter given their linear formation and similar elevation. Viewpoint VP7ii, taken to the west of VP6ii, also on S11 (upper arm of the V route) shows the turbines in question well-spaced with no stacking arising. I consider that the visual representation in VRP6ii could be considered to present the worst-case scenario and while stacking does arise at this particular location, the effect of the stacking would diminish rapidly moving away in either direction from this viewpoint as is evident by the absence of stacking in VP7ii.

Impact on Local Community Views

The EIAR considers such views to occur within 5km of the site and I would consider this to be reasonable. As was outlined at Section 15.5 of the EIAR and addressed above, one of the principle visual impacts arising from the proposal is the combination of visual and spatial dominance as seen from highly sensitive receptor locations which is most likely to occur within 2-3km of the proposed development. The other effect is visual clutter and the potential within the 2-3km zone of turbines becoming stacked in views.

As outlined in the table above, I have indicated the distance of the views from the site and 17 of the views are within this 5km parameter although as clarified by the applicant some of these were selected to represent the impact on other receptor types such as heritage features. They would however also represent the impact of residential receptors within these areas. I would consider that the applicant has

sought to provide a representative examination of the impact on local views through the viewpoints chosen. It is not possible to provide a representation of each and every receptor within the central study area or 2-3km zone, nor is it necessary as given the context of the landscape many of the views selected are representative of more than just the actual view they portray. However, I note the request from the Planning Authority to provide three additional montages to provide a representation from specific properties for a number of reasons.

Receptors 83, 84 & 85 – It is stated that viewpoint 12 is located downhill of these properties and that the view is obscured by planting and that a viewpoint closer to the dwellings should be chosen and representations of same provided. Given the amount of planting in the area I consider that any viewpoint chosen, even one closer to the dwellings will be similar. The impact of the proposed structures on the properties closer to the turbines than the location of VRP12 will be more significant. VRP12 outlines that the turbines in question will comprise significant structures in the views from these properties and there will be a significant visual impact on the properties. While not specifically requested, the applicant submitted an additional photomontage in the further information response to address the concerns raised. RFI1 presents an additional viewpoint to represent these receptors and it effectively supports the conclusions on VP12 above.

Receptor 9 – it is stated that the nearest viewpoint to this receptor is outside of receptor 8 but that this is located downhill of receptor 9. VRP 18 which includes three pans of the view provides a representation of the impact from this wider area. Again, while not specifically requested, the applicant submitted an additional photomontage in the further information response to address the concerns raised. RFI3 (a) & (b) presents an additional viewpoint to represent these receptors and it effectively supports the conclusions on VP12 above.

Receptors 36 & 37 – The PA outline that no visuals were provided from this cluster of dwellings. I would note that VP15 & VP16 are at some remove and I would tend to agree with the PA that some visual representation for this area would be useful for the Board's consideration of the development. Further information on this matter was sought with viewpoints provided which I have assessed above (RFI2).

Secondly, in terms of visual stacking, as outlined above in relation to designated views, I note the concerns of the PA in respect of the visual impact of turbines 5,6 10 & 14 as viewed in VRP6ii. The PA consider that the visual impact of the stacking of

these 4 turbines, in such a linear manner will be significant when the turbines are in operation and blades rotating leading to visual clutter and confusion and they consider that the applicant should address this concern. The other turbines within this view are well spaced or their elevation provides the turbines are at differing heights, the cluster to the left of the montage appear to be cluttered and stacked in this view.

I consider that the visual representation in VRP6ii could be argues as providing the worst-case scenario and while stacking does arise at this particular location, the effect of the stacking would diminish rapidly moving away from this viewpoint as is evident by the absence of stacking in VP7ii.

I acknowledge that there will be a significant change on the visual amenity currently experienced and enjoyed particularly within 2-3 km of the proposed turbines. Placing structures of this scale within the local area cannot but change the views currently enjoyed from homes and along local roads. However, the need to address climate change by developing renewable energy in the State, requires a significant change in the context of accepting visual change.

Impact on Centres of Population

The subject site is located in a remote rural area at some remove from any urban centre. The closest centres of population are Glenville and Burnfoot with the larger centres of Mallow and Fermoy to the northwest and northeast. The applicant has provided a considerable number of visual representations from the various urban centres and I have assessed them in the Table above. Given the distance of the proposed development to the most proximate settlements, the proposal will impact, to varying degrees, on the backdrop or setting of these settlements.

I note that in the EIAR the applicant draws particular attention to VRP34 taken from Whitechurch and VRP38 taken from Burnfort Cemetery both have which have a proposed impact assessment of Moderate - Slight. As I outline above, the applicant argues that the view in question is only enjoyed by a small number of residents with equally broad views available in the opposite direction. However, this is view that they have proposed to represent the village and I consider that in relation to Whitechurch, that the view is considerably altered and I consider the impact to be moderate as opposed to moderate-slight. Similarly, in terms of the potential impact on the view from Burnfort Cemetery, which is representative of this small settlement, which I note has a village plan developed for its improvement, I consider that there is

a considerable alteration to the view with a number of turbines very visible in the view while the blades of others are visible and I consider the impact to be moderate rather than moderate-slight.

While I acknowledge that there will be an impact on the visual amenity of the setting of a number of settlements within the central area in particular, altering what is currently enjoyed, I do not consider that the impact is adverse.

Impact on Major Routes

The area within which the site is located does not directly adjoin any major routes with the road network within the area comprising local roads. There are a number of major routes within the wider area within which the site is situate and the applicant has provided a number of viewpoints from locations on same but it is also noted that viewpoints selected for other reasons, such as being a designated scenic route, also outline the potential impact from major routes. I have addressed these in the table above and I would agree with the applicant's consideration that the impact varies from imperceptible or no impact in my opinion to slight in other instances.

Impact on Amenity & Heritage Features

There are a number of megalithic tombs within the study area with the observations outlining a large number of local amenity/heritage sites which I have addressed in Section 14.7 of my planning assessment. In relation to the megalithic tombs, the applicant has provided viewpoints from two such features. The applicant outlines that VRP1 is from Labbacallee Wedge Tomb which is just off a local road north of Fermoy and which they state appears to have some limited visitation. The impact proposed for this view is imperceptible and I would agree with this consideration.

VRP42 is taken from the Megalithic tomb at Island, which is close to the site (c.2km). The applicant states that it located within a farmers field and does not appear to be regularly frequented by the public. A number of observers take issue with this point stating that it is accessible to the public. However I would note that the applicant does not state that it is not accessible to the public but rather that it is not appear to be regularly frequented by the public. I would concur with the applicant on this as it is not signposted and therefore there is limited visibility of it for visitors to the area. Notwithstanding, I would agree with the applicant that the impact on this feature is slight.

Another local heritage site is the graveyard and Holywell at Doonpeter which is c.2.4 metres from the development site. It is acknowledged in the EIAR that visitors will have a potential view of both clusters of turbines, the Glannasack cluster more prominent on the opposing slopes of the Nagles to the north. The significance of visual impact at this location is deemed to be 'Moderate' with the applicant stating that on balance, the turbines will be an overt addition to the northerly rural vista, but they are seen in a clear and unambiguous manner in a visual setting with which they are a compatible land use. As I note in the table above, while there is a substantial visible change in the visual context I agree that it has a moderate impact in terms of significance given the distance of the structures from the viewpoint and the setting within which they are located which does not itself have any features of significance.

The EIAR also addresses the potential visual impact on sites within the wider study area including Carn Thiernagh' a 3000-year-old ancient site contained within Coillte's Corrin Wood recreation area on a hilltop to the south of Fermoy (VRP28) with middle distance views of most of the proposed turbines in a relatively tight grouping along the southern slopes of the Nagles available. The significance of visual impact is deemed to be 'Moderate-slight' from this location even taking account of the High sensitivity judgement.

As I outline in the table above, I do not consider there is any discernible impact from the elevated ramparts of Blarney Castle, a significant heritage and tourism site within the area, which is located in the outer southern extents of the 20km radius Study Area and which is represented in VRP23. As the applicant states, while this is a highly sensitive receptor, the significance of visual impact is considered to be 'Imperceptible' on the basis that the distant view of two or three turbine blades is experienced amongst a visually complex urban backdrop with no material impact on the visual amenity of visitors to Blarney Castle. Similarly, there is in my opinion a slight impact from Doneraile Wildlife park in the outer north-western extents of the Study Area (VRP27) rather than the applicants consideration that it is slight-imperceptible although there is not much between same**.**

I would disagree somewhat with the applicant in relation to the potential impact on views from the road sections of the Avondhu Way walking trail to the west of the site are similar (VRP39 and VRP40). The applicant contends that while turbines may be visible in some views, given the long range nature of the views, the significance of the impact is reasonably considered to be slight. As I outline in the table above, I

would suggest in relation to VRP39 that while the impact is mitigated by the elevation of the view itself but I consider that the impact would be more appropriately considered to be moderate. In terms of VRP40, I consider that while the view is altered considerably the effect of the impact is mitigated by the distance but the change is still distinct and for that reason I consider the impact would be moderate/slight rather than slight.

Cumulative Impacts

I have outlined at Section 14.3 above the projects addressed by the applicant in their consideration of cumulative impacts within the EIAR. In relation to the cumulative impact with other windfarms, as outlined in the figures accompanying the visual and landscape report in the EIAR, there is one other existing wind farm within the study area (20km radius), approximately 15km to the west and known as Esk Wind farm – 12 turbines. As noted in the table in 14.3 above, there are also other existing wind farms outside of the Study Area. These include c. 23km to the west within the Boggeragh range - Boggeragh Wind Farm, 22km north within the Ballyhoura range - Castlepook Wind farm, and 23km east in the Knockmealdown range - Barranafaddock Wind farm. In response to a matter of clarification outlined in the further information request, in relation to Barranafaddock Wind farm which had been mentioned in the text of Section 15.10.1 of the EIAR but was not included in the Table of projects. The applicant outlines in Section 4.3 of the RFI report that Barranafaddock wind farm was only mentioned in passing in the introduction and as it is outside the 20km radius recommended in the Wind Energy Guidelines it is not included.

Reference is made by the applicant to Figure 15.20, where there is some potential for the proposed turbines to be seen in ‘succession’ (same location but within different viewing arcs) with the Esk turbines from some elevated and open receptors within the western, northern and southern extents of the Study Area. It is clarified that in such instances, one or both developments will be distant background features contained in opposite viewing directions and I would note that the Esk turbines are c.20km away in most instances. I note that the applicant highlights the potential cumulative impact from elevated locations such as VP6 & VP7 however these are described as a very limited opportunity to view the proposed turbines on the same alignment as the Esk Wind farm looking westwards with the Esk turbines distant background features over 15km away.

In relation to the one permitted turbine at Moneygorm, it is stated that notwithstanding its relatively close physical proximity to the proposed Glannasack cluster of turbines, it is somewhat discrete from the proposed development on lower ground and around the south-eastern side of a spur ridge that acts as a visual divide. Given its modest scale, it is considered that the single turbine would not generate significant cumulative impacts if it is constructed. I would agree with this conclusion.

I note the EIAR refers to the limited potential to view the proposal in conjunction with the wind farms that occur beyond the study area to the north, east and west as set out above most likely occurring on elevated ground. However as is concluded cumulative effects are likely to be infrequent and restricted to brief glimpses and the impact would in my opinion be imperceptible to slight.

It is stated that in relation to cumulative impacts with other forms of development that the only other land use that has potential for in-combination effects is the future operation of the currently unutilised Bottlehill landfill, which would be surrounded by the proposed turbines from the Bottlehill cluster. Given that the landfill is a ground based land use that is fully enclosed by conifer plantation there is no likelihood of cumulative visual impacts but it is acknowledged that in the context of physical landscape impacts and impacts on the landscape fabric of the local area that the proposed development in conjunction with the landfill is likely to contribute to a noticeable diversification and intensification of land use within an area characterised by more traditional forms of rural land use and little built development. While this is quite rightly pointed out by the applicant I would also agree that given the physical and visual containment of the Bottlehill landfill site such impacts are not considered to be significant. Therefore, there is very limited landscape and visual cumulative impacts in conjunction with other wind energy developments and major infrastructure developments. The EIAR concludes that in accordance with the criteria provided in Table 15.11, which is clarified as being Table 15-10, cumulative impact is considered to be in the order of Low-negligible. I would concur with this conclusion.

15.13.3. Conclusion

I have considered the submission of the planning authority, prescribed bodies, the observations received from members of the public, this chapter of the EIAR, the response to the further information request and submissions in response to same. I am satisfied that potential effects on landscape and visual would be avoided,

managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects on landscape and visual.

15.14. Summary of interactions & Interrelationships

Chapter 17 of the EIAR addresses Interactions of the Foregoing. I have reviewed same and considered the interrelationships between factors and whether this might as a whole affect the environment, even though the effects may be acceptable when considered on an individual basis. In particular the potential arises for the following interactions and interrelationships.

Air & climate

- Land, Soil & Geology
- Noise & Vibration
- Traffic & Transportation
- Human health
- Material Assets

Noise and Vibration

- Shadow Flicker
- Landscape and Visual
- Population & Human Health

Land, Soil & Geology

- Hydrology & Water Quality
- Biodiversity
- Traffic & Transportation
- Human Health
- Material Assets

Archaeology, Architectural & Cultural Heritage

- Landscape & Visual
- Population and Human Health (Recreation, Amenity & Tourism)

Biodiversity:

- Material assets
- Land

In conclusion, I am satisfied that any such impacts can be avoided, managed and mitigated by the measures which form part of the proposed development and any recommended planning conditions.

15.15. Consideration of risks associated with major accidents and/or disasters

This matter is considered in Section 11.7.3.4 of the EIAR. A number of submissions raise concerns with regard to accidents and/or disasters. These include concerns relating to fire at the battery storage facility and landslides. The matter of blade throw, mast collapse and other issues related to the turbine itself are also outlined. I also note that there is concern that the developer has failed to meet obligations under EIA Directive and Wind Energy Guidelines. EU Directive 2014/52/EU (amended by Directive 2011/92/EU) outlines the requirements in relation to these matters. It is outlined in the EIAR that the potential natural disasters that may occur are limited to the following which I will address in turn:

- Flooding;
- Fire;
- Major incidents involving dangerous substances;
- Catastrophic events; and
- Landslides.

Flooding

In the event of extreme weather conditions there is potential for the proposed development to impact on human health in the surrounding environment due to increased surface water runoff as a result of additional impermeable surfaces. This has potential to add to flood risk which may impact on human safety (including traffic), water quality, biodiversity, soil stability, material assets and archaeological or architectural heritage. It is unlikely that potential increase in flood risk will impact on noise and vibration, air and climate, landscape and visual and telecommunication

and aviation. If unmitigated, the magnitude of these consequences has potential to be significant resulting in potential injury or fatality, property damage, infrastructure damage and damage to ecosystems. Due to inclusion of mitigation by design, the increased surface water runoff produced by the proposed project is considered negligible and therefore in the event of extreme weather conditions, it is unlikely that the proposed development will result in increased flood risk and will not result in effects on human safety (including traffic), water quality, biodiversity, soil stability, material assets and archaeological or architectural heritage, as a result of increased flood risk. As concluded in the Hydrology and Water Quality Chapter of the EIAR, the proposed development has a minimal impact on flooding risk in the surrounding area and therefore the increased risk of flooding as a result of the proposed development is negligible. In the event of extreme weather conditions, the proposed surface water drainage will manage storm water avoiding significant impact on the project's infrastructure. During the construction phase of the proposed development, emergency protocol will be in place in the unlikely occurrence of a flooding event. An emergency response plan is set out in Section 6 of the Construction Environmental Management Plan (CEMP) included in appendix 3-1. As set out in Chapter 9, earthworks are will not be scheduled during forecast severe weather conditions in order to avoid potential effect on water quality and aquatic biodiversity due to soil erosion. Proposed mitigation measures for flood risk are set out in Chapter 10: Hydrology and Water Quality.

Fire

While I address battery storage below under catastrophic events, in relation to fire reference is made in the EIAR to a major gorse/ground vegetation fire incident which took place close to the Galway Wind Park in May 2017. This incident highlights fire as a potential impact for the proposed development, particularly the proximity of the site to forestry. As outlined in the EIAR, a significant number of wind farms are built within forestry in Ireland with an internal Coillte fire and security management plan in place to control the potential spread of forest fires which is achieved through the implementation of fire breaks within the lands and the training of staff in firefighting. The design and layout of the development also mitigates against fire by setting back the site infrastructure from trees creating buffers. Reference is made by the applicant to all the measures proposed and the plans included in the CEMP to respond to

potential fires and emergencies. I consider that the matter has been satisfactorily addressed.

Major incidents involving dangerous substances

Major industrial accidents involving dangerous substances pose a significant risk to human health and to the environment both on and off the site of the accident. However I would note that the subject site is located c.10.5km to the nearest Seveso establishment which is LPG Cylinder Filling Ltd. in Mallow which is a lower tier site with the site located outside of the consultation distance of this facility with no consultation required. I would agree with the applicant, as outlined in the EIAR, given the nature of the proposed development and the distance of the subject site to Seveso sites, there is no likely impact from major incidents involving dangerous substances.

Catastrophic Events

As outlined in the EIAR, each wind-turbine, incorporating the tower, blades, gearbox and ancillary equipment in the tower and nacelle are considered to be machines under the European Machinery Directive [2006/42/EC] with the duties on designers and manufacturers of machinery set out in Regulations with details outlined in the EIAR. Potential catastrophic events associated with operational wind turbines and battery energy storage systems include: Wind turbine toppling (due to foundation or tower failure); Wind turbine rotational failure in extreme wind conditions (due to control system or rotor break failure); and Fire.

In terms of the turbines, the primary mitigation against a catastrophic event that may endanger the health and safety of the public is stated to be the design/layout itself, providing sufficient set back distances from occupied buildings and other infrastructure to avoid the risk of impact in the event of wind turbine collapse with the EIAR outlining the separation distances proposed between turbines and surrounding receptors as well as other elements of the development. Other design mitigation measures are detailed and include amongst others avoiding areas mapped by GSI as having a high susceptibility to landslides have been avoided. Technology employed in the turbine design facilitates remote monitoring, shut down in certain conditions and includes fire suppression systems.

In relation to the battery energy storage units which are proposed next to the main onsite substation at Lackendarragh North, these are proposed in a secure

compound, located to provide adequate separation distance from occupied buildings and fitted with fire warning and suppression systems. A suite of minimum safety measures are outlined in the EIAR first amongst which is that the battery management system (BMS) shall be capable of detecting problems using cell and module voltage measurements and select temperature measurements within the batteries. This element of the proposed development has been addressed elsewhere in this report and in response to further information the applicant has submitted a number of reports including a Fire Risk/Emergency Response Plan. I consider that the matter has been appropriately addressed.

Landslides

I have addressed this matter at Section 14.14 of my planning assessment and Section 15.9 above which addresses Land, Soil & Geology. As set out in the EIAR, Landslides pose a risk to a range of environmental receptors including human safety (including traffic), hydrology and water quality, biodiversity, land, soil, geology and hydrogeology, material assets and archaeological and cultural heritage with the potential for significant to profound impacts on environmental sensitivities. As outlined in Chapter 9 (Land, Soil & Geology) of the EIAR, the GSI Landslide Susceptibility database indicates that the proposed development and proposed infrastructure locations are generally located within areas of 'Low' susceptibility with 2 turbines (T20 & T21) located in areas considered 'Moderately High' susceptibility and 1 turbine (T22) located on lands considered 'Low to Moderately Low' susceptibility. A slope stability assessment was carried out at the site to investigate potential slope failure. Safety ratios for potential slope failures indicates that the slopes are considered stable in the long-term drainage conditions. A shallow Peat/Peaty Topsoil deposit limited in extent and thin with typical thicknesses of between 0.1 – 0.4m was identified on site. As <0.5 of peat has been recorded, a peat stability assessment is not considered relevant for proposal and concluded that the potential risk of landslide at the site is negligible. Mitigation by design has been incorporated into the project to avoid potential effects from landslides. Mitigation measures for potential landslide/slope failure is set out in in respect of Land, Soils and Geology and flood risk as outlined in Hydrology and Water Quality which could have a bearing on potential landslides. I also note the Emergency Response Plan contained in Section 6 of the CEMP which addresses the potential landslide/slope failure events. I consider that this matter has been satisfactorily addressed.

In conclusion, I consider that the applicant has satisfactorily addresses major accidents and disasters.

15.16. Reasoned Conclusion on Significant Effects

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

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

plan and a construction management plan. Impacts arising from traffic can be appropriately mitigated.

- Negative **Landscape and Visual** impacts arise during the operational phase of the development given the placement of significant structures within the local landscape thereby changing the existing visual context in a slight to substantial magnitude. The impacts have been mitigated where possible by the proposed layout and the use of the existing landscape contours.
- Negative **Biodiversity** impacts arise during the operational phase of the development in respect of low to medium residual impacts in respect of the Hen Harrier, in particular in respect of foraging areas for same. The impacts have been mitigated to some degree in respect of the measures proposed including the conservation and habitat management plan however while negative impacts on the Hen Harrier are likely to arise they are not considered to be significant.

The EIAR has considered that the main significant direct and indirect effects of the proposed development on the environment would be primarily mitigated by environmental management measures, as appropriate. Thus, having regard to the foregoing assessment, I am satisfied that the proposed development would not have any unacceptable direct or indirect effects on the environment.

16.0 **Appropriate Assessment**

16.1.1. **Article 6(3) of the Habitats Directive**

The requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, section 177AE of the Planning and Development Act 2000 (as amended) are considered fully in this section. The areas addressed in this section are as follows:

- Compliance with Article 6(3) of the EU Habitats Directive
- The Natura Impact Statement
- Screening for appropriate assessment
- Appropriate assessment of implications of the proposed development on the integrity each European site

16.1.2. **Compliance with Articles 6(3) of the EU Habitats Directive**

Article 6(3) of the Habitats 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 before consent can be given.

16.1.3. **The Natura Impact Statement**

A Natura Impact Statement (NIS), dated December 2020 and prepared by Inis Environmental Consultants Limited, was submitted with the application which is the subject of the Appropriate Assessment. The NIS contains at Appendix C a succinct Screening report and NIS for the Turbine Delivery Route nodes.

In response to the further information request (see section 9 above), a revised NIS, dated March 2022 and prepared by Inis Environmental Consultants Limited, was submitted with the response to the further information. It is the revised NIS that I will reference in my assessment unless expressly stated. For the Board's information it should be noted that the revised NIS omits the NIS in respect of the replant lands, which are considered under a separate code, with the replant lands only addressed in the consideration of in-combination effects. I would also note that while Appendix C, the succinct Screening report and NIS for the Turbine Delivery Route nodes, is not included within the revised NIS, it has been taken into account in the following assessment. The revised NIS document refers to appendices which are contained within the original NIS.

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

Further information was requested in respect of the nature and extend of the development which was originally presented as a series of maximum heights. In response the applicant, at Appendix 1 of the RFI, outlines a turbine range which is detailed at section 3.2 of this report. As part of the request the applicant was requested to review the documentation submitted included in the NIS to determine if the ranges

now proposed would impact on the findings. I note section 2.2.6 of the report in Appendix 1 which clarifies that there will be no change to the footprint of the development irrespective of which turbine is selected, constructed and operated within the turbine range and therefore there is no change to the conclusions of the NIS with respect to terrestrial and freshwater habitats and species. In respect of collision risks to birds, it is noted that to ensure all scenarios are assessed the CRM was re-run to assess the turbine range now proposed and a revised Collision Risk Model is presented in Appendix 1.2 of the RFI report. The difference between the predicted increases in mortality rate in the NIS and those shown in the updated CRM are negligible. Therefore, the conclusions to both the Screening for Appropriate Assessment and NIS remain unchanged.

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

16.1.4. **Screening for Appropriate Assessment – Test of Likely Significant Effects**

16.1.5. The proposed development is not directly connected with or necessary to the management of a European Site and therefore it needs to be determined if the development is likely to have significant effects on any European sites.

16.1.6. The proposed development is examined in relation to any possible interaction with European sites, i.e designated Special Areas of Conservation (SAC) and Special Protection Areas (SPA) to assess whether it may give rise to significant effects on any European Site.

16.1.7. Taking account of the characteristics of the proposed development in terms of its location and the scale of works, the following **sources of potential effects** and the **potential effects to receptors** are considered for examination in terms of implications for likely significant effects on European sites during the construction and operational phases:

Construction Phase

Construction phase works including movement of soils and machinery, excavation works, use of hydrocarbons, tree felling, instream works and water abstraction, soil stockpiling, reinstatement works leading to potential:

- Effects on river water quality (silting and/or contamination);
- Habitat disturbance or removal
- Spread of invasive species
- Direct mortality of mobile QIs or SCIs;
- Disturbance of mobile QIs or SCIs
- Indirect effects to downstream protected habitats.

Operational Phase

Operational phase structure including rotating turbine blades, physical structures and hardstandings leading to potential:

- Effects on river water quality (silting and/or contamination);
- Noise disturbance;
- Visual intrusion.
- Collision: with turbines and blades, leading to • death or injury;
- Displacement from habitats;
- Habitat loss or change: fragmentation of landscape, or site specific damage;

Pathways

Having regard to the sources of potential effects and the potential effects to receptors outlined above, I have examined and considered the pathways likely from the subject development to the relevant sites which I consider, in addition to direct contact, include inter alia:

- Movement of Soils,
- Surface water runoff
- Surface water and river water bodies
- Removal of habitat

- Noise

The applicants, in their screening report, included as Section 3 of the NIS document, concluded that the possibility of significant effects could not be ruled out for 2 of the 5 sites and therefore the proposed development works must proceed to Appropriate Assessment. I have provided a summary of the information in relation to the potential impacts identified in the screening stage below - Table 1.

I would also refer the Board to the test at screening stage which seeks to identify if a project is likely to have **significant effects** (my emphasis) either individually or in-combination with other plans or projects on European sites in view of the sites conservation objective.

Table 1: Summary of potential ecological impacts that may result in significant effects on the sites in the vicinity of the subject development (windfarm (including met masts), grid connection and turbine delivery route) as identified in the applicants screening report.

Site Name **Special Areas of Conservation (SAC)**	**Qualifying Interests (QI's)**	**Potential receptor-pathway-source links to Development Site** **Vicinity of: windfarm (WF), grid connection (GC) and turbine delivery route (TRD)** **Can Significant Likely Effect be Excluded**
Blackwater River (Cork/Waterford) SAC [002170] <u>Distances</u> 551m - WF 1.3km - GC 10m - TDR	• Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Perennial vegetation of stony banks [1220] • Salicornia and other annuals colonising mud and sand [1310]	**Yes** – hydrological connection from the site via potentially silt laden surface waters/ or waters with hydrocarbon/cement spills to aquatic QI's with potential significant effects. Spread of invasive species through soil movement/surface water run-off (particularly along TDR) Impact from physical works/noise

	• Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • *Taxus baccata woods of the British Isles [91J0] • Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] • Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Lampetra fluviatilis (River Lamprey) [1099] • Alosa fallax fallax (Twaite Shad) [1103] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355] • Trichomanes speciosum (Killarney Fern) [1421]	and habitat disturbance on mobile QI's. Vicinity of: WF, GC, TRD Can potential likely significant effect be excluded? – **No – site to proceed to AA.**

Great Island Channel SAC [001058] Distances 5.6km – TDR (WF & GC in excess of 15km)	• Mudflats and sandflats not covered by seawater at low tide [1140] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330	**Yes** – potential hydrological link via the Manin river in the south western area of the site which ultimately drains into Cork Harbour with potential for surface water effects. Vicinity of: TRD Can potential likely significant effect be excluded – **Yes** – as potential for proposal to result in **significant effect** is **not likely** given the distance via river drainage which exceeds 25km. **Site to be screened out.**
Lower River Suir SAC [002137] Distances 14km – TDR (WF & GC in excess of 15km)	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Taxus baccata woods of the British Isles [91J0]	**No** – at such remove from TDR route 2 and no clear hydrological link with such minor works that cannot be reasonably considered that a potential significant effect could arise. Can potential likely significant effect be excluded – **Yes – site to be screened out.**

	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaite Shad) [1103] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]	
Site Name - **Special Protection Areas (SPA)**	**Special Conservation Interests (SCI's)**	**Potential receptor-pathway-source links to Development Site.** **Vicinity of: windfarm (WF), grid connection (GC) and turbine delivery route (TRD)** **Can Significant Likely Effect be Excluded**
Blackwater Callows SPA [004094] Distances 11.7km - WF 4.2km - GC 1.3km - TDR	• Whooper Swan (Cygnus cygnus) [A038] • Wigeon (Anas penelope) [A050] • Teal (Anas crecca) [A052] • Black-tailed Godwit (Limosa limosa) [A156] • Wetland and Waterbirds [A999]	**Yes** – hydrological connection from the site via potentially silt laden surface waters/ or waters with hydrocarbon/cement spills to riverine habitats that support SCI's decreasing water quality. Spread of invasive species through soil movement/surface water run-off degrading habitats. Noted that risk of collision when operational not considered

		significant given distance of site to SCI's and no evidence of same on site. Can potential likely significant effect be excluded? – **No – site to proceed to AA.**
Cork Harbour SPA [004030] <u>Distances</u> 1.3km – TDR (WF & GC in excess of 15km)	• Little Grebe (Tachybaptus ruficollis) [A004] • Great Crested Grebe (Podiceps cristatus) [A005] • Cormorant (Phalacrocorax carbo) [A017] • Grey Heron (Ardea cinerea) [A028] • Shelduck (Tadorna tadorna) [A048] • Wigeon (Anas penelope) [A050] • Teal (Anas crecca) [A052] • Pintail (Anas acuta) [A054] • Shoveler (Anas clypeata) [A056] • Red-breasted Merganser (Mergus serrator) [A069] • Oystercatcher (Haematopus ostralegus) [A130] • Golden Plover (Pluvialis apricaria) [A140] • Grey Plover (Pluvialis squatarola) [A141] • Lapwing (Vanellus vanellus) [A142] • Dunlin (Calidris alpina) [A149]	**Yes** – potential hydrological link via the Manin river in the south western area of the site which ultimately drains into Cork Harbour with potential for surface water effects. Vicinity of: TRD Can potential likely significant effect be excluded – **Yes** – as potential for proposal to result in **significant effect** is **not likely** given the distance via river drainage which exceeds 25km. **Site to be screened out.**

	• Black-tailed Godwit (Limosa limosa) [A156] • Bar-tailed Godwit (Limosa lapponica) [A157] • Curlew (Numenius arquata) [A160] • Redshank (Tringa totanus) [A162] • Black-headed Gull (Chroicocephalus ridibundus) [A179] • Common Gull (Larus canus) [A182] • Lesser Black-backed Gull (Larus fuscus) [A183] • Common Tern (Sterna hirundo) [A193] • Mallard • Greenshank • Wetland and Waterbirds [A999]	

Note – for the Board's information I would reference what I consider is a typographical error on page 114 of the NIS where site code 004030 is stated to be screened in for further assessment. However, it is clear from the rest of the screening and conclusion of same that site 004030, which is Cork Harbour SPA, is not the relevant SPA as the waterbody referenced in the Blackwater and the Cork Harbour SPA is screened out in the screening conclusion. I consider that the relevant SPA screened in for further assessment is in fact Blackwater Callows SPA -site code 004094. This conclusion is based on my assessment of the potential for likely significant effects arising from the proposed development. This is supported by the screening conclusion (pg 57) of the Screening report and NIS prepared for the TDR nodes which is contained in Appendix C of the original NIS.

Notwithstanding, if the Board consider that the works proposed to Node 1.4 require consideration, I would note that the matter arising at this node is the presence of

Japanese Knotweed in close proximity. Node 1.4 is located 1.6km as the crow flies from the Cork Harbour SPA with no hydrological pathway and therefore no likely significant effect could arise on the Cork Harbour SPA.

16.1.8. Consideration of Area as Ex-Situ Site for Hen Harrier

I have addressed the matter of the hen harrier in Section 15.11 (biodiversity) of the EIA. The applicants assert in the NIS, that the subject site is not considered an ex situ site (of SPA's designated for this species), given that the site is at an extensive distance (>25km) from the closest SPA designated for the protection of breeding Hen Harrier. The nearest sites for which the Hen Harrier is an SCI is the Mullaghanish to Musheramore Mountains SPA which is c.30km south west of the subject site and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA which is located c40 km to the nothwest. The applicant asserts that these distances are well outside typical foraging ranges of adult Hen Harrier which would appear reasonable given the significant distances.

It is stated, as outlined in the EIAR, that Hen Harrier use the area in the vicinity of the windfarm during the winter period and three winter roost sites are identified in the EIAR close to the site. The closest winter roost to the windfarm is < 2km. Using the precautionary approach it is stated that wintering Hen Harrier could include individuals from populations outside the local area, including individuals from distant SPA's. However, the applicants argue that given that no impacts are identified in the EIAR to wintering Hen Harrier and no disturbance will arise to any wintering Hen Harrier roosts due to the proposed development, that it can be determined that no significant effects are likely to SCI Hen Harrier associated with the distant SPA's.

Reference is made to precautionary mitigation which is outlined in the EIAR and which includes habitat enhancement measures to minimise risks to local populations of breeding and wintering Hen Harrier that use the locality of the proposed windfarm development.

The Irish Raptor Study Group (IRSG) outline in their submissions that wind farm development is recognised as a significant land use pressure on the conservation of Hen Harrier and are concerned that no cumulative impact assessment on the highly mobile Hen Harrier is undertaken or presented in NIS. They consider that there is a clear admission of possible links and effects to SPA's (Section 2.4.3.1.5 of NIS) and

based on the precautionary approach wintering Hen Harrier could include individuals from populations outside local area including individuals from distant SPA's. Despite this they consider that no assessment is presented in the NIS and they contend this comprises an inadequate cumulative impact assessment in NIS and does not link in with the Article 3 or Article 10 requirements of Habitats Directive or Art. 4 of Birds Directive in relation to breeding and wintering Hen Harrier. No attention presenting to potential likely significant effects on coherence of the Natura 2000 network or important sites outside and connected with SPA network.

In response to this concern (Section 2.4.3.1.5 of NIS), the applicants in their RFI Response (Issue 2) state It is important that the statement within the NIS, referenced by the IRSG is placed in context with the statement in Section 2.4.3.1.5 of NIS reiterated in full which states that: "*Based on a precautionary approach wintering Hen Harrier could include individuals from populations outside the local area, including individuals from distant SPA's. No impacts are identified in the EIAR to wintering Hen Harrier and no disturbance will arise to any wintering Hen Harrier roosts due to the project. It is considered therefore that no significant adverse effects are likely to SCI Hen Harrier associated with SPA's. Precautionary mitigation is outlined in the EIAR including habitat enhancement measures to minimise risks to local populations of breeding and wintering Hen Harrier that use the locality of the proposed windfarm development*". What I would refer the Board in particular to is the concluding statement in this regard which states that "*despite extensive surveying during the autumn and wintering period, when juvenile and adult Hen Harrier may disperse away from breeding or natal areas, there is no established link to other SPAs*". In their submission to the RFI response, the IRSG reiterate their original concerns particularly as it relates to the cumulative assessment which I would clarify for the Board is referenced in Article 6(3) as 'in-combination effects'.

While I note the concerns of the IRSG in this regard, I consider that no evidence has been presented to indicate that there are links between the Hen Harrier population associated with the most proximate SPA's – 30 km to the southwest or 40km to the northwest for which the Hen Harrier is an SCI and the Hen Harrier identified in the Nagle Mountains. The evidence presented by the applicant is that there is no established links to other SPA's.

16.1.9. **In-combination Effects**

Table 3.7 in the NIS provides an evaluation of potential in-combination effects on European sites with a range of other proposed developments within the area. These projects include other wind farm developments, the proposed M20 Cork-Limerick Motorway, the alterations proposed to the Mallow Sewerage Scheme and a range of other largely residential/commercial developments in the area. I would concur with the applicants that save for the proposed alterations to the Mallow Sewerage Scheme where potential short term in-combination effects on the River Blackwater SAC cannot be ruled out at screening stage, that there is no potential for significant in-combination effects arising in respect of any other of the sites listed for screening. This is addressed in Section 16.3.11 of the AA below.

In terms of forestry development which arises within the area or proposed replanting resulting from the proposal, I would note, as stated elsewhere, forestry management is subject to a separate licencing regime which itself addresses matters including water quality. In terms of the replant lands referenced at Moneygorm, Co Cork it is stated that these lands have already been planted and therefore no significant in-combination effects are expected. In terms of the replant lands in Ballard, Co. Wicklow, the 145km separation distance would provide that no in-combination effects are likely to arise.

16.1.10. **Screening Determination**

Having regard to the information presented in the Screening Report and NIS, submissions, the nature, size and location of the proposed development and its likely direct, indirect and in-combination effects, the source pathway receptor principle and sensitivities of the ecological receptors, I concur with the applicant's screening that the significant effects cannot be ruled out for the following sites:

- Blackwater River (Cork/Waterford) SAC [002170]
- Blackwater Callows SPA [004094]

in view of the conservation objectives of these sites.

The other SAC's and SPA within the wider area, as follows:

- Great Island Channel SAC [001058]
- Lower River Suir SAC [002137]
- Cork Harbour SPA [004030]

could not be significantly affected by the proposed development works. I am satisfied that the applicant has demonstrated this objectively with reference to the geographical separation from those sites and the absence of/or weak ecological pathways between those sites. No reliance on avoidance measures or any form of mitigation is required in reaching this conclusion.

16.1.11. Appropriate Assessment of Relevant European sites

The following is an objective assessment of the implications of the proposal on the relevant conservation objectives of the European sites using the best scientific knowledge (provided in the NIS). All aspects of the project which could result in significant effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are examined and assessed for effectiveness. I have relied on the following guidance:

- DoEHLG (2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, National Parks and Wildlife Service. Dublin
- EC (2021) Assessment of plans and projects in relation to Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EC
- EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC

16.1.11.1. Proposed Methodology for Assessment

Two sites as outlined above could not be excluded from the screening exercise undertaken on the basis that significant effects could not be ruled out for reasons related to hydrological pathways. In respect of both the Blackwater River (Cork/Waterford) SAC and the Blackwater Callows SPA it is the impact of the proposal on the water quality and the potential for a reduced water quality to affect the Qualifying interests and Special conservation interests dependent on same.

Therefore, I propose to assess the potential for adverse affects on the sites under a series of headings as outlined in the following sections.

16.1.11.2. Hydrological Environment within which site is Located

At Section 4.1 of the NIS, a detailed description of the hydrological context of the site and wider area is outlined with reference to Chapter 10 of the EIAR which addresses hydrology and which I consider separately in section 15 of this report. Given that the potential for adverse affects relates predominately to the impact on water quality I will outlined briefly the catchments and waterbodies of relevance and the elements of the project within the relevant sub-catchment/sub-basin.

The site is situated within four sub-catchments as defined by the WFD. These waterbodies are known as:

• Bride (Waterford)_SC_010 (18_11)

• Blackwater (Munster)_SC_110 (18_14)

• Bride (Waterford)_SC_020 (18_25)

• Blackwater (Munster)_SC_080 (18_23)

The site is situated within eight sub-basins as defined by the WFD. These waterbodies are known as:

• Clyda_030 - IE_SW_18C020300

• Coom_010 - IE_SW_18C030400

(Turbines T2, T3, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13 and T14)

• Bride (Blackwater)_010 - IE_SW_18B050050

(Turbines T15, T16, T17, T18, T19, T20, T21 and T22 & cable route between the proposed on-site 110 kV substation at Knockacullata and proposed on-site 110 kV substation at Lackendarragh North)

• Bride (Blackwater)_020 – IE_SW_18B050320

(Turbine 23 & cable route between the proposed on-site 110 kV substation at Knockacullata and proposed on-site 110 kV substation at Lackendarragh North & cable route between proposed 110 kV substation at Lackendarragh North and existing 110 kV substation at Barrymore)

• Ross (Killavullen)_010 – IE_SW_18R020500

(Cable route between the proposed on-site 110 kV substation at Knockacullata and proposed on-site 110 kV substation at Lackendarragh North)

• Bride (Munster)_180 – IE_SW_18B022100

(cable route between the proposed on-site 110 kV substation at Knockacullata and proposed on-site 110 kV substation at Lackendarragh North & cable route between proposed 110 kV substation at Lackendarragh North and existing 110 kV substation at Barrymore)

• Blackwater (Munster)_190 – IE_SW_18B022300

(cable route between proposed 110 kV substation at Lackendarragh North and existing 110 kV substation at Barrymore)

• Bride (Blackwater)_030 – IE_SW_18B050400

(cable route between proposed 110 kV substation at Lackendarragh North and existing 110 kV substation at Barrymore).

Proposed Surface Water Run-Off to Rivers

The following table outlines which turbines are propsoed to drain to which water body and if a minor waterbody which major waterbody it joins.

Turbines	**Where SW run-off drains**	**Ultimate Discharge Waterbody**
T2, T3, T4 & T5	Coom River	Bride River
T6, T7, T8, T9, T10, T11, T12, T13 & T14	Toor River	Coom River
T15 & T16	Lyravarrig Stream	Bride River
T17, T18, T19, T20, T21 & T22	Bride River	Blackwater
T23	Bunnaglanna River	Bride River

Proposed Works which may lead to Adverse Affects

Construction of and Drainage of the following:

- Widening of existing tracks, access roads and entrances including 4 watercourse crossings;
- New site access tracks including 5 watercourse crossings
- Hardstandings for turbines

- Substations and BESS
- Temporary site compounds
- Borrow pits
- 13 stream crossings along the Grid Connection

16.1.11.3. **European site: Blackwater River (Cork/Waterford) SAC [002170]**

Table 2 – Qualifying Interests and Conservation Objectives

Qualifying Interest	**Conservation Objectives**	**Location & Potential Adverse Affect**
Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	To restore the favourable conservation condition (map 8 refers)	Upstream and downstream of proposal with species highly sensitive to siltation
Austropotamobius pallipes (White-clawed Crayfish) [1092]	To maintain the favourable conservation condition (map 9 refers)	Upstream and downstream of proposal with species sensitive to changes in water quality
Petromyzon marinus (Sea Lamprey) [1095]	To restore the favourable conservation condition (see map 10)	Upstream and downstream of proposal with species sensitive to changes in water quality and habitat degradation
Lampetra planeri (Brook Lamprey) [1096]	To maintain the favourable conservation condition	Upstream and downstream of proposal with species sensitive to changes in water quality and habitat degradation
Lampetra fluviatilis (River Lamprey) [1099]	To maintain the favourable conservation condition (see map 10)	Upstream and downstream of proposal with species sensitive to changes in water quality and habitat degradation
Alosa fallax fallax (Twaite Shad) [1103]	To restore the favourable conservation condition	Species sensitive to changes in water quality
Salmo salar (Salmon) [1106]	To maintain the favourable conservation condition	Species sensitive to changes in water quality and habitat degradation
Estuaries [1130]	To maintain the favourable conservation condition (map 3 refers)	Downstream - Susceptible to presence of invasive species leading to degradation of habitat

Mudflats and sandflats not covered by seawater at low tide [1140]	To maintain the favourable conservation condition (map 4 refers)	Downstream - Susceptible to presence of invasive species leading to degradation of habitat
Perennial vegetation of stony banks [1220]	To maintain the favourable conservation condition	Downstream - Susceptible to presence of invasive species leading to degradation of habitat
Salicornia and other annuals colonising mud and sand [1310]	To maintain the favourable conservation condition	Downstream - Susceptible to presence of invasive species leading to degradation of habitat
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	To restore the favourable conservation condition (map 6 refers)	Downstream - Susceptible to presence of invasive species leading to degradation of habitat
Lutra lutra (Otter) [1355]	To restore the favourable conservation condition	Species sensitive to changes in water quality and habitat disturbance
Mediterranean salt meadows (Juncetalia maritimi) [1410]	To maintain the favourable conservation condition (see map 6)	Downstream - Susceptible to presence of invasive species leading to degradation of habitat
Trichomanes speciosum (Killarney Fern) [1421]	To maintain the favourable conservation condition (see map 10)	Two locations are upstream of the site so no affects can be considered likely.
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	To maintain the favourable conservation condition	Susceptible to presence of invasive species leading to degradation of habitat
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	To restore the favourable conservation condition	Not an aquatic habitat – no affect can be considered likely.
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	To restore the favourable conservation condition (priority habitat) (map 7 refers)	Upstream and downstream – habitat susceptible to presence of invasive species leading to degradation of habitat
*Taxus baccata woods of the British Isles [91J0/	Status currently under review.	Not an aquatic habitat – no affect can be considered likely.

16.1.11.4. **European site: Blackwater Callows SPA**

Table 3 – Special Conservation Interests and Conservation Objectives for five SPA's.

Special Conservation Interest	Conservation Objectives	Location & Potential Adverse Affect
Whooper Swan (Cygnus cygnus) [A038]	To maintain or restore the favourable conservation condition	Potential indirect effects via deterioration of water quality and habitat
Wigeon (Anas penelope) [A050]	To maintain or restore the favourable conservation condition	Potential indirect effects via deterioration of water quality and habitat
Teal (Anas crecca) [A052]	To maintain or restore the favourable conservation condition	Potential indirect effects via deterioration of water quality and habitat
Black-tailed Godwit (Limosa limosa) [A156]	To maintain or restore the favourable conservation condition	Potential indirect effects via deterioration of water quality and habitat
Wetland and Waterbirds [A999]	To maintain or restore the favourable conservation condition of the wetland habitat at Blackwater Callows SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	Habitat susceptible to presence of invasive species and species sensitive to decrease in water quality

16.1.12. **Potential Effects (Direct and Indirect) and Mitigation**

Given the commonality of matters arising in terms of the Qualifying Interesting and the Special Conservation Interests in these sites, which share the same boundary (SPA 004094 is located within the boundary of SAC 002170, I propose to address them together so as to avoid unnecessary duplication.

Therefore, as outlined in respect of the screening above, I consider that the works which may cause potential for likely Adverse Affects on these sites are as follows

Construction of and Operational Drainage of the following:

- Widening of existing tracks, access roads and entrances including 4 watercourse crossings.
- Works at turbine delivery route nodes;
- New site access tracks including 5 watercourse crossings
- Hardstandings for turbines
- Substations and BESS
- Temporary site compounds

- Borrow pits
- 13 stream crossings along the Grid Connection
- Tree felling

The aquatic species and bird species for which the Blackwater River (Cork/Waterford) SAC and the Blackwater Callows SPA are designated and the habitats for which the Blackwater River (Cork/Waterford) SAC is designated, and the wetland habitat of the Blackwater Callows SPA have the potential to be vulnerable to the following which I have summarised on the basis of the information presented to the Board:

- possible that silt-laden or otherwise contaminated runoff from the construction and drainage of the site could be released into the various watercourses which flow through the site and transferred into the Blackwater River.
- an accidental pollution incident either directly e.g. through direct contact with oil or other polluting chemicals, or indirectly by affecting the habitats and food supply on which they rely for feeding/wintering within the Blackwater River.
- at risk from run-off of sediment during construction of the proposed development, if it was of a sufficient quantity, magnitude and duration to significantly affect water quality in the Blackwater River.
- increase in run-off of sediment indirectly by affecting the habitats and food supply on which the QI's and SCI's rely for feeding and/or roosting within the Blackwater River (Cork/Waterford) SAC area and Blackwater Callows SPA area.
- Spread of invasive alien species through the movement of soils and/or use of machinery.

It is reasonable to conclude on the basis of the information before the Board that all of the above, in the absence of mitigation, may comprise a risk of adverse effects on the integrity of the sites.

Mitigation Measures Proposed

Specific measurers during the construction phase for the windfarm and the grid connection are set out in Section 4.4 of the NIS and include, but are not limited to:

- Use of stilling ponds to reduce concentration of suspended solids.

- Use of silt fencing, silt traps, shallow drains, swales, interceptor cut-off drains, cross drains, fencing of waterbodies, removal of excavated sub-soil.
- Minimum buffer of 50m from watercourses and where within 50m (one location in vicinity of T17) specific silt management mitigation for the area outlined in the CEMP including temporary construction stage silt management.
- Fuel storage in bunded storage tanks and designated refuelling areas.
- Silt fencing at stream crossings.
- Daily visual inspections of drains and streams.
- Water quality monitoring programme.
- Turbidity meters installed
- On site Environment Management and Project Ecologist.
- Specific tree felling measures to comply with Forest Service Guidelines.
- In-stream works as required by IFI and with their written agreement including timing of works (July to September).
- Timing of construction/replacement of culverts.
- Timing of excavation of trenches for cable installation and management of soils.
- In relation to invasive species, prior to any works commencing an updated confirmatory survey to be conducted with area of high impact (Node 1.4) buffered and monitored in addition to monitoring and cleaning of machinery and vehicles.
- Specific measures for horizontal directional drilling.
- Maintenance of all elements of the drainage system.
- Mitigation measures for decommissioning stage as per the above.

Conclusion

I would agree with the authors of the NIS that the implementation of the suite of mitigation measures outlined above will ensure that no adverse effects on the conservation objectives of the Blackwater River (Cork/Waterford) SAC and Blackwater Callows SPA will arise during the construction stage of the proposed development or as a consequence of run-off of sediment/silt or contaminated waters into any of the watercourses present on site during the construction or operational

stages of the proposed development I consider that it would be appropriate to condition the requirement to prepare a confirmatory Invasive Species Management Plan (ISMP) and other related conditions to avoid the spread of such species and that with the implementation of the mitigation measures in full there will be no adverse effects on the conservation objectives of the Blackwater River (Cork/Waterford) SAC and Blackwater Callows SPA sites will arise during the construction stage of the proposed development.

16.1.13. **Overall Conclusion on Likely Potential Adverse Effects and Mitigation Measures**

Overall, I am satisfied that the measures as described will be effective in avoiding and reducing any potential adverse effects to a level that is not significant in view of the conservation objectives of the sites. I consider that conditions should be attached by the Board, if they are minded to grant permission in respect of undertaking the mitigation measures proposed including the preparation of a confirmatory Invasive Species Management Plan and the appointment of an Environmental Manager and a Project Ecologist to oversee the construction works and particularly the timing of works. Therefore, following the implementation of the mitigation measures, the proposed development works will not adversely affect the integrity of these European site and no reasonable doubt remains as to the absence of such effects.

16.1.14. **In combination effects with other plans and projects**

The potential for adverse affects of the proposed development to act in combination with other plans and projects or ongoing activities at the site and give rise to adverse affects is addressed in Section 4.5 of the NIS. The matter of in-combination effects with other plans and projects was addressed above at Section 16.3.6 in the context of screening. I concluded there that save for the proposed alterations to the Mallow Sewerage Scheme where there is potential for short term in-combination effects on the River Blackwater SAC which could not be ruled out at screening stage, that there is no potential for significant in-combination effects arising in respect of any other of the sites listed for screening. I note in respect of the Mallow Sewerage Scheme that while a potential short term impact on the SAC is predicted for the Mallow scheme but given the separation distance of over 10km between the sites and the mitigation

measures proposed for the subject scheme, it would not be reasonable to conclude that any potential effect would be adverse.

As outlined in the screening stage in terms of forestry development which arises within the area or proposed replanting resulting from the proposal, I would note, as stated above, forestry management is subject to a separate licencing regime which itself addresses matters including water quality. In terms of the replant lands referenced at Moneygorm, Co Cork these lands have already been planted and therefore no significant in-combination effects can occur. In terms of the replant lands in Ballard, Co. Wicklow, the 145km separation distance would provide that no in-combination effects could be reasonably expected to occur.

16.1.15. **Appropriate Assessment Conclusion**

Following an examination and evaluation of the material submitted with the application, my findings are that the information before the Board comprehensively addresses all issues and concerns regarding potential adverse effects on the Blackwater River (Cork/Waterford) SAC [002170] and Blackwater Callows SPA [004094]. I consider that the information provided in the NIS allows for a detailed assessment of the implications of the proposed development works on the SAC and SPA and complete, precise, and definitive findings for the purpose of Appropriate Assessment.

Following Appropriate Assessment, my recommendation is that it can be ascertained beyond reasonable scientific doubt that the proposed park development proposal, individually or in combination with other plans or projects would not adversely affect the integrity of the Blackwater River (Cork/Waterford) SAC [002170] and Blackwater Callows SPA [004094] in view of the sites Conservation Objectives.

This conclusion is based on the following:

- A full and detailed assessment of all aspects of the proposed works including proposed mitigation and ecological monitoring in relation to the conservation objectives of Blackwater River (Cork/Waterford) SAC [002170] and Blackwater Callows SPA [004094]
- The proposed windfarm development proposal and associated grid connection and turbine delivery route will not undermine the conservation objectives which seek to maintain and restore the favourable conservation condition of the

qualifying interest habitats and species and special conservation species for which the Blackwater River (Cork/Waterford) SAC [002170] and Blackwater Callows SPA [004094] are designated.

- With the application of all mitigation measures the proposed development proposal will not undermine the conservation objective of maintaining and restoring the favourable conservation condition of the relevant qualifying interests and special conservation interests in the Blackwater River (Cork/Waterford) SAC [002170] and Blackwater Callows SPA [004094]

17.0 **Recommendation**

I recommend that permission for the development as proposed is approved, subject to the conditions recommended below.

18.0 **Reasons and Considerations**

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

European legislation, including of particular relevance:

- Directive 92/43/EEC (Habitats Directive) and Directive 79/409/EEC as amended by 2009/147/EC (Birds Directives) which set the requirements for Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union.
- EU Renewable Energy Directive 2009/28/EC which aims to promote the use of renewable energy

National and regional planning and related policy, including:

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

Regional and local level policy, including the:

- Regional Spatial Economic Strategy for the Southern Region

The local planning policy including:

- Cork County Development Plan 2022- 2028
- other relevant guidance documents
- the nature, scale and design of the proposed development as set out in the planning application and the pattern of development in the vicinity,
- the likely consequences for the environment and the proper planning and sustainable development of the area in which it is proposed to carry out the proposed development and the likely significant effects of the proposed development on European Sites
- the submissions made to An Bord Pleanála in connection with the planning application and the submissions made to the further information response.
- the report and recommendation of the Inspector, including the examination, analysis and evaluation undertaken in relation to appropriate assessment and environmental impact assessment.

Proper Planning and Sustainable Development

It is considered that the proposed development would accord with European, national, regional and local planning and that it is acceptable in respect of its likely effects on the environment and its likely consequences for the proper planning and sustainable development of the area.

Appropriate Assessment:

The Board agreed with and adopted the screening assessment and conclusion carried out in the inspector's report that the Blackwater River (Cork/Waterford) SAC and Blackwater Callows SPA are the European sites for which there is a likelihood of significant effects.

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposal for the Blackwater River (Cork/Waterford) SAC and Blackwater Callows SPA, in view of the Sites Conservation Objectives. The Board considered that the information before it was adequate to allow the carrying out of an appropriate assessment.

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

i. Likely direct and indirect impacts arising from the proposal both individually or in combination with other plans or projects, specifically upon the Blackwater River (Cork/Waterford) SAC and Blackwater Callows SPA Mitigation measures which are included as part of the current proposal,

ii. Conservation Objective for these European Sites, and

iii. Views of prescribed bodies in this regard.

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

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

Reasoned Conclusion for EIA

The Board considered that the Environmental Impact Assessment Report, supported by the documentation submitted by the applicant, provided information which is reasonable and sufficient to allow the Board to reach a reasoned conclusion on the significant effects of the proposed development on the environment, taking into account current knowledge and methods of assessment. The Board is satisfied that the information contained in the Environmental Impact Assessment Report is up to date and complies with the provisions of EU Directive 2014/52/EU amending Directive 2011/92/EU. The Board considered that the main significant direct and indirect effects of the proposed development on the environment are those arising from the impacts listed below.

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

- Negative impacts on **human health and population** arising from construction including noise, traffic and dust disturbance to residents of neighbouring dwellings. All of these impacts are low to moderate. Adequate mitigation measures are proposed to ensure that these impacts are not significant and include adequate mitigation for operational noise.
- Benefits/positive impacts on the **Air and Climate**, the proposed development will have a significant positive effect on human health and population due to the

displacement of CO_2 from the atmosphere arising from fossil fuel energy production.

- Negative impacts on **Water** could arise as a result of accidental spillages of chemicals, hydrocarbons or other contaminants entering the drainage system and discharging to the river thereafter during the construction and operational phases. These impacts will be mitigated by measures outlined within the application and can therefore be ruled out.
- Negative **Noise** impacts arise during the construction phase from construction activities. These impacts will be mitigated through adherence to best practice construction measures. Noise disturbance from the operation of turbines is likely to give rise to slight to moderate impacts depending on distance to dwellings given that new sources of noise would be introduced into the soundscape however, given the separation distances between turbines and the most proximate dwellings the impact is not considered to be significant.
- Negative **traffic** impacts arise during the construction phase of the development, these impacts will be mitigated through the implementation of a traffic management plan and a construction management plan. Impacts arising from traffic can be appropriately mitigated.
- Negative **Landscape and Visual** impacts arise during the operational phase of the development given the placement of significant structures within the local landscape thereby changing the existing visual context in a slight to substantial magnitude. The impacts have been mitigated where possible by the proposed layout and the use of the existing landscape contours.
- Negative **Biodiversity** impacts arise during the operational phase of the development in respect of low to medium residual impacts in respect of the Hen Harrier, in particular in respect of foraging areas for same. The impacts have been mitigated to some degree in respect of the measures proposed including the conservation and habitat management plan however while negative impacts on the Hen Harrier are likely to arise they are not considered to be significant.

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

Conditions

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application and the further information response submitted to the Board on 1 April 2022, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to commencement of development and the development shall be carried out and completed in accordance with the agreed particulars.

   Reason: In the interest of clarity.

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

   Reason: In the interests of clarity.

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

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

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

   Reason: In the interest of protection of the environment.

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

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

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

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

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

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

Reason: In the interest of residential amenity.

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

   Reason: in the interest of aviation safety.

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

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

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

Reason: In the interest of public health

9. The following design requirements shall be complied with:

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

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

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

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

   Reason: In the interest of visual amenity.

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

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

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

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

12. In the event that the proposed development causes interference with telecommunications signals, effective measures shall be introduced to minimise interference with telecommunications signals in the area. Details of these measures, which shall be at the developer's expense, shall be submitted to, and agreed in writing with, the planning authority prior to commissioning of the turbines and following consultation with the relevant authorities.

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

13. Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. Prior to commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the as constructed tip heights and co-ordinates of the turbines and wind monitoring masts and shall notify the Irish Aviation Authority of intention to commence crane operations with at least 30 days prior notification of their erection.

    Reason: In the interest of air traffic safety.

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

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

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

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

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

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

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

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

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

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

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

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

18. In addition to the mitigation contained in the Conservation and Habitat Management Plan the following shall be submitted:

a) A monitoring programme shall be established in line with that proposed in the CHMP for bird surveying, auditing and review of management area prescriptions (every 5 years).

b) The annual bird survey shall include for general breeding birds in addition to Hen Harrier to establish presence and abundance of bird species including possible prey species.

c) In addition to the habitat monitoring described a detailed habitat evaluation programme shall be established based on the parameters for open habitats as set out in Chapter 3 of the Conservation Objectives supporting document for hen Harrier (NPWS, 2022) to ensure that habitat management measures achieve their aim

d) Results of monitoring shall be made submitted to Cork County Council and to the NPWS.

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

19. Prior to the commencement of development, the developer shall agree with the TII and the Planning Authority a strategy for the proposed directional drilling under the M8.

Reason: In the interest of traffic safety.

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

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

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

the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

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

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

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

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Una Crosse

Senior Planning Inspector

9 January 2023

APPENDIX ONE

Names of the 396 observers whose observations were received on or before the 15 February 2021 in the following table.

Name
Adams, Frances
Ahern, Joe & Mary
Ahern, Patricia
Ambrose, Gerard & Sinead
Astor, Frances
Barrett, Martin & Caroline
Barrett, Thomas & Emily
Barrett, Robert
Barrett, Vera
Barrett, William
Barry, Kevin & **Shorten,** Mary
Bay, Margot
Bence-Jones, Silvia
Bowen, Orla
Bracken, Declan & Finola
Brennan, John & Eilish
The **Bride Project,** Donal Sheehan, Project Manager
Browne, Joseph & Clodagh
Browne, Kathleen
Buckley, Maurice
Burke, Colm TD
Burke, Jean
Burke, Paudie & **Fitzpatrick,** Aine
Burnfort National School Board of Mgt. Vincent Twomey, Chairman
Burnfort National School Parents Assoc., Jacqueline Cooney, Secretary
Burnfort Tidy Town/Village Group, John Dennehy, Chairman
Cahill, Battie

Cahill, Billy
Cahill, Denise
Cahill, Donal & Teresa
Cahill, Edel & Joe
Cahill, Elizabeth
Cahill, Eoin
Cahill, Esther & John G.
Cahill, John
Cahill, Liam & Josie
Cahill, Mary B & Eileen
Cahill, Paudie
Cahill, Teresa & Batty
Carey, Denis & Mary
Carey, Louise & others
Carey, Tony & Therese
Carrig na bhFear Community Council, Tom Howard, PC Chairman
Clyda Rovers Juvenile Club Vincent Twomey, Chairman
Coakley, David & Kay
Coakley, Kieran
Coakley, Larry & Eilish
Coakley, Laura
Coleman, Joan
Collins, Donal
Collins, Donna
Collins, Joanne
Collins, John

Collins, John W.
Collins, Lorna
Collins, Siobhan
Collins, Mairead
Collins, Nicola
Condon, Mary
Connolly, Amy
Connolly, Chris
Connolly, Eamon & Georgina
Connolly, Eileen
Connolly, Nicole
Connolly Burgess, Maureen & **Burgess**, Brian
Cooke Connolly, Mary T
Cooney, Jacqueline & Mark
Costello, Dan
Cork County Council, Members of. Shelia O'Callaghan, Frank O'Flynn, William O'Leary, Deirdre O'Brien, Pat Hayes
Cork County Council, Members of – Non Party Group. Frank Roche, Sean O'Connor, Marcia D'Alton, Ben Dalton O'Sullivan, Danny Collins, Paul Hayes, Martin Coughlan, Alan Coleman, Mary Linehan Foley, Declan Hurley
Cork County Council, Members of – Labour Party. Cathal Rasmussen & James Kennedy
Creedon, Bria
Creedon, Kevin
Creedon, Sean
Cremin, Marie
Cronin, Eileen

Cronin, Liam
Crowe, Tim & Gillian
Crowley, Kathy
Crowley, Oliver & Eilish
Curtin, Eugene
Curtin, Helena
Curtin, Jacinta & James
Curtin, James & Carmel
Curtin, Kathleen
Daly, John & Catherine
Daly, Marion & Kieran
Deane, Evelyn & Richard
Delaney, Elaine & Eugene
Dempsey, Wesley & Susan
Dennehy, Anthony & Denise
Dineen, Norma
Donoghue, Michael (O' Donoghue Jnr)
Dorgan, Anne-Marie & Anthony
Dorgan, Barry
Dorgan, Carmel
Dorgan, Don
Dorgan, Donal
Dorgan, John
Dorgan, Kaitlyn
Dorgan, Mary
Dorgan, Michael & Bernadette

Dorgan, Michael & Triona
Dorgan, Niamh & Brian
Dorgan, Noreen
Dorgan, Patricia & Jerry
Dorgan, Paula & Alan
Dorgan, Tim
Dorgan, Tom
Doyle, Charles
Doyle, Tracey & Colm
Drew, John
Duffy, Brendan
Duggan, Dave
Dunlea, Bartholomew & Elizabeth
Dunlea, Bart K.
Dunlea, Dan & Marie
Dunlea, Sharon
Egan, Kevin
Evans, Alun Professor
Evans, Denis & Roseanne
Farrell, Catherine & Bobby
Fitzgerald, John & Family
Fitzpatrick, Sarahann
Fleming, Niamh, **Boeg,** Julian
Forde, Aileen & others
Forde, Anthony
Forde, David & Breada

Forde, Deborah & Aidan
Forde, Gillian & Kieran
Forde, John, Mary & others.
Forde, John
Forde, John
Forde, Louise
Forde, Michael
Forde, Paddy & Joan
Forde, Patrick & **Twomey,** Catherine
Forde, Sean
Forde, Shane P.
Foley, Eleanor
Foley, Glenda & Glenn
Foley, James & Mary
Foley, Michael
Foley, Michael & Others
Frankel, Gavin
Frankel, Jacob
Frankel, Johanna
Frankel, Mina
Frankel, Suji
Galvin, Eamonn & Sinead
Garry, Finbarr
Garry, Thomas
Geaney, James & **Wall**, Rosarie
Geaney, Aine & **O'Leary**, Pat

Geaney, Eileen & **O'Connor**, Ian
Geaney, Matthew & Anne
Geaney, Matthew & Louise
Gleeson, Darren & Elaine
Glenville Community Council
Glenville Flower & Garden Club
Glenville GAA
Glenville Handball Club
Glenville Senior Citizens Group
Glenville & Kildinan Trout Anglers Club
Goggin, Anthony
Good, Ruth
Gowen, Anne-Marie & Michael
Gowen, Kathleen
Gowen, Niall & Mary
Graham, Karyn & James
Hammond, Elaine & **Bosz,** Viktor
Harte, Frances
Harte, Jim
Harte, Joanne
Harte, Teresa
Hassett Curtin, Ann
Hassett, Martin
Healy, David
Healy, Debbie
Healy, Elizabeth & Donal

Healy, Martin & Adelle
Healy, Mary
Healy, Stephen
Healy, Tomas
Heffernan, Aoife
Heffernan, Avril
Heffernan, Chris
Heffernan, Conor
Heffernan, Gerard
Heffernan, Kathleen
Hegarty, Donal
Hegarty, Joan
Hegarty, Patrick
Hegarty, Yvonne
Hennessy, Deirdre & **Wycherley**, James
Hennessy, Frederic
Hennessy, Jerry & Catherine
Hetherington, Guy & Fay
Hickey, D
Howard, Tom (PC)
Humphreys, Jason
Humphreys, Julian
Hyde, Betty
Hyden, Karl & Kay
Irish Raptor Study Group, Ryan Parr-Wilson
Keane, Liam & **Kiely,** Christina

Keane, Maurice & Monica
Keane, Sean F.
Keating, Mike & Jan
Kelleher, Daniel & Lillian
Kelleher, Gillian
Kelly, Michael,
Kennedy, Martin & Joan
Killavullen Angling Club, John Flynn, Hon Secretary
Killavullen Community Council Marion Regan, Chairperson
Killura Gun Club Conor Arnold, Hon Secretary
Larkin, Brian & Helena
Larkin, Caroline
Larkin, Fergal & Others
Larkin, Noel & Marian
Larkin, Oisin
Leahy, Lisa
Leonard, Shelia
Linehan, John J
Linehan, Noreen & DJ
Linehan, William
Lombard, David & Mary
Long, Alan
Long, Liam
Looney, Cormac
Looney, Stella & Oliver
Lynch, Alan

Lynch, Bernie
Lynch, Dominic
Lynch, Michael
Lynch, Yvonne
Madden, Liam (Cllr) & Alice
Magner, John
Mahon, Aidan & **McCarthy** Eidin & others
Manley, Oliver
Mansfield, Carol
Martin, Dan
Martin, Damien
Martin, Michael
Martin, Victoria
Maunsell, Michael & Others
Mellamphy, Mario
Miller, Bronwyn
Monaghan, Brady & Claire
Morgan, Eugene
Motherway, Jacqueline
Mourneabbey Community Council, Liam Madden, Chairperson & Others
Mourneabbey Heritage Association, John O'Sullivan, Chairperson
Mulcahy, Kieran & Annette
Mullane, Carol
Mullins, Noel
Mullins, Michael
Murphy, Eddie & others

Murphy, Edel
Murphy, Ger
Murphy, Martin
Murphy, Mattie & Eilish
Murphy, Marie & Others
Murphy, Michael
Murphy, Nicholas & Josie
Murphy, Pat & Elaine
Murphy, Theresa; **McKeon**, Tom & Abby
Murphy, Thomas & Shelia
Murphy, Timothy
Murray, Garrett
Murray, John
Murray, Jordan
McCarthy, Kevin & Olivia
McCarthy, Mary
McCarthy, Patrick & Others
McCarthy, Paula & Others
McDermott, James
McDermott, Marie
McDermott, Peter
McSweeney, Joseph
McSweeney, William
Nagle, Colman
Nagle View Turbine Aware Group, Kevin Creedon, Secretary
Noonan, Darren,

Noonan, Michael
O'Brien, Con
O'Brien, Deirdre
O'Brien, Julia
O'Brien, Marie
O'Brien, Peter & Norma
O'Brien, Stephen & Vicky
O'Callaghan, James & others
O'Callaghan, Fergus
O'Callahan, Brid
O'Connell, John & others
O'Connell, Noel & Margaret
O'Connell, Paudie & Liz
O'Connell, Pat
O'Connell, Shane
O'Connell, Tim
O'Connor, Fergal
O'Connor, Finbarr
O'Connor, John & Ann
O'Donoghue, Bernie
O'Donoghue, Eva
O'Donoghue, Jeremiah
O'Donoghue, Michael & Eileen
O'Donovan, John
O'Driscoll, Colman & Anne
O'Driscoll, Denis

O'Farrell, Ann & Michael
O'Flynn, Helena
O'Flynn, John & Colette
O'Flynn, Sean
O'Flynn, Stephen & **Coffey,** Katie
O'Grady, David & **Cristovao,** Regina
O'Herlihy, Gerard
O'Keefe, Anthon & Noreen
O'Keefe, Daniel
O'Keefe, Jennie & Others
O'Keefe, John & Margaret
O'Keefe, Mary
O'Keefe, Owen
O'Kelly, Lisa & **Carey,** Raymond
O'Leary, Lisa & Pat
O'Leary, Richard & Carmel
O'Mahony, Catriona
O'Mahony, David
O'Mahony, Denis & Antoinette
O'Mahony, Denis & Josie
O'Mahony, Frank & Ellen
O'Mahony, Jim
O'Mahony, Karen & Colm
O'Mahony, Noreen
O'Mahony, Regina
O'Mahony, Seamus

O'Regan, Michael V
O'Reilly, Marcus
O'Riordan, Eddie & Breda
O'Riordan, John
O'Rodaigh, Eoin & Betty
O'Sullivan Ann & **Smith** Michael
O'Sullivan, Catherine
O'Sullivan, Dan & Noreen
O'Sullivan, Denis
O'Sullivan, James
O'Sullivan, Jim & others
O'Sullivan, John & Marie
O'Sullivan, Sarah
O'Sullivan, Sean
Palmer, James
Power, Laura & David
Reilly, Brendan
Richter, Klaus
Roche, Michael & Anne-Marie
Roche, Theresa
Russell, Philip & Mary Jane (2)
Ryan, Helen
Ryan, Paul
Ryan, Tim & Joanne
Sheehan, Con
Sheehan, Dan & Eileen

Sheehan, Dan – Agri Contracting Ltd
Sheehan, David & Virginia
Sheehan, Eoin
Sheehan, Finbarr & Mary
Sheehan, Joanne & Paul
Sheehan, Jonathan & Yvonne
Sheehan, Mary
Sheel, Mary
Sheels, Tony
Slattery, Kieran & Others
Smith, Christine & Shane
Smyth, Thomas
Spillane, Eoghan
Spillane, Jerry
Spillane, Keith
Sullivan, Belinda
Sullivan, Niall
Sweeney, Eamon
Sweeney, Francis & Eileen
Tattan Dorgan, Mary
Thompson, Lyndsey
Toohey, Deirdre
Twomey, Vincent & Chris
Wain, Barry & Caroline
Walsh, Adrian & Maura
Walsh, Colman & **Cronin**, Mary

Walsh, Nuala & Thomas
Walsh, Sean
Walsh, Ursula & **Harrington,** Kevin
Watergrasshill Ladies GAA Club, Claire Murphy, Club Secretary
Watergrasshill GAA Club, Kieran O'Keefe, Chairperson
Watergrasshill Parish Office, Fr Donal Cotter
Woulfe, Mary & Michael
Wrynn, Catriona

APPENDIX TWO

57 observations/submissions were received on or before the 24 June 2022.

Name
Burnfort National School Board of Mgt. Vincent Twomey, Chairman
Burnfort Tidy Town/Village Group, John Dennehy, Chairman
Carey, Anthony & Therese
Collins, Donal
Collins, Donna
Condon, Mary
Connolly, Georgina
Connolly, Mary Tom & Family
Creedon, Bria
Creedon, Kevin

Cronin, Eileen
Cronin, Liam
Cronin, Mary & **Walsh** Colman
Dorgan, Barry
Dorgan, Triona
Dorgan, Niamh & Brian
Dorgan, Noreen
Evans, Denis & Roseanne
Fitzgerald, John
Fitzpatrick, Brian & Sarahann
Foley, Eleanor
Geaney, James & **Wall**, Rosarie
Geaney, Eileen & **O'Connor**, Ian
Geaney, Matthew & Louise
Glenville & Kildinan Trout Anglers Club, Kevin Barry, Chairman
Healy, David
Healy, Martin & Adelle
Heffernan, Chris
Hegarty, Patrick
Hennessy, Deirdre & **Wycherley**, James
Hennessy, Jerry & Catherine
Howard, Tom & Mary
Irish Raptor Study Group, Lorcan O'Toole, Chairman
Kelleher, Daniel & Lillian
Kelly, Michael,
Looney, Cormac

Lynch, Yvonne
Madden, Liam, Cllr.
McSweeney, William
Morgan, Eugene
Mullins, Michael
Murphy, Michael
Nagle View Turbine Aware Group, Kevin Creedon, Secretary
O'Driscoll, Colman & Anne
O'Grady, David & **Cristovao,** Regina
O'Kelly, Lisa & **Carey,** Raymond
O'Mahony, Frank & Ellen
O'Reilly, Marcus
O'Riordan, Eddie & Breda
O'Rodaigh, Eoin & Betty
O'Sullivan, Donald
O'Sullivan, James
Reilly, Brendan
Russell, Philip
Sheehan, Con
Sullivan, Belinda
Sullivan, Niall

Appendix Three

Memo of Dr Maeve Flynn, Ecologist

An Bord Pleanála

Memo to Inspector

ABP- 308885-20

Development	Coom Green energy park- 10 year permission for construction of 22 turbines, related site works and ancillary development
Topic:	Conservation and habitat management plan
Ecologist	Maeve Flynn BSc. PhD. MCIEEM
Senior Planning Inspector	Una Crosse

Contents

1.0 **Introduction**

As part of measures proposed to ameliorate and offset possible impacts on Hen Harrier, a Conservation and Habitat Management Plan was submitted as part of the planning application for Coom Green Energy Park, a 22-turbine windfarm proposed to be located in North County Cork along the southern edge of the Nagle Mountains. The conservation and habitat management plan (CHMP) has been developed by Inís Environmental Consultants on behalf of the energy Park developer. I note that Inís have also prepared the Biodiversity impact assessment and Natura Impact statement and undertaken ecological survey work for the proposed development. A revised CHMP (2022) was prepared by Inís as part of a response to further information sought by An Bord Pleanála (28th September 2021) which incorporated and addressed nature conservation submissions made by the National Parks and Wildlife Service of the (now) Department of Housing, Local Government and Heritage.

1.1. **Aim of the conservation and habitat management plan (CHMP)**

The stated aim of the CHMP (2022) is to provide a net gain of habitat of value for Hen harrier for the lifetime of the proposed windfarm development. The pan would compensate for the 148.8 ha of habitats calculated as potentially lost as a foraging resource within the proposed development. This will be achieved by improving habitats within viable foraging distances of known and historical nest sites on six managed areas in a way that ensures these habitats are optimal for hen harrier by increasing the value of these lands as foraging habitat while also protecting historical nest sites. It is stated that habitat enhancement will be achieved by diversifying the range and extent of habitats on six management areas with a particular focus on habitats that support prey species and thus facilitate foraging hen harrier. The plan aims to promote a mosaic of vegetation types which are considered optimal foraging habitat and likely to improve foraging success rates and consequently breeding success rates for the local Hen Harrier population, which is the stated ultimate target of the Conservation Management Plan.

1.2. **Scope of memo**

As part of my role as Inspectorate Ecologist, I was requested to review the revised CHMP. This review incudes examining how the revised proposal addresses the issues raised by the NPWS and other scientific submissions, and how the proposal fits in with current best practice.

This note to the Senior Planning Inspector and available to the Board is a written record of my review of the submitted information and supports the biodiversity impact assessment.

1.3. **Submissions**

A submission from the National Parks and Wildlife Service on behalf the Department of Housing, Local Government and Heritage and co-ordinated by Development Applications Unit (DAU) (15th February 2021) included nature conservation observations on the proposal. The submission was complementary of the strength of data collected for the EIAR for Hen Harrier however, raised concerns as to the approach taken in the CHMP and stated that a revised habitat plan was required, otherwise a significant negative effect on Hen harrier could occur. This conclusion was based on the following:

- lack of supporting evidence to back up claims regarding the use of areas close to turbines
- *theoretical* 250m displacement distance from turbines
- one of the target areas was heath/bog which provided hunting and foraging habitat and could not be considered net gain
- They stated that at a minimum the current value as habitat needs to be compared with the value under proposed management

As part of the submission by Cork County Council, similar concerns regarding the CHMP were raised by their Ecologist. He stated that the creation of habitat or management of species is not in accordance with recommended best practice (Scottish Natural heritage 2018) and that:

- The proposed management areas will not offer significant additional foraging habitat above that which currently exist with some areas already of potential value to foraging hen harrier
- Proposed management sites are largely located outside the core foraging area of 2km occupied nest territories.

Notwithstanding the concerns voiced by the Ecologist regarding the avoidance of significant effects on Hen Harrier, a number of recommended conditions were also

included in the submission. In common with the NPWS submission, a revised CHMP was requested which would provide detail and a programme for the implementation of all habitat management proposals including habitat of value to hen harrier, maps identifying areas to be managed and detail on the measures to be implemented to achieve this. Areas to be managed should be equivalent in scale to the areas to be removed or damaged and should not be considered of existing high value to Hen Harrier. A timeline should be provided for implementation and ecological monitoring to evaluate the effectiveness of the proposal. The plan should be prepared by and suitably qualified ecologist.

Irish Raptor study group made a detailed submission on the original CHMP submitted with the planning application and other issues in relation to hen harrier and other raptors (12th February 2021). They stated that that the CHMP does not mitigate for loss of nest sites as a result of the wind farm development. At this point I note that this was never the intention of the CHMP and this was clarified by the applicant in a response to further information. The submission also detailed concerns regarding lease agreements with landowners to facilitate the implementation of the management measures. They also had concerns that no performance-based measures for mitigation or enhancement success were provided.

1.4. **Response to further information request**

An Bord Pleanála requested further information from the applicant (28th September 2021) which included a request for a revised CHMP addressing the key concerns of the NPWS in particular.

In March 2022, the applicant submitted a detailed response to the request for further information which included a revised CHMP. This is considered in more detail in Sections 2 and 3 below.

1.5. **Further submissions**

A further submission was received from the Irish Raptor Study Group following the advertisement of the further information. They reiterated their concerns regarding the revised CHMP and breeding Hen Harrier. They state concerns regarding the inclusion of 104.66ha of improved agricultural grassland (65.1%) of the total CHMP area and how the achievement of a more ‘natural state’ will be achieved. There is no detail presented on how increased foraging rates will be measured and no performance related mitigation. In relation to lease agreements, they request that

the Board be provided with proof of landowner consent before this can be factored into the planning decision and the attachment of statutory verification of the delivery of the CHMP as a condition before it can be factored into the planning process. They also consider that the applicant has a misunderstanding of the concept of 'net gain' in terms of the definition provided by the Chartered Institute of Ecology and Environmental Management (CIEEM).

2.0 **Revised Conservation and Habitat Management Plan**

A revised CHMP (March 2022) was prepared by Inís. I am satisfied that the plan has been prepared by suitably qualified Ecologists with demonstrated experience in ornithology and windfarm developments, mitigation and monitoring.

2.1. **Biodiversity Net Gain**

Definition of Biodiversity Net Gain: *Development that leaves biodiversity in a better state than before, and an approach where developers work with local governments, wildlife groups, landowners and other stakeholders in order to support their priorities for nature conservation (Baker et al 2019[1])*

The mitigation hierarchy is the cornerstone of net gain principles where the first step is to avoid and then minimise impacts on biodiversity. Only as a last resort and in agreement with external decision makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate benefits for nature conservation, then offset biodiversity losses by gains elsewhere. The principles are also clear that impacts on irreplaceable biodiversity cannot be offset to achieve net gain, this generally applies to statutory designated sites or irreplaceable habitats.

I am satisfied that the mitigation hierarchy has been followed in as much as it can be based on the decision to locate a windfarm development in this area and that the application of the offsite compensation areas are a last resort developed by the Ecological team on behalf of the developer to ensuring adequate and improved foraging habitat for hen harrier in the area.

2.2. **Habitat Area**

[1] Baker, J. Hoskin, R, Butterworth, T (2019) Biodiversity Net Gain. Good practice principles for Development, a practical guide, CIRIA, CIEEM and IEMA

The revised plan has calculated the extent of possible Hen Harrier foraging habitat from within a 250m radius of each turbine as 148.8ha. The calculation for each turbine is presented in the CHMP along with habitat maps for each turbine area (Appendix A and B). I am satisfied that the assessment has taken into account the forestry value for the area.

I am satisfied that the 250m radius distance selected by the applicant is based on scientific evidence. The 250m radius of possible foraging displacement is based on a study by Pearse Higgins *et al* 2009a which found Hen Harrier avoidance of apparently suitable habitat within 250m from turbines and reduced flight activity within 500m. However other studies have shown varied results, some with lower displacement distances and some showing greater distances of possible disturbance and displacement. A recent publication on Hen Harrier conservation and wind Energy Sector in Ireland (NPWS 2022[2]) provides a summary of these studies. I appreciate that this publication was not available when the applicant was preparing the revised CHMP however, it is a helpful compilation of scientific information on the species in Ireland which may be of interest to the Board and does not conflict with the information presented by the applicant. A hard copy of this document is included with the file.

The applicant has selected six land parcels varying in size and habitat composition as areas for foraging habitat enhancement. These areas are mosaics of habitat that would not currently provide good quality foraging habitat for Hen Harrier. The dominant habitat is improved grassland, a habitat not favoured (generally avoided) by Hen Harrier and thus with scope for improvement given the correct conditions.

Other habitats present in lower abundance at these six management areas include wet grassland, scrub, hedgerows, seminatural woodland, heath/peatland.

Details are provided in Figure 4.2 and Table 4.2 and Appendix C of the CHMP. I note that there is an error in Table 4.2. Management areas as mis-numbered and the first row with ‘management area 1’ (3.86ha) should in fact be at the end of the table as management area 6. Therefore all other management area rows should be moved up one place in the table. I.E management area 2 in table 4.2 should be management area 1 as it comprised of 53.3 ha. I am satisfied that the areas

[2] NPWS, (2022). Hen Harrier Conservation and the Wind Energy Sector in Ireland. Supporting document to the Hen Harrier Threat Response Plan. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

proposed to be managed are greater in scale to the areas of potentially suitable foraging habitat be removed or damaged based on the applicants 250m radius around proposed turbines.

2.3. **Core foraging area for breeding Hen Harrier**-

I have examined the confidential information showing Hen harrier Nest Locations and Winter Roost sites and cross referenced these areas with the proposed six enhancement area locations. The applicant states that the six enhancement areas are within 5km of known or previously used Hen Harrier nest sites. Studies have shown that the core foraging area for female Hen Harriers is around 2km during the breeding season with Male Hen Harriers foraging at further distances. The NPWS submission also makes the point that in landscapes with relatively low availably of suitable habitat (such as that of the proposed CGEP), Hen Harriers are known to regularly hunt 4km from their nest sites.

I am satisfied that the majority of the proposed habitat enhancement sites are located within a suitable core area for breeding hen harrier (within 3km). Habitat management area 6 appears to be the greatest distance from a known/ historic nest site.

2.4. **Management**

The CHMP details habitat management prescriptions which are aimed at enhancing and promoting low level extensive grazing on current improved agricultural grasslands and the creation of scrub areas and edge habitats. The stated intention is to ensure that gazing continues and that the appropriate management of grassland and scrub creates a favourable habitat mosaic for Hen Harrier and would be of benefit to a wider array of bird species. Prescriptions are set out for specific habitats including hedgerows, earth banks and scrub, wet grassland and improved agricultural grassland.

In terms of improved agricultural grassland, the aim should be to return this habitat to a low intensity managed grassland as this has been shown to be positively selected as a foraging habitat by Hen Harrier. As this habitat is dominant across the six proposed management areas, comprising (65.1%) of the total CHMP (104.66ha of improved agricultural grassland-GA1), and as it the habitat least preferred by foraging Harrier Hen according to studies, management of this habitat of greatest importance. A key element in reversing ‘improved grassland’ is reducing nutrient

status and inputs and I am satisfied that this is considered in broad terms with soil sampling, ceasing of use of chemical and organic fertilisers, no lime application and other habitat enhancement measures. Section 6.2.3.1 details other general issues relating to grassland management. This section has some rather general statements such 'introduce traditional grazing patterns' which would benefit from greater definition when it comes to implementing the management plan. In addition, there is some conflicting advice on fertiliser application e.g., fertilisers will not be applied above the stipulated levels, where earlier in the section it states that the application of fertilisers will cease. The site-specific management plans for each unit would benefit from the joint consideration of an Ecologist and Agricultural agent in terms of specific management measures to ensure appropriate stocking rates and input management.

In September 2022, the NPWS[3] published Conservation Objectives Supporting Document for Breeding hen Harrier. I appreciate that this publication is post submission of the revised CHMP, and that the proposed development site is outside of the SPA network of Natura 2000 sites for hen harrier, however, I consider that Chapter 3: *Extent and condition of open habitats attributes* would be a useful reference for scoring and evaluating the improvements in habitats for Hen Harrier over time. A useful example and reference would be the scoring index used to define the condition of low intensity management of grassland and scrub used in Table 3.4 and reproduced on the following page for information. A hard copy of the conservation objectives supporting document for Hen Harrier has been attached to the file.

I recommend that the applicant follows this approach in monitoring the habitats identified for active management in Section 3; Monitoring and Conditions of this memo.

[3] NPWS (2022). Conservation Objectives Supporting Document: Breeding Hen Harrier. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage

Table 3-4. Scoring to define the condition of low-intensity managed grasslands and associated scrub (*i.e.* where it does not dominate) in the SPAs. If a field/land parcel is primarily grazed, the column 'Grazed' should be used to assess vegetation structure. If a field/land parcel is cut or mowed for silage, the 'Cut/Mowed' column should be used instead.

Ecological Integrity Score	**1. Vegetation Structure GRAZED**		**2. Vegetation Structure CUT/MOWED**	3. Scrub diversity and structure	4. Open habitat coherence
Very Good	**Tall and medium and short vegetation throughout. Tussocks abundant throughout. Some tall dense soft rush (*Juncus effusus*), some areas of shorter sharp-flowered rush (*Juncus acutiflorus*) and some grass/sedge dominated areas. Potential roost site.**			Scrub with a mix of several woody plant species of varied heights throughout. Highly structurally diverse with some compact inaccessible areas.	Large unfragmented areas of open heath/bog habitat in combination with grassland and riparian habitats (see Table 3-1) throughout; distant from large artificial structures such as wind turbines and masts.
Good	**Tall/medium and short vegetation throughout. May contain frequent tall tussocks or frequent sharp-flowered or jointed rush (*Juncus articulatus*). Some grass/sedge dominated areas also occur.**	**O R**	**Aftermath grazing takes place providing variations in height of sward; sward does not look uniform in appearance.**		
Moderate	**Tall vegetation cover is patchy. No areas with distinct tussocks. Grassy areas dominate field. Little variation in the height of vegetation. Dead standing leaves rare OR Uniform vegetation height throughout the field.**		**Low number of flowering plants and vegetation structure within the field margin poor to moderate. Some aftermath grazing providing some structural variation.**	Single-species scrub (often gorse) with diverse height and irregular edge. One or two other wood plant species may be present. Base sparsely vegetated. Suitable nesting area for small birds.	Contiguous areas of heath/bog habitat in combination with grassland and riparian habitats, albeit with some fragmentation evident due to forestry and/or proximity to large artificial structures (as above), but not extensive.
Poor	**All vegetation short OR excessively dominant unmanaged rush. Little evidence of grazing. Dead standing rushes throughout.**		**Field topped right up to the field boundary line. No aftermath grazing. Little or no variation in sward height.**	No scrub or isolated leggy gorse bushes.	Relatively small areas of heath/bog habitats fragmented by forestry and/or holding or adjacent to large artificial structures (as above).

Note 1- The above habitat variables and descriptions (1-3) above are adapted from the grasslands scorecards and associated guidance produced by the Hen Harrier Project.

Each variable *e.g.* 1. **Vegetation Structure - Grazed** or 2. **Vegetation Structure – Cut/Mowed**, and 3. Scrub Diversity & Structure and so on, is assessed as either Very Good, Good, Moderate or Poor. Combined scores which include all 'Very-good' and/or 'Good' scores, indicate favourable conservation condition; combined scores with at least one moderate, indicate favourable-adequate condition and combined scores with at least one 'poor', indicate overall unfavourable – inadequate conservation condition. Please note: where scrub is present and occurring in smaller patches or as linear features (<0.2ha), it can act as a complementary habitat for foraging and can be scored using 'Scrub diversity and structure' above. However, if scrub and/or bracken is encroaching on the grassland (and in blocks larger than 0.2ha), this should be factored into the overall condition assessment. 'Open Habitat Coherence' relates to the qualitative assessment of the contiguous extent of grasslands.

2.5. **Time frame**

The CHMP sets out a general statement in terms of the timeframe of the implementation and commencement of measures in advance of construction works but fails to provide any indication of a timeframe for habitat enhancement measures to take real effect.

Responsibility for the implementation of the plan will lie with the developer and their agents. A Hen Harrier ecologist/ornithologist is proposed to be engaged by the Coom Green Energy Park to oversee the implementation of the CHMP

2.6. **Land lease agreement**

I am satisfied that the applicant has provided adequate assurance and evidence of option agreements for leases in respect of biodiversity management with the registered owners of the lands (CHMP, Appendix D confirmation of management area agreements).

3.0 **Monitoring and conditions**

The CHMP requires monitoring to determine if the objectives of the plan are being achieved and whether modifications on any element are required. This is set out in Section 8 of the CHMP including monitoring of habitats, additional bird surveys across the six-enhancement areas, auditing of the management prescriptions and review of same on a 5-year cycle.

There is no detail presented on how to measure any increase in ecological integrity of habitats under management or how this could be related to increased foraging rates for Hen Harrier beyond general statements.

In order to bolster the monitoring programme, I propose that the habitat and bird surveys could be enhanced to provide greater clarity on improvements on the ecological integrity of the six enhancement/management areas.

In addition to the habitat monitoring described by the applicant, I recommend that a detailed habitat evaluation programme be established based on the parameters for *Open Habitats* as set out in Chapter 3 of the Conservation Objectives supporting document for Hen Harrier (NPWS,2022) to ensure that habitat management measures achieve their aim.

In addition to the bird surveying proposed, which appears to be focused on breeding Hen Harrier, a wider bird survey (breeding bird survey) should be undertaken to monitor any increases in other bird species, in particular prey species such as meadow pipit across the six management areas. Proposed conditions are outlined, and I have included them in the recommendation below.

3.1. **Suggested conditions:**

The Conservation and Habitat Management Plan (2022) will be implemented in full if planning permission is granted for the proposed development.

In addition to the measures proposed by the applicant in the CHMP, I propose the following additional conditions that the Board may consider if minded to grant planning permission for this proposal.

A monitoring programme shall be established in line with that proposed in the CHMP for bird surveying, auditing and review of management area prescriptions (every 5 years).

The annual bird survey shall include for general breeding birds in addition to Hen Harrier to establish presence and abundance of bird species including possible prey species.

In addition to the habitat monitoring described, I recommend that a detailed habitat evaluation programme be established based on the parameters for open habitats as set out in Chapter 3 of the Conservation Objectives supporting document for hen Harrier (NPWS, 2022) to ensure that habitat management measures achieve their aim

Results of monitoring will be made submitted to Cork County Council and to the NPWS.

4.0 **Conclusion**

Following an examination and evaluation of the material submitted my findings are that the information before the Board largely addresses the main issues identified with the original CHMP and that the applicant has provided a plan that will provide compensatory foraging habitat for Hen Harrier in the area. However, a number of finer details have not been expanded to the extent that the overall impact conclusion

of an imperceptible impact in relation to displacement and disturbance in the medium to long term can be reached.

While I am satisfied that the applicant has revised CHMP and included habitats that will certainly benefit from management, as recommended by the NPWS and the Cork County Council Ecologist, no timeframe has been provided as to how long it will take to see ecological improvements on these areas, or a scientific basis for same.

I have concerns that the management prescriptions are lacking in detail as to how to achieve a more natural sward in improved agricultural grassland and revert to a low intensity managed grassland in particular. No timeframe is presented as to when such improvements could be expected or how ecological integrity would be measured.

There will certainly be a short to medium term impact on Hen Harrier arising from the development which the applicant assesses as an impact of medium magnitude and significance, and the mid- long-term impact (considering the CHMP) is difficult to ascertain with certainty in the absence of supporting evidence but it could be low to medium significance (based on Percival – EIAR Table 8-10 and 8.11). The area is obviously of importance to Hen Harrier with 13 breeding attempts recorded over the course of surveys and significant flight time recorded in the area, and the declining population is vulnerable to further land use change. While the proposed conservation and habitat management plan will go some way to ameliorating these impacts, the evidence presented doesn't fully support the conclusion that that the measures could reduce impacts to an imperceptible level.

For that reason, I consider that a low to medium residual impact on foraging areas for Hen Harrier is likely as a result of the proposed development. This impact should be viewed in the context of a Nationally important but declining population of the Nagle Mountains.

Maeve Flynn BSc. PhD, MCIEEM
Inspectorate Ecologist

6th January 2023