

An
Coimisiún
Pleanála

Inspector's Report ABP-322154-25

Development

7 no. turbine windfarm development, grid connection and associated works. An Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS) have been submitted.

Location

Land within the townlands of Townlands of townlands of Acragar, Ballyconra, Ballycuddihy, Ballyroe, Ballyroe (Grace), Ballyroe (Maher), Baunaniska, Boherkyle, Briskalagh, Brittas, Clone, Coolnapisha, Curraghduff, Freshford, Freshford Lots, Graigueswood, Grange, Huntstown, Kilmanagh, Knockeenglass, Knockown, Moatpark, Monabrika, Monavadaroe, Moneenaun, Oldtown, Oldtownhill, Parksgrove, Picketstown, Rathealy, Sart, Sweethill, Tobernapeastia, Tullaroan, Upperwood Demesne, Co. Kilkenny.

Planning Authority

Kilkenny County Council

Planning Authority Reg. Ref.

25/60003

Applicant(s)

Briskalagh Ltd.

Type of Application	Permission
Planning Authority Decision	Refusal of Permission
Type of Appeal	First Party v. Refusal of Permission
Appellant(s)	Briskalagh Ltd.
Observer(s)	68 no. observations received. An additional 73 no. responses/ observations received following the receipt of further information. Third Party observers are identified within main report.
Date of Site Inspection	20 th June 2025 & 12 th June 2026.
Inspector	Enda Duignan

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1. Site Location and Description

- 1.1.1. The proposed wind farm site is located with a rural area of County Kilkenny, c. 8.5km to the west of Kilkenny City. The settlement of Kilmanagh is located c. 1.2km to the south of the nearest proposed turbine (T7) and access to the site during the construction phase will be provided from a temporary entrance within the village (additional permanent entrance provided to the north). The settlement of Tullaroan is also located c. 2.7km to the north of the nearest turbine and both the proposed grid connection route (GCR) and the construction haul route will pass through this village. The wind farm site comprises predominantly agricultural lands and farmsteads which are characterised by a mosaic of fields of differing sizes. Field boundaries are defined by hedgerows and tree lines of varying maturities and there are a number of agricultural buildings located within the northern portion of the site. An area of the site comprises coniferous forestry, within which T7 is proposed to be located. The Kilmanagh River (identified as the Tullaroan Stream as per the EPA maps and the Applicant's EIAR and therefore referred to as the Tullaroan Stream herein) bisects the wind farm site, flowing from north to south and continuing southwards before discharging into the Munster River c. 5.7km to the south. The site is traversed by a number of existing agricultural roads and tracks and existing access is via farm entrances off the L5023 local road to the north-west, L5024 to the north and L1009 to the south.
- 1.1.2. The Slieveardagh Hills are located to the west of the site along the Kilkenny-Tipperary county border. The local topography is hilly, with land generally sloping down towards the Tullaroan Stream, with the wind farm site at a lower elevation to the surrounding network of local roads. It is noted that ground elevations are greatest in the east at c. 190mOD (metres above Ordnance Datum) and fall towards the Kilmanagh River which stands at c. 110mOD in the south. The GSI map the presence of a Regionally Important Gravel Aquifer in the valley of the Tullaroan Stream which forms part of the Kilmanagh Gravels GWB.
- 1.1.3. Agriculture is the predominant land use within the surrounds of the subject site. However, a substantial number of residential properties are located within the nearby settlements of Tullaroan and Kilmanagh, as well as dispersed throughout the rural

landscape along the network of surrounding local roads. There are also existing wind farms located to the west of the site at Foyalatalure and Grangehill, and further to the north-west in the Slieveardagh Hills at Ballybeagh.

- 1.1.4. The proposed GCR is c. 23km in length and located primarily within the public road corridor, with a short section (c. 260m) located within a private road south-west of the proposed on-site substation and another short section (c. 660m) passing through a number of agricultural fields and a private access track north of the Ballyragget substation. A full description of the proposed GCR is provided in Section 2 of this Report.

2. Proposed Development

- 2.1.1. The Applicant is seeking a 10 year planning permission for a wind farm development with a 35-year operational lifespan. In summary, the development shall comprise:

- 7 no. wind turbines with an overall turbine tip height of 185 metres; a rotor blade diameter of 163 metres; and hub height of 103.5 metres, and associated foundations and hard-standing areas;
- A permanent 38kV substation compound (control building with welfare facilities, all associated electrical plant and apparatus, security fencing, underground cabling, storage containers, wastewater holding tank, site drainage and all ancillary works);
- Permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation in the townland of Moatpark (including joint bays, communication and earth sheath link chambers and all ancillary works along the route). This cabling route is primarily located within the public road corridor which includes Protected Structures (Kilkenny RPS Ref. C89);
- Underground electrical (33kV) and communications cabling connecting the wind turbines and meteorological mast to the on-site substation;
- 3 no. temporary construction compounds (including site offices and welfare facilities);
- A meteorological mast with a height of 30 metres, security fencing and associated foundation and hard-standing area;
- A new temporary site entrance on the L1009;

- A new gated site entrance on the L5024;
- Upgrade of existing site tracks/ roads and provision of new site access roads, junctions and hardstand areas.
- A borrow pit;
- Spoil Management;
- Tree felling and hedgerow removal;
- Biodiversity Management and Enhancement Plan measures (including establishment of a riparian buffer and hedgerow enhancement);
- Site Drainage;
- Operational Stage site signage; and,
- All ancillary works and apparatus.

Wind Farm Site

2.1.2. In terms of layout, Turbine Nos. 1-6 (T1-T6) will occupy the northern portion of the wind farm site, directly to the south of the L5024 local road and shall typically be located within areas of improved agricultural grassland. T7 is located further to the south-west, to the west of the Tullaroan Stream and is to be located within an area of forestry. Approximately 4.3ha. of forestry (comprising both 3.57ha conifer plantation (WD4) and 0.73ha mixed broadleaved/conifer plantation (WD2)) will be felled to accommodate T7 and its associated infrastructure.

2.1.3. As noted, the turbines will have the following dimensions:

- Tip Height – 185m,
- Hub Height – 103.5m,
- Blade Rotor Diameter – 163m.

A rated output of 7 MW has been chosen to calculate the potential generating capacity of the proposed 7-turbine renewable energy development, which would result in an estimated installed capacity of 49MW. Therefore, the proposed development has the potential to produce up to 137,356 MWh (megawatt hours) of electricity per year.

2.1.4. It is indicated that each wind turbine is to be secured to a reinforced concrete foundation that is installed below the finished ground level. The horizontal and vertical extent of the turbine foundation will be 25m and 3 to 3.5m respectively. It is also

indicated that where ground conditions are unfavourable to excavate, piles will be installed to formation level. Hard standing areas consisting of levelled and compacted hardcore are required around each turbine base to facilitate access, turbine assembly and turbine erection. The crane hardstands will be constructed in a similar manner to the excavated site roads, and it is noted that the precise sizes, arrangement and positioning of hard standing areas are informed by the turbine manufacturers.

- 2.1.5. The proposal seeks permission to upgrade c. 1.8km of existing roads and tracks, and to construct c. 6km of new access road on the site. It is also proposed to construct passing bays along the proposed access road network in order to allow construction traffic to safely pass each other. The make-up of the founded access tracks is a stone thickness of c. 400mm. Each turbine and the meteorological mast will be connected to the on-site 38kV substation (part of the Proposed GCR) via underground 33 kV electricity cabling. Fibre-optic cables will also connect each wind turbine and the met mast to the onsite 38kV substation. The electricity and fibre-optic cabling connecting to the onsite substation compound will be run in cable ducts c. 1.2m beneath ground level, along the sides of roadways and/or under the roadways.
- 2.1.6. One meteorological (met) mast is proposed as part of the development and is to be located to the east of T5. It is noted that the met mast will be a free-standing slender lattice structure, c. 30m in height and will be constructed on a hard-standing area sufficiently large to accommodate the equipment that will be used to erect the mast.
- 2.1.7. Two temporary construction compounds will be located in the northern and southern portions of site, along the proposed road adjacent to the proposed borrow pit, and to the south of T7. The northern temporary construction compound measures c. 3,625m² and the southern temporary construction compound measures c. 5,585m². Each construction compound will comprise temporary site offices, staff facilities and car-parking areas for staff and visitors. Temporary port-a-loo toilets and toilets located within a staff portacabin will be used during the construction phase. It is noted that waste water from staff toilets will be directed to a sealed storage tank, with all waste water being tankered off site by a permitted waste collector to waste water treatment plants.

- 2.1.8. It is estimated that c. 65,370m³ of stone material will be required to construct the proposed development and it is intended to obtain the majority of materials for the construction from the proposed onsite borrow pit. The onsite borrow pit is located c. 270m north of T1 and measures c. 15,270m² with an estimated volume of 70,000m³. It is noted that post-construction, the borrow pit will be backfilled with excavated spoil, then reseeded or left to vegetate naturally. Hardcore materials will be extracted from the borrow pit (and some turbine locations, if necessary), principally by means of rock breaking. Depending on the hardcore volume, it is noted that blasting may also be used as a more effective rock extraction method.
- 2.1.9. It is proposed to manage overburden generated through construction activities for the proposed development locally within the site, through backfilling of the proposed borrow pit void in the first instance and following that within identified spoil management areas throughout the site (i.e. south-east of T3, north-east of T5 and around and to the south of T7). It is noted that linear berms will be placed along access roads and turbine hardstand areas where appropriate. The total estimated volume of spoil to be managed following excavations during the construction phase is c. 70,700m³.
- 2.1.10. To facilitate the construction of the windfarm roads, a total 4 no. new watercourse crossings are required within the windfarm site. The new watercourse crossings will comprise either clear span watercourse crossings or bottomless box culverts. For the crossing of the Tullaroan Stream to the north-east of T7, a clear span crossing will be constructed. It is noted that all new proposed culverts and proposed culvert upgrades at field drain crossings required for the windfarm will be suitably sized for the expected peak flows in the watercourse.
- 2.1.11. The proposal includes the creation of a new native riparian woodland buffer zone adjacent the Tullaroan stream within the windfarm site. Approximately 1.7ha of riparian woodland planting is proposed to be planted on both banks of the Tullaroan stream and it is indicated that planting and management will be guided primarily by conservation, water quality protection and other ecological considerations. The areas

will be allowed to develop as undisturbed native riparian buffer zones.

Grid Connection

- 2.1.12. It is proposed to construct a 38kV electricity substation which is to be located within agricultural land in the north-western corner of the site. The footprint of the proposed onsite 38kV substation compound measures c. 1,780m² and will include 1 no. control building, 2 no. storage containers and the electrical substation components necessary to consolidate the electrical energy generated by each wind turbine, and export that electricity from the onsite 38kV substation to the national grid. It is noted that the construction and exact layout of electrical equipment in the onsite 38kV substation will be to ESB Networks specifications. The onsite 38kV substation compound will include steel palisade fencing (c. 2.6 metre high or as otherwise required by ESB), and internal fences will also segregate different areas within the main substation.
- 2.1.13. The substation control building will include staff welfare facilities for the operational phase and toilet facilities will be installed with a low-flush cistern and low-flow wash basin. It is proposed to either harvest rainwater from the roofs of the building or, alternatively, install a groundwater well adjacent to the substation in accordance with the Institute of Geologists Ireland, Guide for Drilling Wells for Private Water Supplies (IGI, 2007). It is not proposed to treat wastewater on site and wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed underground storage tank, with all wastewater being tankered off site by permitted waste collector to a licenced wastewater treatment plant. A temporary construction compound measuring c. 1,520m² in area will be located adjacent to the northeastern boundary of the proposed onsite 38kV substation. This construction compound will consist of temporary site offices, staff facilities and car-parking areas for staff and visitors.
- 2.1.14. It is proposed to connect the onsite 38 kV substation to the existing 110 kV Ballyragget substation in Moatpark, Co Kilkenny via 38 kV underground electrical cabling. The underground electrical cabling route is c. 23km in length and located primarily within the public road corridor, with a short section (c. 260m) located within a private road south-west of the proposed on-site substation and another short section (c. 660m)

passing through a number of agricultural fields and a private access track north of the Ballyragget substation. It is noted that the underground electrical cabling route will originate at the proposed onsite 38kV substation and run west for c. 260m through a site road towards the L5023 local road. The underground cabling route continues underneath the local road network for c. 12.3km before following the R694 north for 8.6km. The underground cabling route then follows the N77 national road north for 1.1km before crossing the River Nore via directional drilling. On the eastern side of the River Nore, the proposed cable route then passes through agricultural fields and a private access track, for a distance of c. 660m, before joining the R432 for the remainder of the route, a stretch of c. 135m. From the R432, the cable route turns right into the existing 110kV Ballyragget Substation compound in the townland of Moatpark.

3. Planning Authority Decision

3.1. Decision

3.1.1. The Planning Authority refused planning permission for the proposed development for the following 3 no. reasons:

1. Having regard to the size and scale of the proposed development, the Planning Authority considers that the proposed seven (7) number turbines with 185 metre tip height will, due to the cumulative effects of visual intrusion, combined with noise, flicker and disturbance of access, on a significant number of nearby dwellings in and around the settlements of Tullaroan, Kilmanagh, and Ballycallan, give rise to excessive levels of adverse effects on residential amenity in the area. These effects are integral and incapable of being mitigated because they arise from the extent and scale of the proposed works and their proximity and position relative to dwellings. Therefore, notwithstanding the National imperatives on renewable energy it is considered that the proposed development on its own and in combination with other windfarms already constructed and permitted in the area will have a disproportionate undue and unreasonable impact on the visual landscape amenity of the area and in particular will severely impact negatively on the residential amenity of the community in close proximity. The proposed development would therefore be contrary to the proper planning and sustainable development of the area.
2. The Planning Authority in its assessments of the applicants' specialist chapters

of the EIAR finds that there are a number of significant deficiencies in the quality and quantum of data provided, particularly in the areas of landscape and visual effects, material assets, noise, ecology and hydrology. Furthermore, insufficient detail has been provided on the matter of cumulative effects, especially in regards to the likely effect on the residential amenity of the immediately adjacent residential areas. The EIAR was found to not meet the statutory ELA requirements in relation to the following sections contained therein as follows:

- a. Consideration of Reasonable Alternatives, including cable routes
- b. Description of the Proposed Project
- c. Population and Human Health
- d. Biodiversity (excluding birds)
- e. Birds
- f. Land, Soils and Geology
- g. Hydrology and Hydrogeology
- h. Air Quality
- i. Noise and Vibration
- j. Landscape and Visual
- k. Cultural Heritage
- l. Traffic and Transport
- m. Other Material Assets
- n. Interaction of Effects.

which has resulted in insufficient information for the Planning Authority to arrive at a reasoned conclusion on the significant effects of the project on the environment. In applying the precautionary principle therefore, the Planning Authority is not satisfied that the environment impacts alone or in combination have been satisfactorily addressed, the development would therefore be contrary to the proper planning and sustainable development of the area if permitted.

3. There is a significant lack of supporting information for certain ecological receptors (such as birds) in both the Stage 1 Screening and Stage 2 Natura impact Statement, and certain elements of the mitigation measures; with particular regard to:

- a. otter surveys carried out outside of the optimum season,
- b. botanical surveys results accuracy and completeness,
- c. comprehensive information on all watercourses within the proposed development site that have hydrological connectivity to downstream European sites, and assessment of potential effects with particular regard to cumulative effects and interactions with various construction stages and works areas across the proposed site,
- d. full data sets of all SCI species recorded during surveys (including non “target species”),
- e. clear rationale for the selection for “target” bird species and exclusion of other SCI species that were recorded within the proposed development site,
- f. consideration of SCI species considered for assessment of potential effects in the NIS,
- g. inadequate collision risk assessment for SCI species,
- h. insufficient assessment for birds in the NIS supplemented with relevant scientific literature regarding the migratory pathways of species recorded,
- i. insufficient information regarding the relationship between required works for the proposed grid connection and intersecting European sites to support statements made regarding absence of potential for direct effects, and,
- j. sufficiency and implementation of mitigation.

As a result, the subsequent assessments of potential effects, the application of mitigation measures and the assessment of residual and cumulative effects are not supported in terms of a complete Appropriate Assessment process. Having regard to the Natura Impact Statement submitted as part of the planning application and the lack supporting information, the planning authority is not satisfied that there is no risk of adverse effects on the integrity of the associated European Sites (either directly or indirectly), along or in-combination with other plans or projects. The application as submitted contains reasonable scientific doubt which in line with case law precludes the planning authority as the competent authority from concluding a finding of no adverse effects.

3.2. Planning Authority Reports

3.2.1. Planning Reports

3.2.1.1. The Kilkenny County Council Planning Report forms the basis of the decision and included the following appendices:

- Appendix 1: Public Submissions,
- Appendix 2: Referral Responses,
- Appendix 3: CAAS EIAR Review Report for Kilkenny County Council,
- Appendix 4: CAAS NIS Review Report for Kilkenny County Council,
- Appendix 5: Kilkenny County Council Appropriate Assessment Screening, and,
- Appendix 6: Pre-Planning and EIAR Scoping response.

3.2.1.2. The report provides a description of site and proposed development, it describes the planning policy context, the relevant planning history, and it provides a summation of the public submissions and referral responses received in relation to the subject proposal. The key issues raised by the Planning Authority during their assessment are summarised below, under the following headings.

EIAR

3.2.1.3. The Planning Authority highlighted deficiencies in the various chapters of the EIAR. A summary of the key issues raised are as follows:

- Consideration of Reasonable Alternatives.
 - o The rationale for the project design options and layout do not present a balanced account of the likely significant effects on the landscape character of the area.
 - o A more detailed survey of the turbine delivery route and assessment in accordance with the Exception Abnormal Loads 2024 permit process is required to demonstrate adequacy of the route selection.
 - o Concerns in relation to the consideration by the Applicant of alternative grid connection cabling route (GCR) options and the failure to consider other potential grid connection points, or potential connection with other renewable energy projects.
- Population and Human Health.

- There is no clear consideration present of cumulative impacts of effects due to visual intrusion in combination with noise, flicker and disturbance of access in terms of road closures, diversions, construction traffic, and other projects, which is a significant omission in the assessment.
- Biodiversity (excluding birds).
 - Concerns regarding adequacy of the survey work (bats, badger, otter, amphibians or reptiles).
 - Information provided in relation to existing habitat baseline and botanical study contains inaccuracies and nuances, together with the absence of a sufficient hedgerow appraisal or detailed map showing the full extent of habitats that will be lost.
 - Lack of clarity in the EIAR regarding invasive species.
 - The EIAR lacks clarity of habitats that may have to be removed or disturbed, either directly or indirectly, in order to accommodate the turbine delivery route.
 - Tree felling within bat felling buffers around turbines is not clearly identified.
- Birds.
 - The rationale for choosing the 'target species' of birds or how those species were selected is not clear.
 - There is no data or discussion provided for several species of Special Conservation Interest for which SPAs are designated which were recorded during surveys that are also Amber Listed. The assessment of the potential significant effects and impacts of the proposed projects on bird species and populations as a whole is not adequately assessed in the report.
 - The assessment for passerines does not include habitat loss in terms of grassland, hedgerows, treelines or mature trees.
 - Further surveys are required regarding the importance of the site for the Peregrine Falcon, which is an internationally protected species under the Birds Directive, having regard to hunting behaviour observed during surveys.
- Land, Soils and Geology.

- Concerns raised as to the use of the site-won stone (borrow pit), regarding its strength and chemical suitability. Insufficient information has been provided on the exact areas proposed to receive this quarried material.
- Concerns regarding the levels of contamination in materials removed from the roads (i.e. ducting run). It is indicated that this material should not be permitted entry into zones earmarked for spoil placement being near or adjacent to the Callan PWS Source Protection Area.
- Hydrology and Hydrogeology.
 - Concerns raised in relation to the impact of the wind turbines and borrow pit (depth of 9.5m) on the site of a drinking water supply source, and the potential for foundations at T07 to dig directly into the water table which would increase the risk of groundwater contamination.
 - Inadequate provision for mitigation measures to prevent contamination during excavations.
 - No site investigation has been undertaken at T7 (within forestry).
 - Concerns regarding the lack of information on the aquifer forms beneath their expected turbine foundation depths and the probability of a strike on the aquifer during the tower-base installation.
 - Inadequate information provided in relation to surface water and potential flooding impacts.
 - Concerns regarding the lack of clarity and detail in mitigation and monitoring measures. This does not support the Applicant's stated findings that likely residual effects on downstream watercourses and associated water-dependent ecosystems will be imperceptible.
 - The CEMP lack the levels of clarity and detail as would be required to ensure achievement of required outcomes.
- Air Quality.
 - The applicant has not carried out air quality monitoring on site to verify SO₃, PM₁₀, NO₂ and O₃ concentrations. There are also no plans to carry out air quality (and dust) monitoring during construction.
 - The EIAR has not specified dust control measures for blasting or rock/breaking/crushing from a borrow pit/"quarry".

- Climate.
 - The potential for flood risk downstream from the site has not been adequately assessed.
- Noise and Vibration.
 - Concerns regarding noise limits guidance being exceeded in relation to linear construction works and blasting bedrock. Insufficient information has also been provided in relation to blasting bedrock and impacts on residents.
 - Vibration effects of potential piling have not been assessed.
 - The absence of clear mapping for this receptor group (NSLs) is a significant impediment to accessibility of the information and is not compliant with EIA requirements regarding presentation and accessibility of information.
 - The lack of information on the assignment of the limit criteria to individual NSLs (or NSL groups) and of identification of exceedances and any exclusions in Appendix 12.7 impedes clarity, cross checking of results and accessibility of this key information.
 - The absence of any meaningful assessment of cumulative noise effects is an EIA compliance issue.
- Landscape and Visual.
 - The assessments of the majority of the effects of visibility and significance are under-reported for those viewing points that are closest to the proposed development. The assessment fails to highlight the significance of the fact that these closest views are locations from which there is currently little or no visibility, or cumulative effects of other windfarm developments.
 - The overall assessment is deficient on account of a lack of rigour and objectivity in the matter of assessing the significance of landscape and visual impacts.
 - The cumulative effects will impose an unreasonable and disproportionate environmental loading on the character of a rural area with a locally concentrated population.
 - The scale of the development is unprecedented in Kilkenny due to the

size of the turbines and their location on lowlands surrounded and closely overlooked by a large number of houses.

- Cultural Heritage.
 - There is a very significant lack of assessment of historic masonry bridges. It is highlighted that works to the carriageway of a bridge may be problematic.
- Material Assets.
 - Concerns raised regarding potential impacts on existing public drinking water services infrastructure and the public road network capacity, and impacts on services located within the public roads including telecommunications, water, gas and electricity infrastructure.
 - Concerns regarding the lack of a plan-led strategy and co-ordinating mechanism for the delivery of private grid connection infrastructure from multiple energy developments which are being planned or delivered independently of each other.
 - Insufficient information to fully assess the traffic management arrangements for the proposed grid connection works and the suitability of the traffic management arrangements, diversion routes and closure durations during the construction works.

AA

3.2.1.4. It was determined by the Planning Authority that the NIS was non-compliant with the Habitats Directive and would require further information to be provided and a subsequent revised NIS produced. The following concerns/deficiencies were noted:

- A comprehensive otter survey of the proposed development site and zone of influence for European otter (*Lutra Lutra*) within the optimum season has not been demonstrated in line with relevant best practice.
- Botanical surveys results, with particular regard to species ratios and determination of grassland habitat types and protected / rare species guidelines.
- The lack of comprehensive information on all watercourses within the proposed development site that have hydrological connectivity to downstream European sites, and assessment of potential effects with particular regard to cumulative effects and interactions with various construction stages and works areas

across the proposed site.

- Requirement for full data sets of all SCI species recorded during surveys (including non “target species”) with associated discussion / assessment.
- Requirement for a clear rationale for the selection for “target” bird species and exclusion of other SCI species that were recorded within the proposed development site.
- Consideration of SCI species considered for assessment of potential effects in the NIS (i.e., those with potential to have indirect effects as a result of the proposed development)
- Inadequate collision risk assessment for SCI species.
- Insufficient assessment for birds in the NIS supplemented with relevant scientific literature regarding the migratory pathways of species recorded, the species identified as “target species”, the collision risk assessment, and cumulative impact assessment.
- Insufficient information regarding the relationship between required works for the proposed grid connection and intersecting European sites to support statements made regarding the absence of potential for direct effects.
- Insufficient information regarding the roles, responsibilities and timelines for the implementation of the proposed mitigation measures, including the roles and responsibilities regarding post construction monitoring and enforcement of ecological and water quality measures.

Planning Assessment

3.2.1.5. It was noted that the scale and height of this development is unprecedented in Kilkenny due to the size of the turbines and their location on lowlands surrounded and closely overlooked by a significant number of houses. It was noted that the cumulative exposure to noise and a highly contrasting visual intrusion will fundamentally alter the landscape character of an area containing at least 35 dwellings with similarly high levels of effects on a further 140 dwellings. In concluding their assessment, the following points were noted:

- Significant deficiencies in the EIAR in terms of the quality and quantum of data provided, particularly in the areas of landscape and visual effects, material assets, noise, ecology and hydrology,

- Insufficient detail has been provided on the matter of cumulative effects,
- The proposed development by reason of its size and scale will give rise to excessive levels of adverse effects on residential amenity due to the cumulative effects of visual intrusion, combined with noise, flicker and disturbance of access on many nearby dwellings,
- Lack of regard to the permitted 110kv grid connection extending from the west also leading to the Ballyragget and concerns regarding the absence of a plan-lead and co-ordinating mechanism for private grid connections,
- The documentation submitted fails to provide a comprehensive mapping and assessment of all actively flowing watercourses through the site or to adequately consider the surface water abstraction catchment at the Troyswood scheme. Failure also to demonstrate that the proposed grid connection route will not adversely impact Uisce Eireann infrastructure.
- Concerns regarding potential adverse impacts on the protection of biodiversity species and habitats both within and remote from the site, with particular regard to potential impacts on water quality, botany, otters, kingfishers and other birds, amphibians and reptiles, bats, and badgers, and the effectiveness of mitigation measures proposed in the absence of a complete dataset and conflicting information.
- Failure to adequately assess or demonstrate that the proposed development would not have significant adverse impacts on existing structures on (a) the Record of Monuments and Place with regard to impacts on their setting or sub-surface archaeology, and (b) the setting of a number of buildings with listed in the Kilkenny Record of Protected Structures,
- Failure to adequately consider recent flood events downstream from the proposed site and the potential for the substantial works to lead to an increase in flood risk potential downstream.

3.2.2. Other Technical Reports

3.2.2.1. Roads Section: Report on file dated 21st February 2025 which highlighted the following points.

- It is stated that there are a number of concurrent energy projects in the planning/development stage in the wider area which have proposed

underground grid connections to the Ballyragget 110kv ESB substation. Concerns raised that there will be separate ducting runs for each development which will severely limit the public road capacity and the Local Authority's ability to carry out its functions in respect of maintenance works and future services provision. It is noted that there is significant merit in rationalising the ducting and grid connection infrastructure to cater for the various parties/developments. In particular, the crossing of structures and the duct crossing under the N77.

- Therefore, there is significant concern regarding the lack of a plan-led strategy and co-ordinating mechanism for the delivery of private grid connection infrastructure from multiple energy developments which are being planned or delivered independently of each other.
- In terms of the GCR selection, the applicant identified four substations within 25km of the development site but does not elaborate sufficiently as to how the Ballyragget substation was selected. It is stated that the option to connect the windfarm to the substation located in the Farranarory Windfarm (c. 5km away) does not appear to have been assessed. It is considered that this option has significant merit in minimising the impact on the public road assets, reduction in construction costs, and the rationalisation of the underground network.
- For the GCR (c.8.1km) located in the R694 between Freshford Village and the N77, the Traffic Management Plan indicates that this portion of the route will be subject to road closures in the order of 81 days (16 weeks). It is considered that this will have a significant impact on this key Regional Road link connecting Freshford to Ballyragget, should full road closures be in place for the duration of the installation.
- It is considered that the cumulative effects of traffic disruption and impact on the travelling public arising from the installation of grid connections for other developments in the public road shall be considered. The risk of being unable to obtain a Road Opening Licence due to lack of capacity in the road network or due to other potential grid connection installations or other constraints shall be evaluated.
- There is concern that the extent of watercourse crossing/ culverts and drainage pipes on the GCR has not been fully identified. The level of detail provided for the identified watercourse crossings is insufficient to fully assess the impact on

existing structures. It is considered that the applicant should be required to carry out a structure/bridge specific design report on the structural condition at each of the identified bridges/structures and determine how the cable installation will impact the structure and to assess how directional drilling will affect the individual bridge or structure, due to the unique ground conditions under it.

- With respect to the trenching detail for the cable installation, there are concerns regarding the vertical clearance from the road surface to the proposed ducting. The proposed construction detail will potentially limit the vertical clearance for the installation of other services, drainage improvement and maintenance.
- It is noted that the applicant has not provided a detailed assessment of the GCR to ascertain the optimum traffic management proposals and options to minimise road closures. For the potential diversions and construction haul/delivery routes, there is concern as to the suitability of these road to cater for construction traffic and diverted local traffic. Therefore, there is insufficient information to fully assess the traffic management arrangements for the proposed GCR works and the applicant was requested to address the concerns and demonstrate the suitability of the traffic management arrangements, diversion routes and closure durations during the construction works. It is noted that the works zones will vary from 100m to 200m and there may be scope to facilitate limited through traffic under traffic management in lieu of full road closures. This is particularly applicable to works within the R694 Regional Road when road closures may potentially be avoided or significantly minimised.
- The Applicant should be requested assess the cumulative effect on traffic, diversions and road closures that may arise from other similar projects in the wider vicinity whether occurring concurrently or sequentially.
- The applicant should be requested to submit a revised TTA to address the above to provide further clarity to reflect the traffic generation on the material delivery routes to and from the northern exit.
- It is indicated that there is insufficient detail to identify the extent of roadside boundary to be setback/modified to facilitate visibility splays for the access for the northern entrance on the L5024.

3.2.2.2. Environment Section: Report on file dated 24th February 2025 which raised various concerns with respect to the following:

- Noise and Vibration during the construction and operational phases.
- Air quality during the construction and operational phases.
- Geology and hydrogeology during the construction and operational phases.
- Light and shadow flicker.
- Waste.
- Surface water & wastewater.
- Other observations.

3.2.2.3. Conservation Section: Report on file dated 25th February 2025 which highlighted the following points.

- It is indicated that proposals have been submitted to cross bridges which are on the PRS, NIAH or which are historic masonry bridges (but maybe not included in either the RPS or the NIAH) and include the insertion of an underground cable laid in a flatbed formation within the public road over the bridge deck and also options for underground directional drilling. It is noted that works to the carriageway of a bridge may be problematic for the following reasons:
 - Insufficient road depth to accommodate the new cables,
 - Road build up results in requirements to heighten parapets, negatively impacts the character of these bridges while potentially weakens masonry elements when excavating,
 - Significant rubbing strips / kerbing negatively impacts the character of these bridges, and,
 - Attaching hardware directly to the facade of the bridge negatively impacts character while potentially weakens masonry element

Further information is recommended regarding the proposed bridge crossings, and it is noted that where historic bridges are to be crossed, directional drilling under masonry bridge is the recommended approach.

3.3. Prescribed Bodies

- 3.3.1. Department of Housing, Local Government and Heritage (National Monuments Service): Report on file dated 6th February 2025 recommending further information with respect to a requirement for a more detailed Archaeological Impact Assessment.

3.3.2. Department of Housing, Local Government and Heritage (National Parks and Wildlife Service (NPWS)): Report on file dated 11th February 2025. Issues raised within the report included:

Appropriate Assessment

- Conflicting information within the NIS and EIAR in relation to the presence of Otters on the wind farm site. The requirement for further survey work is suggested.
- In terms of Kingfisher and the proposed GCR, no information has been provided on the baseline conditions and associated noise levels with the horizontal directional drilling (HDD). Therefore, the NIS is not based on best scientific information relevant to the likely effect on the conservation objective of the River Nore SPA. The Department recommended further information is included on the noise levels associated with the HDD works at the River Nore crossing and associated disturbance impacts on Kingfisher.
- Recommendation for silt fencing to be utilised on all works adjacent or close to water crossings.

Ecological Impact Assessment

- Bats: Concerns raised regarding the adequacy of the survey work for the various farm complexes within the site. It is also highlighted that no bat activity surveys were prepared for the bridge crossings. The submission indicates that flatbed formation and horizontal directional drilling are proposed at these bridges, but it is not made clear the level of noise and vibration that will occur here as a result of these works. The Department, therefore, recommended that data should be provided on this and bat activity surveys following best practice guidance should be carried out.

Badger

- It is noted that as a badger was recorded using a sett on the site, this is therefore a confirmed badger sett, and the word "potential" should be removed from the EIAR. As the entire site is highly suitable for badger, the Department recommended that a pre-construction badger survey is undertaken within all

work areas, and within 150 metres of all work areas.

Amphibians and Reptiles

- No amphibian or reptile surveys were completed as part of the proposed development. As suitable habitat exists within the site, they cannot be ruled out as a KER. It is noted that amphibians are sensitive to changes in water quality.

Habitats

- There will be a loss of 1.3m of linear habitat within the site, the majority being hedgerows. It is not clear whether these hedgerows are heavily managed, or unmanaged. This should be clarified, and all efforts should be made to avoid the removal of hedgerows of significance, according to the Hedgerow Appraisal System.

3.3.3. Irish Aviation Authority (IAA): A report received dated 9th January 2025 which has recommended conditions in the event of a grant of permission.

3.3.4. Uisce Éireann: Report on file dated 5th February 2025 recommending further information with respect to the following:

- An updated EIAR to include the Kilkenny City Water Supply as a Surface Water Resource (Section 9.3.14.2). The water supply should also be considered in Section 9.3.15 Receptor Sensitivity and Section 9.5.2 Construction Phase – Likely Significant Effects and Mitigation Measures, where applicable.
- Concerns regarding impacts to UÉ infrastructure. A Confirmation of Feasibility from Uisce Eireann's Diversion team to build near/under or divert the existing Uisce Eireann assets.

3.3.5. Transport Infrastructure Ireland (TII): A report received dated 31st January 2025 which noted the following:

- While abnormal 'oversized' loads are addressed in the EIAR in the context of turbine component haul route proposals, it is indicated that no details appear to be included in the EIAR related to abnormal 'weight' loads.
- The Authority considers that it is critical a full assessment by the

applicant/developer of all structures on the national road network along the haul route should be undertaken, where relevant, and all road authorities along the haul routes should confirm their acceptance of proposals by the applicant.

- In terms of the GCR, it is noted that proposals to lay cable in the national road reservation have the potential to impact road authorities and TII in undertaking future maintenance and improvement requirements. There may also be additional cost implications to national road improvements and maintenance resulting from the presence of high voltage cabling within the national road reservation. TII recommends that it is established that the routing proposed represents the optimal routing solution. TII note that a number of other proposed private grid connections to the Ballyragget Substation utilising this same section of N77, national road. It is understood that it is not technically feasible to lay multiple electricity connections in the same section of road arising from the required separation distances. This is a serious concern which highlights the absence of a plan led approach private grid connections and presents significant risk to the strategic national road network maintenance and operation as well as impacting project delivery of independently proposed renewable energy projects.
- In relation to any Greenway or Active Travel proposals in the vicinity of the proposed works, consultation with Kilkenny County Councils own internal project and/or design staff is recommended.

3.3.6. Health Service Executive (HSE): A report dated 13th January 2025 advises that the HSE South Emergency Management function does not have any specific observations to make with respect to this application. An additional report received dated 4th February 2025 which provides an assessment of chapters of the Applicant's EIAR and recommends various conditions in the event of a grant of permission.

3.3.7. Inland Fisheries Ireland (IFI): A report received dated 5th February 2025 which has provided various recommendations, including a requirement for consultation with IFI at design stage regarding method statements for all new water course crossings and alterations to crossings, a requirement for the use of clear-span crossings for second order watercourses or higher, for the GCR existing infrastructure should be utilised where possible to minimise interference with watercourses along the route, particularly

in the case of HDD underneath the River Nore and various recommendations with respect to buffer zones, storage of materials on site and surface water management proposals.

3.4. Third Party Observations

- 3.4.1. A total of 202 no. observations were received by Third Parties at application stage. The submissions are summarised in Appendix 1 of the Planner's Report. A detailed response to the various issues raised by Third Parties during the course of the application is provided within the First Party appeal and I have provided a summary of the response in Appendix 3 of this report. It is noted that many of the Third Party observers have also submitted observations to the First Party appeal and I note that the issues raised are broadly similar. I will discuss these matters in further detail in Section 6 of this assessment. I note that I have considered all submissions in my assessment of the subject proposal.

4. Relevant Planning History

4.1. Appeal Site

- 4.1.1. As detailed in Chapter 2 of the Applicant's EIAR, a planning search was carried out through the national planning application database and the Commission's online planning portal for relevant planning applications submitted within the past 10 years that fall within the planning application boundary of the proposed development. These are outlined Table 2-4 of the Chapter and relate primarily to smaller scale residential, agricultural and commercial developments. I have undertaken a more recent review of the planning history of the site and surrounding area and permissions of note that overlap with the boundary of the subject site include:

- **2560418 (ACP-323759-25):** Planning permission refused by the Planning Authority in September 2025 for the construction of 6 no. wind turbines, a permanent 38kV substation compound, permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation in the townland of Moatpark and underground electrical and communications cabling connecting the wind turbines and meteorological mast to the on-site substation. At the time of writing this report, the application is the subject of a First Party appeal with the Commission.

- **ABP-322069-25:** Planning permission granted in April 2026 for a wind farm with an operational lifespan of 35 years and includes 12 no. wind turbines, a wind farm control building, a 110kV Electrical Substation in Tinnalintan townland and associated access road and an underground grid connection from the Tinnalintan Substation to the existing EirGrid Ballyraggett Substation and facilitating works in the EirGrid Substation.
- **2560144:** Planning permission granted in June 2025 for development (10 year permission with 35 year operational life) comprising a compound (with a total footprint of c. 1,080 square metres with a hardcore surface enclosed by security fencing and gates, a 110kV electricity transformer and associated electrical plant and equipment, an electrical control building (with a total gross floor area of 64m²) containing electrical plant and equipment, underground electrical cabling to connect the permitted Ballyragget Power Reserve (Kilkenny County Council Planning Register Reference 24/60221) to the electrical control building and to connect the 110kV electricity transformer to the existing Ballyragget 110kV electricity substation and all associated ancillary site development works.
- **2460221:** Planning permission granted in February 2025 for development (10 year permission with 35 year operational life) comprising an energy storage facility comprising (i) energy storage containers installed on concrete plinth foundations; (ii) electrical transformers; (iii) underground electrical and communications cabling; (iv) provision of a new access point from the R432; (v) on-site access track; (vi) security fencing and security gates; (vii) pole-mounted security cameras; (viii) ancillary electrical equipment and storage containers including a staging area; and, (ix) all associated and ancillary site development, drainage, landscaping and reinstatement works.
- **2460534:** Planning permission granted in January 2025 for a 2,000sq.m extension to the existing Ballyragget 110kV Substation compound.
- **2460241:** Planning permission granted in December 2024 for a Battery Energy Storage System (BESS) in the townland of Moatpark, Ballyragget, Co. Kilkenny.
- **2360330:** Planning permission granted in February 2024 for the installation of a network connection and grid connection, and minor amendments to solar farms previously approved under planning application references 17/669 and

22/126.

- **2360248:** Planning permission granted in January 2024 for an amendment to planning application previously granted under reference PL/21/627. The previously consented planning application comprised the installation of 31.4 km of a 38kV underground grid connection comprising cable ducting and associated electrical cabling and all other ancillary works including joint bays, culverts, marker posts and all associated development.
- **21627:** Planning permission granted in September 2022 for the installation of 31.49km of a 38kV underground electrical cabling and all other ancillary works. The development comprises part of an overall development for which planning permission was granted for a 9 no. turbine wind farm and all associated works on lands located in the townlands of Farranroy Upper, Farranroy Lower, Coolnashinnagh & Gortnasmuttaun, Co. Tipperary. The full extent of the grid connection is 33.8km, and a separate planning application was made for an underground grid connection to Tipperary County Council.
- **ABP-308824-20:** Planning permission granted in August 2021 for the realignment of a 2.44km section of the N77 to remove a bend immediately to the north of the Glanbia plant at Ballyragget, County Kilkenny.

5. Policy Context

- 5.1. The planning policy context for the development is set out in the Planning Reports submitted by Kilkenny County Council, Section 6 of the Applicant's Planning Report and Chapter 2 of the EIAR. A summary of key policy documents is set out below.

5.2. International/EU Policy.

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

- 5.2.1.1. The revised Directive EU/2023/2413 came into force on 20th November 2023. RED III sets an overall renewable energy target of at least 42.5% binding at EU level by 2030, but it is aiming for 45%. This target is raised from the previous 32% target. It means almost doubling the existing share of renewable energy in the EU. The Directive introduces several provisions to facilitate the deployment of photovoltaic (PV) projects, including the designation of renewable acceleration areas by Member States, a simplified and expedited permit granting process for solar PV projects and streamlined

environmental assessment procedures for solar PV projects in designated renewable acceleration areas. It is noted that some of the provisions of the Directive have been transposed by way of SI 254/2025 on 6th August 2025.

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

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

5.3. National Policy and Guidance

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

- 5.3.1.1. The Act commits Ireland to the objective of becoming a carbon-neutral economy by 2050, reducing emissions by 51% by the end of the decade. Section 17 of the Climate Action and Low Carbon Development (Amendment) Act, 2021 amends the principle act such that Section 15(1) requires:

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

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

“Relevant body” means a prescribed body or a public body.

5.3.2. Climate Action Plan 2024 (“CAP24”) and 2025 (“CAP25”)

- 5.3.2.1. The Climate Action Plan 2024 (CAP24) is the third annual update to Ireland's Climate Action Plan 2019. The plan is prepared under the Climate Action and Low Carbon Development Act 2015 (as amended, see below), which introduced economy wide

carbon budgets and sectoral emission ceilings, to achieve a 51% reduction in emissions by 2030 (relative to 2018 levels) and net zero emissions by 2050. CAP24 sets out the sectoral emission ceilings for the electricity sector (Table 3.2) and, in Table 12.5, KPIs to accelerate renewable energy generation. These include 6GW of onshore wind capacity by 2025 and 9GW by 2030. The Plan also details the significant changes required to enhance the electricity grid's capacity and flexibility.

5.3.2.2. To meet its targets and obligations CAP 24 sets a course for Ireland to halve emissions by 2030 and reach net-zero no later than 2050. In terms of the electricity sector a 75% reduction in emissions based on 2018 levels is required by 2030 and CAP 24 provides that central to achieving this is the strategic increase in the share of renewable electricity to 80% by 2030 including ambitious targets of deploying 9GW of onshore wind, 8GW of solar power and at least 5GW from offshore wind projects. CAP 2025 was published on 15th April 2025. It re-affirms the previous commitment to increase the share of renewable electricity generation to 50% by 2025 and 80% by 2030, including to deploy up to 9 GW of onshore wind by 2030.

5.3.3. **Ireland's Long-term Strategy on Greenhouse Gas Emissions Reductions 2024**

5.3.3.1. The National long-term Climate Action Strategy, entitled Ireland's Long-term Strategy on Greenhouse Gas Emissions Reductions 2024, sets out indicative pathways, beyond 2030, towards achieving carbon neutrality for Ireland by 2050. The Strategy provides a pathway to a whole-of-society transformation and serves as a vital link between shorter-term Climate Action Plans and Carbon Budgets and the longer-term objective of the European Climate Law and Ireland's National Climate Objective.

5.3.4. **The National Adaptation Framework; Planning for a Climate Resilient Ireland (June 2024)**

5.3.4.1. The most recent approved national adaptation framework, the National Adaptation Framework; Planning for a Climate Resilient Ireland June 2024 (NAF) is Ireland's second statutory National Adaptation Framework (NAF) and was published on 5th of June 2024. The NAF and its successors do not identify specific locations or propose adaptation measures or projects in individual sectors, but sets out the context to ensure local authorities, regions and key sectors can assess the key risks and

vulnerabilities of climate change, implement climate resilience actions and ensure climate adaptation considerations are mainstreamed into all local, regional and national policy making. The NAF identifies 13 (previously 12) priority sectors under 7 lead Departments that are required to prepare sectoral adaptation plans under the Climate Act in accordance with the Sectoral Planning Guidelines for Climate Change Adaptation which were published in 2018 and updated in 2024. The original 12 sectoral Plans prepared in 2019 and a new sectoral Plan for tourism are to be updated/prepared by end of Q3 2025. The following Electricity and Gas Sectoral Plan is relevant to the subject proposal.

5.3.5. Electricity and Gas Networks Climate Change Sectoral Adaptation Plan 2025 (EGN SAP 2025)

- 5.3.5.1. This is the second Sectoral Climate Change Adaptation Plan for the Electricity and Gas Networks Sector, as required under the provisions set out in the Climate Action and Low Carbon Development Act 2015 and the National Adaptation Framework and focuses on climate adaptation. It is a strategic document designed to help Ireland's electricity and gas networks build long term resilience to climate impacts and extreme weather events. The Plan has been developed through the 6-step adaptation planning process set out in the Sectoral Adaptation Planning Guidelines, and has been informed by the latest science and stakeholder engagement. To address the risks posed by climate change to the EGN sector, the EGN SAP 2025 sets out a EGN SAP Vision underpinned by three goals: (i) Establish structures to strengthen and enable action across the EGN sector to increase resilience; (ii) Strengthen the capacity of the EGN sector to ensure long-term resilience and (iii) Deliver a sustainable and resilient EGN sector. These goals are supported by 7 objectives and 38 actions, ranging from enhancing existing SAP governance processes, to prioritising research, and strengthening policy integration. In addition, delivery of this Plan aims to prioritise the key principles outlined in the 2024 National Adaptation Framework, to ensure just resilience, support nature-based solutions, and avoid maladaptation. Each action is linked to delivery owners, timelines, and relevant national strategies, ensuring alignment with Ireland's climate commitments.

5.3.6. Project Ireland 2040: National Planning Framework ("NPF"), First Revision of the

NPF and the National Development Plan (“NDP 2021-2030”)

5.3.6.1. The Project Ireland 2040 is the Government’s long-term overarching strategy to make Ireland a better country for all and to build a more resilient and sustainable future. The NPF and the NDP combine to form Project Ireland 2040. The NPF sets out to deliver a spatial strategy through a set of National Strategic Outcomes (“NSO’s”), including: ‘Transition to a Low Carbon and Climate Resilient Society’ which establishes a national objective of achieving transition to a competitive, low carbon, climate resilient and environmentally sustainable economy by 2050. The first revision of the NPF has been approved by both Houses of the Oireachtas, following the decision of the Government to approve the final revised NPF on 8th April, 2025. The ‘First Revision’ introduces regional renewable electricity capacity allocations for each of the three Regional Assemblies to be achieved by 2030. The NDP 2021-2030 sets out the investment priorities that will underpin the implementation of the National Planning Framework, through a total investment of approx. €116 billion. It recognises that Ireland’s energy system requires radical transformation in order to achieve its 2030 and 2050 targets and objectives. It recognises that investment in renewable energy sources affords Ireland an opportunity to decarbonise our energy generation, but that this must be complemented by wider measures to moderate growth in energy demand, increase energy security, diversify supply sources and facilitate more variable electricity generation on the grid.

5.3.7. Relevant National Policy Objectives (NPO) include:

- NPO 69 Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions as expressed in the most recently adopted carbon budgets.
- NPO 70 Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a climate neutral economy by 2050.
- NPO 71 Support the development and upgrading of the national electricity grid infrastructure, including supporting the delivery of renewable electricity generating development.

5.3.8. **Ireland's 4th National Biodiversity Action Plan 2023–2030**

5.3.8.1. Ireland's 4th National Biodiversity Action Plan (NBAP) sets the national biodiversity agenda for the period 2023-2030 and aims to deliver the transformative changes required to the ways in which we value and protect nature. The NBAP will continue to implement actions within the framework of five strategic objectives, while addressing new and emerging issues:

- Objective 1 - Adopt a Whole of Government, Whole of Society Approach to Biodiversity,
- Objective 2 - Meet Urgent Conservation and Restoration Needs,
- Objective 3 - Secure Nature's Contribution to People,
- Objective 4 - Enhance the Evidence Base for Action on Biodiversity
- Objective 5 - Strengthen Ireland's Contribution to International Biodiversity Initiatives.

5.3.9. **National Energy Security Framework, April 2022**

5.3.9.1. The Framework addresses Ireland's energy security needs in the context of the war in Ukraine. It coordinates energy security work across the electricity, gas and oil sectors. The Framework takes account of the need to decarbonise society and the economy, and of targets set out in the Climate Action Plan to reduce emissions. Theme 3 - Reducing our Dependency on Imported Fossil Fuels, focusses on three areas of work:

- 7.1 Reducing demand for fossil fuels.
- 7.2 Replacing fossil fuels with renewables, including solar energy.
- 7.3 Diversifying fossil fuel supplies.

5.3.9.2. Under 7.2, the statement notes that prioritising renewables is in line with the requirements of the recast Renewable Energy Directive and the EC REPowerEU action statement. The Commission has called on Member States to ensure that renewable energy generation projects are considered to be in the overriding public interest, and the interest of public safety, and the Government supports this request.

5.3.10. **Wind Energy Development Guidelines issued by the Department of the Environment, Heritage and Local Government (June 2006) (WEDG, 2006)**

5.3.10.1. The 2006 WEDG Guidelines provide advice to PAs for onshore wind energy through

the development plan process and in determining applications for planning permission. They provide consistency of approach throughout the country and state that whilst the development of renewable energy sources is supported, implementation must have regard for the environment, including the conservation and sustainable use of biological diversity. Specific guidelines are provided on the environmental implications of wind energy and for certain environmental topics, including design and siting, noise, shadow flicker and landscape effects. Recommendations are also made in respect of conditions.

5.3.11. Draft Wind Energy Development Guidelines, 2019 (draft WEDG 2019)

- 5.3.11.1. The draft WEDG propose key amendments to the 2006 Guidelines in respect of noise, visual amenity, shadow flicker and community engagement. These include the application of more stringent noise limits in line with WHO noise standards together, a more robust noise monitoring system and reporting system and additional requirements in respect of shadow flicker, community consultation obligation, community dividend and grid connections. A minimum setback distance for visual amenity purposes of 4 times the tip height is also required subject to a mandatory minimum setback of 500m from sensitive receptors. The draft guidelines have not been issued under section 28 of the Planning and Development Act, 2000 as amended and, as per circular 05/2017, the 2006 Guidelines remain in place.

5.3.12. Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement (DCCA&E, 2016)

- 5.3.12.1. The Department's Code of Practice for community engagement advocates building strong and effective relationships with communities and individuals that will live with all infrastructure projects, including wind turbines. It makes recommendations in respect of promotor contact and visibility, consultation and engagement with the community, compliance with statutory requirements (public notice/consultation), community benefit, impact mitigation, independent advice, ancillary developments and transparency in compliance with the code of practice. Industry best practice guidelines for community consultation are set out in the publication '*IWEA Best Practice Principles in Community Engagement and Community Commitment 2013*'.

5.3.13. Renewable Electricity Support Scheme Good Practice Principles Handbook for Community Benefit Funds GoI, 2021

- 5.3.13.1. Sets out guidelines and recommendations on how to comply with the Community Benefit Fund requirements contained in the RESS-1 T&Cs (i.e. the first suite of projects supported in RESS), with a view to ensuring that communities and developers work together to maximise the benefits of the funds to local communities living in proximity to RESS projects.

5.3.14. Ireland's 4th National Landscape Strategy for Ireland 2015-2025

- 5.3.14.1. This document has been developed in response to the European Landscape Convention, which establishes principles for protecting and enhancing the landscape while positively managing its change. Recognising the cultural, social, environmental and economic role played by landscape in the State, the NLS provides a high-level policy framework to achieve balance between the protection, management and planning. Central to the policy is the preparation of landscape character maps and landscape character assessment to inform and guide landscape policy, action plans and development plans.

5.3.15. The Onshore Wind Farm Sector in Ireland Planning in Harmony with Heritage (Heritage Council, 2013)

- 5.3.15.1. This research report examines the policy context for wind farm spatial planning in the State and elsewhere and provides recommendations to improve spatial planning policy formulation, implementation and monitoring in respect of heritage assets.

5.3.16. The Planning System and Flood Risk Management, 2009

- 5.3.16.1. These Guidelines seeks to avoid inappropriate development in areas at risk of flooding and avoid new developments increasing flood risk elsewhere. They advocate a sequential approach to risk assessment and a justification test.

5.4. Regional Policy

5.4.1. Regional Spatial & Economic Strategy – Southern Region 2020-2032

- 5.4.1.1. This document seeks to support the delivery of the programme for change set out in Project Ireland 2040, the National Planning Framework (NPF) and the National

Development Plan 2018-27 (NDP), and to ensure coordination between the City & County Development Plans and Local Enterprise & Community Plans. It seeks to facilitate the sustainable development of additional electricity generation capacity throughout the region and to support the sustainable expansion of the transmission network. The Regional Authority seeks to ensure that future strategies and plans for the development of renewable energy, and associated infrastructure, will promote the development of renewable energy resources in a sustainable manner.

5.4.1.2. Regional Policy Objectives (RPOs) of relevance are RPO 87 Low Carbon Energy Future, RPO 95 Sustainable Renewable Energy Generation, RPO 96 Integrating Renewable Energy Sources, RPO 98 Regional Renewable Energy Strategy, RPO 99 Renewable Wind Energy, RPO 219 New Energy Infrastructure, RPO 221 Renewable Energy Generation and Transmission Network, RPO 222 Electricity Infrastructure, and RPO 224 Delivery of Energy Networks.

5.4.2. **Other Relevant Guidelines**

5.4.2.1. Regard is also given to:

- EU Energy Directives and Roadmaps and associated national targets for renewable energy by sector.
- National Renewable Energy Action Plan 2010.
- Strategy for Renewable Energy 2012-2020.
- EU Guidance (2013) Wind Energy Developments and Natura 2000 Sites.
- Ireland's Transition to a Low Carbon Energy Future, DCENR, 2015-2030.
- Renewable Energy Policy and Development Framework. DCENR, 2016.
- Architectural Heritage Protection Guidelines for Planning Authorities, Department of Housing, Local Government and Heritage, 2011. (updated in 2022).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, (Department of Housing, Local Government and Heritage) (August 2018).
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2009).

5.5. Local Policy

5.5.1. Kilkenny City & County Development Plan 2021-2027

- 5.5.1.1. The Kilkenny City and County Development Plan 2021-2027 (hereafter referred to as the 2021-2027 DP) came into effect on the 15th October 2021 and is the operative plan for the basis of this appeal determination.

Chapter 2 - Climate Change

- 5.5.1.2. Aim: To provide a policy framework with objectives and actions in this City and County Development Plan to facilitate the transition to a low carbon and climate resilient County with an emphasis on reduction in energy demand and greenhouse gas emissions, through a combination of effective mitigation and adaptation responses to climate change. Objectives of note include:

- Strategic Objective 2B: To support the implementation of the National Climate Action Plan and the National Climate Action Charter for Local Authorities, and to facilitate measures which seek to reduce emissions of greenhouse gases by embedding appropriate policies within the Development Plan.
- Strategic Objective 2E: To ensure that the Development Plan transposes, supports and implements strategic objectives of the National Planning Framework and the Southern Regional Spatial and Economic Strategy to create an enabling local development framework that: (a) promotes and integrates important climate considerations in local development and the assessment of planning applications and (b) supports the practical implementation of national climate policy and targets to assist in the delivery of the national transition objective.

Chapter 4 - Core Strategy

- 5.5.1.3. Aim: To implement the provisions of the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES) and to promote the compact growth of Kilkenny City, Ferrybank/Belview (as part of WMASP), the District Towns, the other settlements in the hierarchy and to strengthen rural economies and communities through growth and development of rural areas

Chapter 7 - Rural Development

- 5.5.1.4. Aim: To manage rural change and guide development to strengthen the rural economy

and community through the network of towns and villages ensuring vibrant, sustainable and resilient rural areas whilst conserving and sustainably managing our environment and heritage. The chapter contains several policies, objectives and development management standards that seek to protect and promote rural development.

- 5.5.1.5. Section 7.7 (Diversification) notes that the diversification of the rural economy from mainstream farming can both supplement existing rural incomes and add to the richness of the rural area. In transitioning to a low carbon economy in line with Government policy, future diversification and adaptation to new energy technologies is seen as an important mechanism to achieve diversification. Renewable energy such as wind, solar and biomass will assist in the transition of the local economies of such areas.

Chapter 9 – Heritage, Culture and the Arts

- 5.5.1.6. Aim: To seek the protection and sustainable management of the arts, culture and heritage of Kilkenny for the benefit of current and future generations; to encourage the collection of knowledge to inform its protection; and to promote access to, awareness of and enjoyment of Heritage, Arts and Culture, to further develop the infrastructure and actively support engagement with communities. throughout Kilkenny. The chapter contains several policies, objectives and development management standards that seek to protect the landscape, views, biodiversity and cultural heritage and are relevant to the subject proposal.
- 5.5.1.7. Chapter 9 contains several policies, objectives and development management requirements that seek to protect the landscape, views, biodiversity and cultural heritage.
- 5.5.1.8. Section 9.2 Natural Heritage and Biodiversity:

Protected habitats and species designated for nature conservation

Relevant Development Management Requirements include:

- Ensure that an ecological impact assessment is carried out, by suitably qualified

professional(s), for any proposed development likely to have a significant impact on rare and threatened species including those species protected by law and their habitats. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.

Biodiversity Outside of Habitats Designated for Nature Conservation

Relevant Development Management Requirements include:

- To protect and where possible enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows and road verges, and to minimise the loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites.
- To ensure that appropriate mitigation and/or compensation measures to conserve biodiversity, landscape character and green infrastructure networks are required in developments where habitats are at risk or lost as part of a development.

Hedgerows

Relevant Development Management Requirements include:

- To protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character of the county, and to ensure that proper provision is made for their protection and management, when undertaking, approving or authorising development.
- To retain hedgerows, and other distinctive boundary treatment such as stone walls, when undertaking, authorising or approving development; where the loss of the existing boundary is unavoidable as part of development, to ensure that a new hedgerow is planted using native species, and species of local provenance to replace the existing hedgerow and/or that the wall is re-built using local stone and local vernacular design.
- To require the planting of native broadleaved species, and species of local provenance, in new developments as appropriate. See Appendix G for a list of native trees and shrubs.

Invasive Species

Relevant Development Management Requirements include:

- To require relevant development proposals to address the presence or absence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan where such a species exists to comply with the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011-2015.

Landscape

- 5.5.1.9. Landscape matters are dealt with in Section 9.2.12 of the CDP. It is noted that a Landscape Character Assessment was prepared for County Kilkenny in 2008, a supporting document of the Development Plan, titled Landscape Appraisal of County Kilkenny 2008-2016 (LACK). The LACK divides the county into four landscape character types (LCTs). LCTs are distinct types of landscape that are relatively homogenous in character and are generic in nature in that they may occur in different localities throughout the county, but share similar combinations of geology, topography, land cover and historical land use, for example, Upland Areas. LCTs are sub-divided into 14 geographically specific Landscape Character Areas and are identified in Figure 9.2 of the 2021-2027 DP. It is noted that proposed wind farm site is located within LCA A – Slieveardagh Hills (South).

Views and Prospects

- 5.5.1.10. The Council will preserve and support the improvement of places or areas from which views or prospects of special amenity value exist, as identified in Appendix H and on Figure 9.2.

Built Heritage: Archaeological and Architectural Heritage

- 5.5.1.11. Relevant objectives of the 2021-2027 DP in relation to archaeological heritage include:
- 9C: To protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater

archaeological remains.

Relevant Development Management Requirements include:

- To endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on archaeological heritage.
- To require archaeological assessment, surveys, test excavation and/or monitoring for planning applications in areas of archaeological importance if a development proposal is likely to impact upon in-situ archaeological monuments, their setting and archaeological remains.
- To ensure that development within the vicinity of a Recorded Monument is sited and designed appropriately so that it does not seriously detract from the setting of the feature or its zone of archaeological potential. Where upstanding remains of a Recorded Monument exist a visual impact assessment may be required to fully determine the effect of any proposed development.
- To safeguard the importance of significant archaeological landscapes from developments that would unduly sever or disrupt the relationship, connectivity and/or inter-visibility between sites.

5.5.1.12. In terms of architectural heritage, it is Council policy to ensure the protection of architectural heritage by including all structures considered to be of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest in the Record of Protected Structures.

5.5.1.13. Relevant Development Management Requirements include:

- To have regard to the Architectural Heritage Protection Guidelines²⁸ when assessing proposals for development affecting a protected structure and buildings listed in the NIAH.

5.5.1.14. Noting the proposed GCR is partly located within the centre of the settlement of

Freshford, relevant objectives of the 2021-2027 DP in relation to Architectural Conservation Areas (ACAs) include:

- 9J: To ensure the preservation of the special character of each ACA listed in this Plan (See Table 9.2 and Volume 2 Heritage Strategy) with particular regard to building scale, proportions, historical plot sizes, building lines, height, general land use, fenestration, signage, and other appendages such as electrical wiring, building materials, historic street furniture, paving and shopfronts..

Chapter 10 – Infrastructure and the Environment

- 5.5.1.15. Aim: To ensure a sufficient level of water services within the county for the implementation of the core strategy, provide a framework for the protection of the environment, including water quality, the avoidance of flood risk and the provision of a high-quality telecommunications infrastructure.

Noise control

- 5.5.1.16. Excessive noise and dust levels can have an adverse impact on the county's environment. The Council will seek to minimise noise through the planning process by ensuring that the design of future developments incorporate measures to prevent or mitigate the transmission of noise and vibration, where appropriate.

Flooding

- 5.5.1.17. It is Council policy to adopt a comprehensive risk-based planning approach to flood management to prevent or minimise future flood risk. In accordance with the Planning System and Flood Risk Management – Guidelines for Planning Authorities, the avoidance of development in areas where flood risk has been identified shall be the primary response.

- 5.5.1.18. Relevant Development Management Requirements include:

- Where flood risk may be an issue for any proposed development, a detailed flood risk assessment should be carried out appropriate to the scale and nature of the development and the risks arising. In particular, any area within or adjoining flood zone A or B, or flood risk area, shall be the subject of a site-specific Flood Risk Assessment appropriate to the type and scale of the

development being proposed. This shall be undertaken in accordance with the Planning System and Flood Risk Management – Guidelines and the Strategic Flood Risk Assessment accompanying this Plan.

Chapter 11 – Renewable Energy

5.5.1.19. Aim: To generate 100% of electricity demand for the County through renewables by 2030 by promoting and facilitating all forms of renewable energies and energy efficiency improvements in a sustainable manner as a response to climate change in suitable locations having due regard to natural and built heritage, biodiversity and residential amenities. The chapter contains several policies, objectives and development management standards that seek to promote renewable energy, including:

- Objective 11A: To support and facilitate the provision of energy in accordance with Ireland's transition to a low carbon energy future by means of the maintenance and upgrading of electricity and gas network grid infrastructure and by integrating renewable energy sources and ensuring our national and regional energy system remains safe, secure and ready to meet increased demand as the regional economy grows over the period of the plan.

5.5.1.20. As per Section 11.5.1 (Current Status and Targets) of the 2021-2027 DP, Kilkenny currently has approx. 76 MW of installed wind energy, generated by 39 turbines in 8 windfarms. On 15th October 2021, the Minister of State at the Department of the Housing, Local Government and Heritage, consequent to a recommendation made to him by the Office of the Planning Regulator under section 31AM(8) of the Planning and Development Act 2000 (as amended), notified Kilkenny County Council of his intention to issue a Direction to the 2021-2027 DP. In accordance with Section 31(4) of the Planning and Development Act 2000, those parts of the 2021-2027 DP referred to in the notice shall be taken not to have not come into effect, been made or amended; namely, Chapter 11, Renewable Energy:

- Section 11.4: Kilkenny Targets,
- Section 11.5.1: Current status and targets, and,
- Figure 11.4: Wind Strategy areas

5.5.1.21. I note that there has been no further update on the ministerial direction at the time of writing this report. The Commission will note that the 2021-2027 DP designated the subject site as both “Acceptable in Principle” (northern portion) and “Open for Consideration” (southern portion) for wind energy developments.

5.5.1.22. **Relevant Appendices to the 2021-2027 DP include:**

- G - List of Native Trees & Shrubs (City and County),
- H - Protected Views and Prospects (County only, City in text),
- I - Record of Protected Structures (County only), and,
- K - Wind Energy Development Strategy (City and County).

5.6. Kilkenny County Council Local Authority Climate Action Plan, 2024-2029

5.6.1. The Kilkenny County Council Climate Action Plan (2024-2029) sets out the actions that Kilkenny County Council will take over the next 5 years to address climate change. In particular it focuses on how the Council will reduce greenhouse gas emissions and energy use across its own buildings, fleet and assets. It also addresses how the Council will influence, facilitate and support the community, businesses, and other sectors in the county to take climate action.

5.7. Natural Heritage Designations

5.7.1. Two (2) no. European sites were identified as being located within the proposed development’s Likely Zone of Influence (Zol), and include the:

- River Barrow and River Nore SAC [002162], and,
- River Nore SPA [004233].

The River Barrow and River Nore SAC is located c. 5.7km downstream of the proposed wind farm and is hydrologically linked to it via watercourses which drain the site. The proposed GCR is also positioned immediately inside the boundary of the SAC and the GCR crosses both the River Barrow and River Nore SAC and the River Nore SPA via HDD at a location 620m north of Ballyragget Bridge.

5.7.2. It is noted that no National Heritage Areas (NHA) occur within the proposed development’s Zol. In terms of Proposed Natural Heritage Areas (pNHA), the following have been identified as being located within the proposed development’s Zol:

- Inchbeg pNHA [000836], and,

- River Nore/Abbeyleix Woods Complex [002076].

6. The Appeal

6.1. Grounds of Appeal

- 6.1.1. A First Party appeal has been prepared by MKO on behalf of the Applicant. The report by MKO sets out the Applicant's Grounds of Appeal (GOA) against the reasons for refusal given by Planning Authority and provides a response to the Third Party and Statutory Consultee submissions. The report also highlights the Commission's legal obligations under the Climate Action and Low Carbon Development Act 2015 (as amended) and the Planning and Development Act 2000 (as amended) in assessing renewable wind energy projects. The report provides its background context, an overview of the proposed development and the planning policy that is relevant to the proposal and the overall rationale/need for the proposed development. Included as appendices to the First Party appeal are:
- Appendix 1 - KCC Notification of Decision to Refuse Permission,
 - Appendix 2 - Response by Hydro-Environmental Services, and,
 - Appendix 3 - Response by AWN Consulting Ltd.

- 6.1.2. The Applicant's appeal submission is summarised in under the following headings:

Reasons for Refusal

Refusal Reason 1

- 6.1.3. The first reason for refusal relates to the potential for excessive levels of adverse effects on residential amenity in the immediately surrounding area, specifically relating to visual impacts, noise, shadow flicker and disturbance of access. Where the Planner refers to the "cumulative impacts of effects", it is assumed that this relates to interaction or combination of effects under the headings referred to above. It is reiterated that all non-involved properties are located at a minimum of 740m from any proposed turbine, i.e., 4 times the tip height of 185m (specifically set out draft WEDG 2019) for the purposes of protecting visual amenity.
- 6.1.4. In terms of 'visual intrusion'. It is noted that the LVIA addresses the impact of the proposed development on residential visual amenity, including the settlement clusters

of Tullaroan, Kilmanagh, and Ballycallan. For effects on locally sensitive receptors such as residential properties, mitigation measures can be implemented, contrary to what is stated in Refusal Reason 1. Mitigation for visual effects for wind energy development is achieved through design interventions during the iterative design process which is relevant in the case of the subject proposal. The LVIA sets out many factors which were considered in the impact assessment of residential visual amenity, including:

- Population density,
- The orientation of properties and the nature and scenic quality of views from residences;
- Landscape characteristics influencing actual visibility on the ground.
- Elevation relative to local receptors.

Following an assessment of photomontages, it is contended that the proposed development will not cause any 'Significant' residual visual effects on the residential amenities in Kilmanagh, Tullaroan and Ballycallan. 'Moderate' residual visual effects were recorded in consideration of the various factors, the specific design interventions and most notably that the project design has met the mitigation requirements explicitly set out for residential visual amenity (4 x tip height set back distance) in benchmark best practice guidance.

- 6.1.5. In terms of cumulative visual impacts, it is stated that the cumulative assessments in Chapter 13 of the EIAR addresses all potential cumulative scenarios with other existing, permitted and proposed wind energy developments in an LVIA Study Area out to 20km. The key potential for cumulative effects occurred in relation to several existing and permitted developments within 10km to the west, in the marginal uplands of the Slieveardagh Hills. There is physical and visual separation between the proposed wind farm and these other developments. Due to landform characteristics and set back distances, it is determined that no significant and unacceptable surrounding effects will occur for receptors located between these developments and the proposed development. The greatest cumulative visual effects occur from receptors located at elevated vantage points immediately east of the site where in combination views occur, as shown in Photomontage Viewpoints - 8, 9 and 10 and will only occur for a small spatial area to the east of the proposed turbines, representative

of a small number of residential receptors.

- 6.1.6. For concerns raised with respect to 'shadow flicker', of the 164 no. properties modelled; it is predicted that 41 no. Sensitive Properties may experience shadow flicker levels that exceeds the 2006 WEDGs thresholds of 30 minutes per day or 30 hours per year. However, this prediction does not consider wind direction or screening provided by intervening vegetation and local topography. Where shadow flicker exceedances are experienced, suitable mitigation measures will be employed at the potentially affected properties to ensure that the limits set out in the WEDG 2006 are not exceeded at any dwelling within the Shadow Flicker Study Area. These mitigation measures include the installation of screening measures following agreement with the relevant property owner or the implementation of wind turbine control measures (Supervisory Control and Data Acquisition (SCADA) system).
- 6.1.7. In terms of 'noise' impacts, it is stated that the background noise environment was established through noise monitoring surveys undertaken at 6 no. noise sensitive locations (NSLs) surrounding the proposed wind farm site. All NSLs considered as part of the noise impact assessment are shown on a figure in Appendix 3 (Response by AWN Consulting Ltd.) of this appeal submission. The results of the background noise survey have been used to derive appropriate noise criteria for the development in line with the guidance contained in 2006 WEDGs. Subject to good working practice and mitigation measures as recommended in the EIAR (Chapter 12), it is not expected that there will be any significant noise and vibration impacts associated with the construction phase and the likely noise effects from construction activity at the nearest NSLs will be brief to short-term in duration. A turbine noise prediction model was prepared for the proposed wind farm. It is stated that the assessment has confirmed that, once the appropriate mitigation measures are implemented, the residual turbine noise levels will be within the best practice noise criteria curves recommended in the 2006 WEDGs and no significant effects are expected to arise.
- 6.1.8. On the issue of 'disturbance of access', it is acknowledged that there will be a temporary, slight to moderate negative effect on local traffic during the construction phase of the proposed wind farm due to the increase in traffic volumes utilising the local road network around the site. It is not anticipated that any section of the public

road network will be closed during transport of turbine components. However, there will be some delays to local traffic at pinch points and during these periods it may be necessary to operate local diversions for through traffic. All deliveries comprising abnormally large loads where required will be made outside the normal peak traffic periods, usually at night, to avoid disruption to work and school-related traffic. In terms of the proposed grid connection, its construction along the public road network will require a combination of traffic management measures including single-lane and full road closures. Road closures will be required at various points along the route on c. 201 of the c. 230 day construction period with the longest diversion incurred being a maximum of 6.9kms. It is stated that access for local residents and landowners into and out of the sections of the public road network that are subject to full road closures will be maintained at all times. It is also noted that a Traffic Management Plan (TMP) incorporating all the mitigation measures is included as Appendix 15-2 of the EIAR and will be finalised prior to the commencement of development.

Refusal Reason 2

6.1.9. The second reason for refusal raises concerns regarding the quantity and adequacy of the data presented within the EIAR, the assessment of cumulative effects, the assessment of residential amenity the EIAR's compliance with the relevant statutory requirements. This reason for refusal is refuted and it is submitted that:

- The EIAR, as a whole, does comply with statutory ELA requirements,
- There are no significant deficiencies in the quantum and quality of data provided in the following assessments within the EIAR:
 - o Landscape and Visual,
 - o Material Assets,
 - o Noise,
 - o Ecology (Biodiversity and Ornithology),
 - o Hydrology
- Sufficient detail has been provided on the matter of cumulative effects within the EIAR, and,
- Sufficient detail has been provided in relation to the potential for effects on residential amenity EIAR.

6.1.10. In terms of 'compliance' with the EIA requirements, it is stated that a detailed and

comprehensive description of the proposed development components and design site activities, process and methodologies during the construction, operation and decommissioning are included in Chapter 4 of the EIAR and its associated Appendices. Furthermore, it is confirmed that all of the information required in Annex IV of Directive 2014/52/EU, where it is relevant to the characteristics of the proposed development (a renewable energy development), is provided in the EIAR.

6.1.11. In terms of the 'quantum and quality of data provided', it is submitted that each of the impact assessment chapters within the EIAR (Chapters 5 to 16) have been prepared in accordance with EIA legislation and guidance, as well as the relevant best-practice legislation and guidance relevant to each particular discipline. Each of these chapters includes a section dedicated to listing the relevant legislation and guidance followed in the preparation and undertaking of the desktop study, field survey and baseline data collection methodologies, modelling and impact assessment methodologies.

6.1.12. On the issue of 'cumulative effects' it is contended that a comprehensive and robust assessment of the potential cumulative effects, when considering the proposed development with all other existing, permitted and proposed developments and other land uses, within defined study areas has been included in Chapters 5 to 15 of the EIAR. A detailed description of the cumulative impact assessment methodology is included in Chapter 2 of the EIAR. In addition, the cumulative impact assessments carried out in each of the impact assessment chapters of this EIAR consider all potential significant cumulative effects arising from all land uses in the vicinity of the proposed development. These include proposed, permitted and existing wind farms in the area, solar farms, energy storage, ongoing agricultural practices/forestry practices, quarries and extractive industries, intensive production/ processing industries, large infrastructure projects and other EIAR projects.

Refusal Reason 3

6.1.13. In response to the Planning Authority's concerns, it is contended that the NIS submitted with the planning application, including comprehensive surveys of the site undertaken by qualified ecologists across a range of dates in 2023 and 2024 covering February, March, April, June, July and August. During these surveys, comprehensive

information on the baseline environment was collected and is considered to be more than adequate to inform the NIS and undertake a robust assessment of all potential adverse effects on European Sites. The response to each of the points raised in Refusal Reason No. 3, is detailed in the below table.

Table: Response to Refusal Reason 3

Issue	Applicant Response
Otter surveys carried out outside of the optimum season	Comprehensive otter surveys were undertaken throughout 2023 and 2024 and were undertaken in full accordance with best practice guidance (NRA, 2009, CIEEM 2013) by professional ecologists. The comprehensive survey effort, which spanned a range of months, was more than adequate to inform a robust NIS, identifying all potential effects on otter. As a result, the NIS included appropriate mitigation measures for the protection of otter and to ensure that there will be no residual effects on this species and no potential for adverse effects on the River Barrow and River Nore SAC in light of its conservation objectives.
Botanical surveys results accuracy and completeness	The habitat and botanical surveys undertaken to inform the NIS were comprehensive, complete and fully sufficient to undertake a complete assessment of all potential effects on Qualifying Interest (QI) habitats associated with the River Barrow and River Nore SAC. MKO is satisfied that all habitats recorded were accurately identified. The majority of the proposed wind farm infrastructure and the proposed grid connection 38kV substation is located within grassland habitats classified as Improved agricultural grassland (GAI) and Wet grassland (GS4). The majority of the Proposed GCR will be laid within the existing road infrastructure classified as Buildings and artificial surfaces (BL3). It is stated that habitats within the site were accurately identified and the data collected allowed for a thorough assessment of the potential for adverse effects on the integrity of the River Barrow and River Nore SAC in light of its conservation objectives.
Comprehensive information on all watercourses within the Proposed Project site that have hydrological connectivity to downstream European sites, and assessment of potential effects with particular regard to cumulative effects and interactions with various construction stages and works areas across the proposed site	A full aquatic baseline report was provided as Appendix 5 of the NIS submitted with the planning application which describes the extensive aquatic assessments, including river habitat and fisheries habitat appraisals, electrofishing surveys, macroinvertebrate surveys and eDNA surveys, that were undertaken to inform the NIS. It is stated that comprehensive information on the watercourses within the proposed development site that have hydrological connectivity to downstream European Sites was provided in the NIS and its appendices. A comprehensive assessment of the potential for adverse effects, including cumulative effects, on European Sites during all stages of the proposed project was undertaken as fully detailed in the NIS which accompanied the planning application and allowed for the prescription of appropriate mitigation for the protection of water quality.
Clear rationale for the selection for "target" bird species and exclusion of other SCI species that were recorded within the Proposed Project site	Following a comprehensive desk study, initial site visits and consultation, a list of "target species" likely to occur in the Zol of the Proposed Project was compiled and the rationale for "target" bird species is detailed in Chapter 7 of the EIAR (Appendix 3 of the NIS). Although all species were recorded, particular attention was paid during surveying to species of conservation concern that are particularly susceptible to impact from this type of development. This practice follows the recommendations of NatureScot (SNH, 2017). As noted, for the purposes of Appropriate Assessment, the only relevant

	SCI species is kingfisher (River Nore SPA). Clear rationale for the inclusion of the River Nore SPA and the exclusion of any other SPAs is provided in the NIS and appended Chapter 7 (Birds) of the EIAR.
Consideration of SCI species considered for assessment of potential effects in the NIS	A thorough and complete assessment of all potential effects on kingfisher was undertaken within the NIS and is detailed in Sections 4.1, 5.1.2 and Section 6.2.1 of the NIS.
Inadequate collision risk assessment for SCI species	Kingfisher, the only SCI species of SPAs for which potential for likely significant effects was identified, was not recorded flying at the potential collision height during the two years of vantage point surveying, and therefore no collision risk assessment was required for this species. No significant collision risk effect on the Kingfisher population associated with the SPA are predicted. A collision risk assessment was undertaken for all target species recorded flying at the potential collision height during vantage point surveys, the results and methodology of which are presented in Appendix 7- 5 of the EIAR.
Insufficient assessment for birds in the NIS supplemented with relevant scientific literature regarding the migratory pathways of species recorded	A thorough assessment of all potential effects on kingfisher, including reference to scientific literature, is provided in the NIS and Chapter 7 (Sections 7.4.1.1, 7.4.3, 7.5.2.1) of the EIAR. No potential for adverse effects on this species were identified and the conclusions of both the NIS and EIAR in relation to Kingfisher are robust and accurate.
Insufficient information regarding the relationship between required works for the proposed grid connection and intersecting European sites to support statements made regarding absence of potential for direct effects	The Proposed GCR works are located outside of any European Site, apart from where the route intersects with the River Barrow and River Nore SAC and the River Nore SPA at the location of the proposed crossing of the River Nore. This crossing will be undertaken via HDD beneath the river. All works were considered in full when assessing the potential for direct effects on the above European Sites and given the nature of these works, the absence of instream works, and the absence of Kingfisher nesting habitat there is no potential for direct adverse effects on either the River Barrow and River Nore SAC or the River Nore SPA. As such, the conclusion of the NIS submitted with the planning application is entirely valid.
Sufficiency and implementation of mitigation	In order to block any pathways for adverse effects appropriate and robust mitigation measures were prescribed within the NIS and will be implemented in full. The mitigation measures in relation to protection of water quality (detailed in Sections 6.2.1.2, 6.2.1.3 and 6.2.1.4 of the NIS and also within Sections 9.5.2 and 9.5.3 of Chapter 9 'Hydrology and Hydrogeology', of the EIAR which was included as Appendix 4 to the NIS) and in relation to disturbance of otter (detailed in Section 6.2.2 of the NIS) are considered more than sufficient to ensure that there will be no adverse effects on the integrity of any European Site in light of its conservation objectives. The assessment, undertaken by qualified ecologists, and the subsequent prescription of mitigation measures was based on best scientific knowledge was fully in line with best practice guidelines. The CEMP identifies the key environmental considerations (including those outlined within the NIS and EIAR) that must be adhered to and delivered during construction of the proposed project. The Contractor, appointed by the Project Developer, will be required to implement all of the requirements set out within the CEMP, NIS and EIAR. This specifies that an Environmental Clerk of Works (ECOW) will be appointed by the Project Developer to oversee the Project Contractor's effective implementation of the Proposed Project's environmental requirements and obligations detailed in the CEMP, NIS and EIAR. In addition, a Project Hydrologist will also be appointed to support the ECOW in monitoring and auditing the effective

	implementation of the detailed drainage design to ensure that there will be no significant effects on water quality.

Response to Submissions

6.1.14. Section 4 of the First Party appeal seeks to resolve any concerns raised within the Third Party submissions on file. The submission provides a response to Third Party observations, grouped by theme, followed by an analysis of individual submissions received from Prescribed Bodies. An outline of the issues raised, and a summary of the Applicant's response to same is provided in Appendix 3 of this report.

6.2. Planning Authority Response

6.2.1. A response to the First Party appeal was received dated 23rd April 2025. The issues raised are summarised as follows:

- Notwithstanding the Applicant's assertions, the Planning Authority considers that the cumulative effects of the proposed development on its own will impose an unreasonable and disproportionate environmental loading on the character of this rural area with a locally concentrated population due principally to the combined effect of potential visibility and noise, as well as flicker and disruption of material assets, especially roads, during a prolonged period.
- It is indicated that Figure 11.4 'Wind Strategy Areas' of the current development plan has not come into effect following a ministerial direction.
- The Planning Authority note that the appeal submission makes little or no reference to the Architectural Conservation Officers comments concerning the historic bridges along the GCR, and the crossing of same. Works to these bridges have the potential to impact their character and it is contended that directional drilling under the water course can avoid such impacts and is the preferred approach.
- Concern over visual impacts of the wind turbines as the background to Kilmanagh Village remains.
- It is noted that there is no significant additional information in respect of roads and traffic provided by the applicant to address the concerns and observations raised in the Road Design Office report.
- It is the view of the Planning Authority that there will be abnormal weight and sized loads both on the national and non-national road networks and that

assessments of structures on the road network are expected to be required as part of the Abnormal Load Permit process subject to the dimensions and weights of these loads.

- A requirement of Planning Authority that the depth of cover to the Transmission HV cable duct(s) should be no less than 950mm to top of cable unless. It is stated that this minimum depth requirement of 950mm shall apply to all associated grid connection service ducting included telecommunications and ECC (Earth Continuity Conductor) ducts.

6.3. Observations

- 6.3.1. A total of 68 no. observations were submitted concerning the First Party appeal. These observations encompassed a broad spectrum of issues, many of which presented varying degrees of overlap. Submissions were received from the following parties:

Table: Third Party Submissions

1. Holly Tolbert	2. Clinton Tolbert	3. Deirdre Foley	4. Anthony O'Dea and Clare Mahon	5. Wayne Ronan
6. Eugene Foley	7. Alan and Laura Trayer	8. Norah Doheny	9. Brendan Doheny	10. Catherine and Micheal Burke
11. Graigue Ballycallan GAA Club Tom Ryall Park	12. Eamonn Dunne, Brigid Keating and Caragh Keating	13. Denis Butler	14. Mary Murphy East	15. Brendan Roberts
16. Dr. Ingelise Stuijts	17. Vincent O'Dea	18. Phil Holland	19. Sohail Khan	20. Grant Peters
21. Nicola and Damian Cleere	22. Vera Butler	23. Niall Egan	24. Johanna Brennan	25. Chris Doheny
26. Eddie & Olivia Brennan	27. Conor Brennan	28. Sean & Margie Walsh	29. KBT Responsible Energy c/o Shane Lynch	30. Michael Egan
31. Caroline Trayer	32. Tom & Nora Hogan	33. Jonathan & Louise O'Neill	34. Richard Delaney	35. Jesse Roberts
36. Kevin & Claire Cleere	37. John Joe Hennessy	38. Pat Brennan	39. Sharon Trayer	40. Vinny & Teresa Corcoran
41. Bernie Young	42. Linda Hayes	43. Sarah & Eoin Reilly	44. Colum Prendiville	45. Marieann Cleere
46. Deirdre Prendiville	47. Edward Fennelly	48. Nicky Butler	49. John Teehan	50. Thomas Ryan
51. Gearoid Cleere	52. Alice Walter	53. Gee Walter	54. Con Sheehan	55. Assumpta O'Brien

56. Warren and Norah Deacon	57. Noel Brett	58. Patricia Teehan	59. Shane and Lisa Lynch	60. Paul and Nicola Doheny
61. Diarmuid Burke	62. Frank Keoghan	63. Eoghan Doheny	64. Thomas Comerford	65. St Brigid's Camogie Club
66. Kilkenny West Group Water Scheme Cooperative Society	67. Mary Brennan	68. Pat Brennan		

6.3.2. It is noted that a detailed submission has been received by Kilmanagh Ballycallan Tullaroan (KBT) Responsible Energy. This submission included the following appendices:

- Appendix 1 – Grosvenor Consultancy Review of First Party Appeal.
- Appendix 2 – Hydro-G Review of First Party Appeal.
- Appendix 3 – Mr Roger Goodwillie Review of First Party Appeal.
- Appendix 4 – Enerco Energy/ MKO Briskalagh Biodiversity Poster

In an effort to provide clarity, the issues raised within the observations have been categorised under the following headings and a full summary of the issues raised has been included in Appendix 4 of this Report.

- ***Principle of Development*** – Existing wind farms in the locality position the local community at the forefront of Ireland's energy transition, inappropriate siting of met mast and erection of unauthorised temporary met mast structure.
- ***Planning Policy*** - Failure to comply with the 2021-2027 DP, including its wind energy development strategy, the proposed development represents a material contravention of the 2021-2027 DP and is in conflict with Ireland's National Planning Framework and Climate Action Plan, EU law under the Habitats and Water Framework Directives, contravenes the European Landscape Convention by failing to protect landscape as lived cultural space and undermines public participation principles under the Aarhus Convention.
- ***Application Deficiencies*** - Incomplete noise and health assessments, no amplitude modulation or infrasound modeling, visual impact photomontages taken from unrepresentative locations, hydrology chapter lacking flood pathway and groundwater modelling despite known vulnerabilities, cumulative impact chapters fail to assess real world combined effects with existing and permitted

wind farms, concerns regarding the intention to select turbines through a competitive tender process and deficiencies in the application documentation which should render the application invalid.

- **Consultation** - The local community has been misrepresented, omitted or overlooked, the Grounds of Appeal document (GOA) fails to demonstrate any meaningful, proactive engagement with the community and concerns associated with the systematic omission and minimisation of Kilmanagh village within the assessments.
- **Alternatives and Cumulative Impacts** – Concerns regarding the lack of alternatives to a 23km of grid connection, unsuitability of site given the location of residences, different turbine size options have not been properly assessed in the EIAR with regard to viable alternatives and cumulative impacts in terms of shadow flicker, noise and visual impact.
- **Procedural Matters** – Misrepresentation of the company structure and ownership and concerns in relation to compliance, enforcement and liability and failure of the Applicant to address omissions in application. The case of Meenbog was raised as it is owned by Planree Ltd., an associated company of Enerco Energy Ltd.
- **Impact on Property Values** - Concerns regarding Applicant's reliance on outdated foreign studies irrelevant to this context and the potential loss in value of existing properties poses an unfair economic impact on those who have invested in their homes for its tranquility and natural beauty.
- **Population and Human Health** – Applicant's failure to address judicial precedent (Justice Egan ruling) rebutting community's health-based evidence, shadow flicker impacts, electromagnetic fields and its impact on human health, noise impacts, additional traffic generation in close proximity to the village of Kilmanagh, impacts on local GAA pitches in terms of the generation of noise pollution and visual distraction by shadow flicker, health and safety related concerns (including structural failure and ice throw in winter), contribution of the development to rural decline, failure to identify and assess schools in the vicinity, industrial intrusion, impacts to the health and well-being of children through increased levels of dust, vehicle exhaust particulates and carbon monoxide created by development traffic, including those children who present

with sensory difficulties and land use and equine industry impacts.

- **Separation Distances** – Failure of the turbine spacing to comply with the WEDG 2006, insufficient turbine separation distances resulting in excessive wear and tear, turbulence within the wind farm, reduced power output, increased acoustic emissions, ultimately exacerbating noise issues over time.
- **Visual Impact** – concerns regarding the accuracy and transparency of the visual assessment and view point selection, lack of meaningful engagement with residents has further eroded confidence in the completeness and reliability of the LVIA, concerns regarding the Applicant's dismissal of the community photomontages, the proposed development will significantly alter the visual character of the community, will dominate views will create an industrial aesthetic that is out of place in a rural area and the failure of the Applicant to adequately assess the cumulative effect on the character of the existing landscape.
- **Hydrological and Hydrogeological Impacts** - The proposed development area lies within zones of high to extreme groundwater vulnerability, with particularly sensitive areas mapped for turbine installation, spoil management, and borrow pits, significant concerns raised regarding the potential for ground and surface water pollution events and its potential impact on drinking water supplies, concerns regarding the inadequacy of the onsite investigations to inform the Applicant's reports, inadequacy of the proposed mitigation measures and the level of detail on the submitted plans and particulars, dewatering impacts, flood related concerns including the absence of a hydraulic assessment, the exacerbation of existing flood issues which would render the local GAA pitches unusable and impact on the ability of emergency services to access existing businesses, unauthorised alterations to the riverbank within the site and its failure to be considered in the Applicant's assessments.
- **Biodiversity Impacts (excluding birds)** – Impacts to Plants/Trees, Fish/Aquatic, Mammals (otters and badgers), Bats, Amphibians/Reptiles and the overall adequacy of the assessment and survey effort. Lack of alternatives to avoid crossing the River Nore and failure of the EIAR and NIS to be compliant with EU Law (Habitats Directive) and it is highlighted that critical data gaps and errors, along with new errors have been identified within the appeal.

- ***Ornithology*** - unacceptable risk to Kestrel, lack of assessment for Snipe, Buzzard, Sparrowhawk, inadequate reference to red-listed Lapwing, deficiencies in methodology to identify target species and collision risk assessments, omitting certain bird species, only Kingfisher assessed in NIS, no full data set of SCI species recorded, missing relevant literature regarding migratory pathways, no night surveys/Owl sightings despite being known to be present on site, submissions confirming that Hen Harriers have been sighted in the area, lacunae in various reports and it is not considered to be compliant with the CJEU C-258/11 case and questions over the reliability of the ornithological results as PIE poster and community information on bird identifications on site that are not included in final reporting and supporting information.
- ***Traffic and Transport Related Impacts*** - Excessive grid routes which have not been adequately addressed in the appeal, construction phase impacts on local roads over a long period that cannot accommodate the proposed development, significant road widening requirement, tree felling and upgrading required to meet the requirements for construction traffic, GCR will have significant impacts on local population, impacts of haul route on local schools and the impact of the proposed GCR on bridges, Uisce Eireann infrastructure and the architectural and archaeological heritage of the area.
- ***Telecommunications*** - Concerns raised regarding the impact of the proposed development on broadband, mobile and TV connectivity and reception.
- ***Cultural Heritage Impacts*** – Impact of the turbines on St. Aidan’s Church and Kilmanagh Creamery which have not been appropriately addressed, the assessment does not take account of real-life visibility or cumulative impacts with other wind farms, sub-surface archaeology impacts and inadequacy of the applicant’s assessment (i.e. need for LIDAR and geo-physical surveys), impact of the proposed GCR on historic bridges and presence of historic weir on wind farm site noted.

6.4. Further Responses

None.

7. Further Information Request

7.1. Introduction

- 7.1.1. On the 15th July 2025, the Commission issued a further information request to the Applicant requiring the submission of further information as detailed below.

7.2. Summary of Request

7.2.1. Biodiversity

1. Requirement to submit an updated AA Screening Report and NIS which had regard to the changes to the SSCO for the River Barrow and River Nore SAC, as published on 6th June 2025.
2. Submission of a revised NIS which includes details of Otter activity within all aspects of the proposed development (wind farm site, grid connection etc) and a detailed description of the survey methodology for this QI species to determine its adequacy.
3. The submission of a revised NIS which includes the provision baseline noise conditions at the location of the underground cabling works at the crossing of the River Nore SPA [004233], the noise/vibration levels associated with HDD, timing and duration of works etc. Also required to clearly outline the survey methodology adopted for Kingfisher along this section of the River Nore to determine its adequacy.
4. Submission of a detailed site layout plan for the crossing of the River Nore where HDD is proposed and a similarly detailed layout plan for all other locations where HDD is proposed along the grid connection route.
5. Submission of an indicative landscape plan and section diagram for the proposed riparian buffer along the Tullaroan Stream.
6. Submission of a site-specific plan and section diagram of the bridge crossing over the Tullaroan Stream between T6 and T7.
7. The extent of hedgerow and tree loss across the site appeared to be underreported given the extent of new access tracks proposed. The Applicant was therefore requested to respond to this issue. Should further hedgerow removal/tree loss be required, this was to be clearly identified, and the extent of habitat loss should be updated within EIAR accordingly. In addition, the Applicant's Bat Survey Report (Appendix 6-2) should be updated to have regard

to the additional hedgerow removal/tree loss on site, if required.

8. The Applicant was requested to satisfy themselves that they could comply with the updated guidance from the DHLGH on Regulation 54 derogation process for protected species listed on Annex IV (Applications for Regulation 54 Derogations for Annex IV species, Guidance for Applicants, Version 1.0, 1 July 2025).
9. Provision of a response to concerns regarding the potential impact of the works to bridges along the GCR on roosting bats and whether a derogation may be required.
10. Provision of a rationale for the exclusion of amphibians or reptiles as KERs within the EIAR.
11. Submission of a restoration plan (plan and section diagrams) for the proposed borrow pit.

7.2.2. Noise

1. Submission of updated cumulative noise impacts associated with the construction phase.
2. Submission of omni-directional noise predictions for each NSL in tabular format for the proposed development only.
3. Submission of predicted cumulative omni-directional turbine noise levels for each NSL in tabular format.
4. Clarify the discrepancies on the e predicted cumulative noise level contours at 9m/s wind speed (i.e. Appendix A of Appendix 3 of the First Party Appeal prepared by AWN Consulting).

7.2.3. Hydrology and Hydrogeology

1. Submission of a robust rationale for the adequacy of the trial pits provided across the site.
2. Noting the location of the proposed borrow pit relative to a regionally important gravel aquifer, the Applicant was requested to establish the impacts of such an excavation on the potential to impact surface water and groundwater flows in the area.
3. The Applicant was requested to undertake further site investigations proximate

to the location of T7.

4. The provision of an assessment pertaining to all potential impacts on surface waters flows and/or groundwater flows as a result of dewatering associated within the excavations for the turbine foundations.
5. Submission of an updated Flood Risk Assessment (FRA) which includes detailed site-specific hydraulic modelling of the Tullaroan Stream which should examine the potential impact on the existing floodplain or on flood risk elsewhere downstream.

7.2.4. Roads and Traffic

1. The Applicant was requested to demonstrate that the surrounding local road network can adequately cater for the additional traffic generated during the construction phase of the proposed development.
2. The Applicant was requested to consider whether full road closures along the GCR can be avoided or significantly minimised given that work zones will typically vary from 100m to 200m in length. Where diversions cannot be avoided, the Applicant was requested demonstrate that the indicative diversion routes can adequately cater for two-way traffic.
3. During the proposed road closures and diversions within Section Nos. 1 and 2 (Table 15-29) of the proposed GCR, the Applicant was requested to clarify how construction access to the site via the L5024 is to be maintained and demonstrate that the indicative diversion routes can adequately cater to the volumes of construction traffic during this period (i.e. 58 no. days).
4. Provide clarity regarding no. of 2-way PCUs/day as detailed in Table 15-9 (Trip generation - Stage 1 – Site preparation and groundworks – total movements and volumes per delivery day – Proposed Wind Farm) of the EIAR.
5. Submission of a proposed boundary treatment plan/elevation for the northern site access off the L5024.

7.2.5. Cultural Heritage

1. The Applicant was requested to clarify discrepancies regarding the methods proposed for each river crossing.
2. The Applicant was requested to address the Planning Authority's Conservation

Officer concerns regarding the potential impact of the GCR works on the various historic bridges along the proposed grid connection route and put forward proposals for HDD at bridges both included on the Record of Protected Structures (RPS Ref. C886) (WC6) and the National Inventory of Architectural Heritage (NIAH Ref. Reg. 12305031 (C886) and 12305012 (New Bridge) (WC5)) located within the urban centre of Freshford.

7.2.6. Landscape and Visual Assessment

1. Clarify whether a 20km study area has been adopted for the purposes of the LVIA.

7.2.7. General

1. In terms of the consideration of alternatives (Chapter 3 - Consideration of Reasonable Alternatives of the EIAR), the Applicant was requested to provide a rationale for the identification of Ballyragget 110kV substation as the optimum connection node for the proposed development.
2. The Applicant was requested to outline why 'Proposed Grid Connection Underground Cabling Route Option No. 1' was discounted despite this route being adopted for the permitted Farranrory grid connection route (Kilkenny CC Pl. Ref. 21/627). In addition, they were requested to consider further the cumulative impact of the proposed GCR from a traffic and transportation perspective given a number of the indicative diversion routes (Section Nos. 5 & 6 (Table 15-29 of the EIAR)) for the proposed GCR overlap with the permitted GCR (Kilkenny CC Pl. Ref. 21/627) serving the Farranrory Wind Farm (Tipperary CC Pl. Ref. 20/972).
3. Provide a summary of all amendments to the EIAR, NIS and other supporting information.
4. Provide a response to any issues raised in the Third Party observations to the appeal.

7.3. **Applicant's Response**

- 7.3.1. The applicant responded to the Commission's further information request on the 28th October 2025. In addition to a further information response (FIR) Report, the following

appendices were enclosed:

- Appendix 1 – An Coimisiún Pleanála FIR,
- Appendix 2 – Additional and Amended Plans and Detailed Drawings,
- Appendix 3 – Revised Natura Impact Statement,
- Appendix 4 – Revised Bat Survey Report,
- Appendix 5 – Baseline Environmental Noise Survey at Ballyragget,
- Appendix 6 – Predicted Omni-Directional Noise Levels,
- Appendix 7 – Predicted Cumulative Omni-Directional Noise Levels,
- Appendix 8 – Response by Hydro-Environmental Service, and,
- Appendix 9 – Detailed Site-Specific Hydraulic Modelling.

A summary of the Applicant's FIR is included below.

7.3.2. Biodiversity

1. The Applicant submitted a Revised NIS which has considered the changes to the SSCOs for the River Barrow and River Nore SAC, specifically the removal of Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*) [1990] and inclusion of Reefs [1170] as Qualifying Interests (QI) of this SAC. In addition, updates to the conservation objectives for Freshwater Pearl Mussel (*Margaritifera margaritifera*), Estuaries [1130] and Mudflats and sandflats not covered by seawater at low tide [1140] have been captured.
2. Potential effects on Otter are assessed in the Revised NIS, included as Appendix 3 of the FIR. It is noted that the survey methodology employed to detect signs of Otter during field surveys is provided in Section 3.3.1.2 and it confirmed that an additional survey of previously identified potential otter holts within approximately 150m upstream and downstream of any proposed infrastructure, and the proposed HDD location, was carried out on 3rd September 2025. The baseline noise survey conducted at the River Nore crossing, and predicted noise levels as a result of operation of machinery and the drill generator are not dissimilar to the existing baseline noise levels, which features noise interference from vehicles commuting on the nearby N77, in which the launch pit will be located. The noise levels are classified as moderate to low noise stimulus as per Cutts criteria (2013) and is therefore not expected cause any potentially significant effects on the Kingfisher, nor the SPA. While

vibration levels cannot be determined, levels recorded in a south Dublin study reached a maximum of 5 mm/s, which could potentially disturb foraging Kingfisher. However, mitigation measures outlined above will eliminate any possibility of an adverse effect for kingfisher during the breeding season.

3. It is noted that an additional kingfisher survey was undertaken in May 2025, at the location where the Proposed GCR would cross the River Nore and it is confirmed that survey methodology followed Cummins et al. (2010). In addition, baseline noise and vibration surveys were undertaken at the Proposed GCR HDD crossing location of the River Nore SPA on 2nd September 2025
4. Drawing No. 230502-76FI of Appendix 2 was submitted which provides details on the proposed HDD crossing under the River Nore.
5. Drawing No. 230502-78FI of Appendix 2 was submitted which provides an indicative landscape plan and section diagram for the proposed riparian buffer.
6. Drawing No. 230502-52FI of Appendix 2 was submitted which provides a plan and section diagram of the clearspan crossing over the Tullaroan stream.
7. Additional areas of hedgerow and linear habitat loss have been identified. It is noted that the hedgerow loss at the spoil management area to the east of the T5 access track (Plates 7 & 8) appears to have been accurately quantified in the EIAR (see Figure 6-1 of the Bat Report and Figure 1-1 of the BMEP). In conclusion, c. 120m of additional hedgerow loss has been identified.
8. It is noted that a more detailed assessment was undertaken in August 2025 of all the trees proposed for removal to facilitate the bat felling buffers and the infrastructure footprint, including the site entrance (L1009), temporary construction compound, spoil management area, substation entrance, and access track to T7. A total of 83 no. trees proposed for removal were subject to detailed assessment, and none were found to support features suitable for roosting bats.
9. A detailed re-inspection was undertaken in August 2025 of all eight crossings. Improved access to WC7 in particular allowed for a closer inspection than was possible during the 2024 effort. No evidence of roosting bats (droppings, staining, feeding remains, or live specimens) was identified during the inspection survey. While no evidence of roosting was identified during either the 2024 or 2025 inspection surveys, all eight crossings were reconfirmed as

having Low suitability (Plates 23-32) due to the presence of a small number of potentially suitable gaps/crevices for opportunistic use by individual bats. Given the temporary nature of the works, the setback distances for HDD launch pits and the fact that flatbed formation cabling installation will take place within the existing road build-up over the structure, no significant effects on bats are anticipated. Accordingly, it is stated that a derogation is not required.

10. The development is not anticipated to result in a significant amount of loss of suitable supporting habitat given the availability of suitable supporting habitat in the locality, the loss of such habitat is not considered significant to the degree that it would affect populations of reptiles or amphibians, where they occur, at a local level or greater. In consideration of this, reptiles and amphibians are not regarded as KERs.
11. Drawing No. DANU-BSK-D004.1FI of Appendix 2 has been submitted which provides details of the borrow pit restoration plan.

7.3.3. Noise

1. In terms of the GCR, it is confirmed that the appointed contractor will coordinate with the contractors for other projects to ensure that works do not coincide so as to cause cumulative significant noise or vibration effects at noise-sensitive locations (NSL's) along the proposed GCR. It is also noted that there are no other permitted wind farm projects in the cumulative assessment i.e. wind farms yet to be constructed, therefore no cumulative wind farm construction effects are likely.
2. Appendix 6 was submitted which presents predicted omni-directional noise levels in tabular format due to the proposed wind farm alone.
3. Appendix 7 was submitted which presents predicted cumulative omni-directional noise levels in tabular format.
4. A new noise contour map has been provided with corrected NSL references.

7.3.4. Hydrology and Hydrogeology

1. Section 2.1 of Appendix 8 provides rationale as to the appropriateness of the level and scope of site investigation and contends that the site investigations undertaken are more than sufficient to characterise the baseline geological

environment. It is also be noted that further site investigation has been undertaken in the vicinity of T7

2. It is stated that the proposed borrow pit location is adequately distant from the sand and gravel aquifer (993m) and nearby streams (196m at closest point), a water monitoring well has been drilled at the proposed borrow pit location on the 7th of August 2025, the proposed borrow pit will not significantly alter the existing hydrogeological regime and drawdown impacts will not occur at the proposed borrow pit location.
3. Additional site investigations which were completed in August 2025 within 90m of T07. A slow water strike was encountered in the clay deposits at a depth of 5.5mbgl with a more significant strike at 11.5mbgl. A permeability test determined that the permeability value was relatively high at 1.79×10^{-4} m/s. However, the results of the site investigation do not alter the conclusions presented in the EIAR, which assessed both gravity and piled foundations of which a piled foundation will most likely be implemented at T07.
4. An assessment of the effects of dewatering at the turbine bases on surface and groundwater flows is presented in Sections 9.5.2.5 and 9.5.2.5 of the EIAR
5. A detailed site-specific hydraulic flood model along the Kilmanagh/Tullaroan River is provided in Appendix 9. It is concluded that there is no significant change to flood water levels between the existing baseline flood scenario and the future flood scenario which includes the proposed wind farm. There is also no significant change in the flood extents or the flow rates between the existing baseline flood scenario and the future flood scenario which includes the proposed wind farm infrastructure. It is confirmed that channel alterations and watercourse crossings within the site are considered within the model.

7.3.5. Roads and Traffic

1. Based on professional judgement, the capacity L1009 is representative of the capacity of the local roads accessing and exiting the site. Based on the analysis provided within the EIAR and the introduction of the mitigation measures, it is contended that the local road network will accommodate the additional traffic that will be generated on the local road network during the construction phase.
2. The traffic management measures required to be implemented for each location

of the GCR be prepared by the Applicant in consultation with the Local Authority and will likely include significant stretches of the R694 where it will be feasible to retain 2-way operation by means of a “stop & go” arrangement. The routes identified are based on the shortest feasible diversion routes available, but in practice, alternative routes of a similar or higher standard may be considered the preferred solution as part of the detailed traffic management plan for the construction of the proposed GCR, with agreement of the Local Authority.

3. The Applicant commits that the construction schedule will be developed to ensure that there will be no occasion when the proposed GCR is constructed on the relevant part of Section 2 at the same time as deliveries are made to the proposed wind farm site on this route.
4. In order to robustly assess the potential effects on the local traffic in the event of delivery of engineer’s specified material from local licenced quarries to the Site, 2,400 truckloads of material were included for the purpose of the assessment. This is c. 30% of the entire stone volume required to construct the proposed project, which represents a precautionary estimate.

7.3.6. Cultural Heritage

1. Watercourses WC3, WC5, WC6 and WC7 (CH4) will now be HDD crossings to ensure there is no potential for any impact on the existing bridge structure. WC11 has also been changed from a ‘Crossing Using Standard Trefoil Formation’ to a ‘Flatbed Formation over Bridges/Culverts’ crossing type. It is confirmed that there is sufficient road depth to accommodate this without the need to raise the road level. Table 4-5 of Chapter 4 of the EIAR: has been updated, and reproduced below as Table 2, to reflect changes to the Proposed GCR watercourse crossing types.
2. Additional Layout Plans for HDD at WC5 and WC6 have been submitted (Drawing Nos. 230502-62FI and 230502-77FI). As HDD crossings will be employed at these locations, it is contended that there is no potential for direct negative impacts on both protected structures as the Proposed GCR cabling will not directly interact with the bridge structures, instead drilling beneath the road surfaces.

7.3.7. Landscape and Visual Assessment

1. It is confirmed that a 20km Study Area has been adopted for the purposes of the LVIA.

7.3.8. General

1. Table 3 of the FIR highlights the 3 no. alternative grid connection routes identified during the consideration of alternative connection nodes and rationale for the identification of Ballyragget 110kV substation as the optimum connection node. When considering the 3 no. alternative substations, it was concluded that Ballyragget 110kV substation would be the optimum connection node to lower potential effects across multiple environmental considerations, such as air quality, climate and material assets, as well as reduce the construction duration and costs associated with an increased grid connection length.
2. While it is acknowledged that reference to the permitted Farranrory grid connection was absent within Chapter 3 of the EIAR, it is noted that factors such as the increased length of Option 1 and associated disadvantages had rendered Option 1 suboptimal prior to consideration of cumulative effects with the permitted Farranrory Grid Connection. It is noted that the construction of the permitted Farranrory grid connection is underway and is expected to be completed well in advance of the construction of the Proposed GCR and the use of the potential diversion route sections 5 and 6, as per Figures 15-4e and 15-4f of the EIAR, which overlap with the Farranrory grid connection route
3. Where information has been altered, supported or omitted from the content submitted in the EIAR as a result of FIR or correction of errata, this has been compiled in subsections denoting the relevant EIAR chapters, appendices and other documents.
4. Table 5 of the FIR outlines the common themes identified within the Third-Party submissions and specifies who in the project team is responsible for the corresponding response. Table 6 details the third-party observers, the themes raised within submissions, and where they have been addressed within the FIR, or if it has been comprehensively addressed in the Appeal Document previously.

7.4. Consideration of Further Information Request

- 7.4.1. The Applicant's FIR was assessed on receipt to the Commission. As part of the FIR, the Applicant had submitted additional drawings, reports and a revised NIS. On the basis of the submitted information, it was determined that the FIR should be circulated to all participants, and the Applicant was requested to readvertise the application.

7.5. Further Planning Authority Submission

- 7.5.1. The Planning Authority made a further submission dated 25th November 2025 which noted the following:
- The Commission needs to satisfy itself that the AA screening and revised NIS are fit for purpose in arriving at its decision. This will ensure that any decision is robust and can withstand any potential challenge under the judicial review process.
 - The Commission needs to satisfy themselves that the proposed development will not impact on any designated species associated with a European Site. Not only does this include the proposed mitigation but also whether the survey work is sufficient and robust for its purpose.
 - The Applicant's FIR demonstrates the level of inaccuracies submitted to the Planning Authority given that the extent of hedgerow loss had been underreported.
 - Concerns raised that the proposed development would require a derogation from Annex IV. This is not supported by the Planning Authority, and it is a further demonstration of the poor quality and ill-considered nature of the project's overall design.
 - It is highlighted that there is uncertainty regarding the potential for noise impacts on ecological receptors.
 - It is contended that the submitted information fails to provide a comprehensive mapping and assessment of all activity watercourses through the site or adequately consider the surface water abstraction catchment of the Troyswood Scheme. It is also noted that the applicant failed to demonstrate that the proposed GCR will not adversely impact existing Uisce Eireann assets.
 - It is the Planning Authority's view that the proposed development is considered to be premature until a suitable Connection route is provided/ designed/approved.

- Continued concerns raised regarding the potential visual impact of the proposed development on residential receptors and the landscape character as a whole.
- The Planning Authority respectfully requests the Commission to refuse the proposed development in line with the Planning Authority's decision.

Additional submission on file referring to commentary provided in initial submission dated 25th November 2025.

7.6. Further Third Party Submissions

- 7.6.1. Following the circulation of the Applicant's FIR to all participants and the readvertisement of the application, further submissions/responses were received from the following members of the public.

Table: Further Third Party Submissions

1. Holly Tolbert	2. Clinton Tolbert	3. Deirdre Foley	4. Anthony O'Dea and Clare Mahon	5. Wayne Ronan
6. Eugene Foley	7. Alan and Laura Trayer (2 submissions received)	8. Norah Doheny	9. Brendan Doheny	10. Catherine and Micheal Burke
11. Graigue Ballycallan GAA Club Tom Ryall Park	12. James Brennan	13. Denis Butler	14. Mary Murphy East	15. Brendan Roberts
16. Dr. Ingelise Stuijts (2 submissions received)	17. Vincent O'Dea	18. Helen Roberts	19. Sohail Khan	20. Grant Peters
21. Nicola and Damian Cleere	22. Vera Butler	23. Niall Egan	24. Johanna Brennan	25. Chris Doheny
26. Eddie & Olivia Brennan	27. Ivy and Conor Hogan	28. Sean & Margie Walsh	29. KBT Responsible Energy c/o Shane Lynch (2 submissions received)	30. Michael Egan (2 submissions received)
31. Claire Roberts	32. Tom & Nora Hogan (2 submissions received)	33. Jonathan & Louise O'Neill	34. Richard Delaney	35. Jesse Roberts
36. Kevin & Claire Cleere	37. John Joe Hennessy	38. Pat Brennan (2 submissions received)	39. Sharon Trayer	40. Vinny & Teresa Corcoran
41. Michael and Rhonda Malone	42. Linda Hayes	43. Sarah & Eoin Reilly	44. Colum Prendiville	45. Marieann Cleere (2 submissions received)

46. Nicola Butler	47. Edward Fennelly (2 submissions received)	48. Nicky Butler	49. John Teehan	50. Pat and Mary Brennan
51. Gearoid Cleere	52. Alice Walter	53. Gee Walter	54. Thomas Comerford and Geraldine Comerford	55. Assumpta O'Brien
56. Warren and Norah Deacon	57. Noel Brett	58. Patricia Teehan	59. Diarmuid Burke	60. Frank Keoghan
61. Thomas Comerford	62. St Brigid's Camogie Club	63. Kilkenny West Group Water Scheme Cooperative Society	64. Mary Brennan	65. Anthony and Jackie Drohan

7.6.2. It is again noted that a comprehensive submission has been received by KBT Responsible Energy. Within this submission, a detailed and itemised response to the Applicant's FIR items has been provided within their planning consultant's structured report. Furthermore, commissioned opinions have been enclosed from the following experts:

- Dr Pamela Bartley – Hydrogeologist.
- Dr Patrick Moran – Ecologist.
- Mr Les Huson & Mr Grosvenor – Acoustic Consultants.
- Con Sheehan – Consulting Surveyor.
- Mr Roger Goodwillie - Ecologist.

Recommended reasons for refusal have also been drafted within the KBT Responsible Energy submission for the Commission's consideration. I note that the following sections of my assessment engage with the various concerns raised within the submissions. A summary of the key themes and issues raised within the submissions is included in Appendix 5 of this Report. I note that the issues raised related to biodiversity, noise, hydrology and hydrogeology, roads and traffic, cultural heritage, landscape and visual impacts and other general concerns.

8. Assessment

8.1.1. I note that there are three parts to my assessment: Planning and Sustainable Development, the Environmental Impact Assessment (EIA) and an Appropriate Assessment (AA) all detailed below separately in the individual sections. There is

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, and to avoid undue repetition where possible, matters are not repeated but such overlaps are indicated in subsequent sections of the report.

Planning Assessment

8.1.2. Having inspected the site and having examined the application details and all other documentation on file, including the reports of the Local Authority, the submissions on file, and having regard to the relevant local/regional/national policies and guidance, I consider that the substantive issues in this appeal to be considered are as follows:

- Climate Act, Policy & Principle of Development,
- Wind Farm Layout & Separation Distances,
- Visual Impact & Residential Amenity,
- Drinking Water Supplies,
- Flooding,
- Other Matters, and,
- Consideration of Conditions.

8.2. Climate Act, Policy & Principle of Development.

8.2.1. The proposed development has been refused by the Planning Authority for 3 no. reasons, with the first relating to excessive adverse impacts on residential amenity that were deemed to primarily arise from the cumulative effects of visual intrusion, noise, flicker and disturbance of access. Perceived deficiencies in the EIAR and AA formed the basis of the additional 2 no. reasons for refusal. The proposed development has been heavily resisted by the communities that surround the application site. Third Party observers have highlighted that there is a concentration of existing and permitted wind energy developments within 10km of the subject site. They go on to submit that the surrounding communities already generate approximately 22 times more renewable electricity from wind energy on a per capita basis than the national average. It is argued that this reflects the significant contribution being made by these communities towards meeting the State's climate and renewable energy objectives. Overall, observers have expressed the view that the subject site is not a suitable location for a wind energy development. They argue that

the proposed development is inconsistent with the policies and objectives of the 2021-2027 DP, and the proposals amount to a material contravention of the plan, including the wind energy development strategy. As outlined in Section 5 of this Report, I have identified the relevant policy provisions, from local to international level, the support the transition to a green economy and the rapid deployment of renewable energy projects to meet climate and energy objectives. To reiterate, Section 15(1) of the Section 15 of Act, as amended states:

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

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

8.2.2. As a relevant body, An Coimisiun Pleanála is required to exercise its function in a manner consistent with the applicable climate objectives, in so far as is practicable, and I have set out the following consideration to enable the Commission to make their decision within that framework. In terms of the national policy context, CAP 2025 was published on 15th April 2025 and re-affirms the previous commitment in CAP 2024 to increase the share of renewable electricity generation to 50% by 2025 and 80% by 2030. There are also objectives included within CAP24 and CAP25 to deploy up to 9 GW of onshore wind by 2030. There is clear support for the development of wind energy within this context. Ireland’s long-term Climate Action Strategy, entitled Ireland’s Long-term Strategy on Greenhouse Gas Emissions Reductions 2024, sets out indicative pathways, beyond 2030, towards achieving carbon neutrality for Ireland by 2050. The Strategy provides a pathway to a whole-of-society transformation and serves as a vital link between shorter-term Climate Action Plans and Carbon Budgets and the longer-term objective of the European Climate Law and Ireland’s National Climate Objective. The National Adaptation Framework; Planning for a Climate

Resilient Ireland (June 2024), the most recent approved national adaptation framework, sets out the context to ensure local authorities, regions and key sectors can assess the key risks and vulnerabilities of climate change, implement climate resilience actions and ensure climate adaptation considerations are mainstreamed into all local, regional and national policy making. The NAF identifies 13 (previously 12) priority sectors under 7 lead Departments that are required to prepare sectoral adaptation plans under the Climate Act. It is noted that the furtherance of the national climate objective is a central tenet of the above referenced Plans and strategies, as is the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State. In this regard, it is evident that a development of this nature is consistent with European and National climate change policy and legislation, including the Climate Action and Low Carbon Development Act, 2015 (as amended), in particular the Commission's obligations under Section 15 thereof. I will address the local policy context in the following section, but I would refer to the conclusion therein that the proposal would comply with the provisions of the Wind Energy Development Strategy for Kilkenny.

- 8.2.3. A strategic aim (Climate Change) of the 2021-2027 DP is to provide a policy framework with objectives and actions to facilitate the transition to a low carbon and climate resilient County. It also a strategic aim to generate 100% of electricity demand for the County through renewables by 2030, by promoting and facilitating all forms of renewable energies and energy efficiency improvements. The policy acknowledges that this must be done in a sustainable manner and provided in suitable locations having due regard to natural and built heritage, biodiversity and residential amenities. There is also a specific objective (11a) of the plan to support and facilitate the provision of energy in accordance with Ireland's transition to a low carbon energy future by means of the maintenance and upgrading of electricity and gas network grid infrastructure. It is relevant in this context to note that there is a relatively unusual situation that exists in relation to the status of certain aspects of the 2021-2027 DP and this was the subject of a recent decision of the High Court in *Save the South Leinster Way & Anor v An Coimisiún Pleanála & Ors* [2025] IEHC 541. There is an acknowledgement in the Planner's Report on file of the draft Ministerial Direction that applies to certain sections of Chapter 11 of the 2021-2027 DP. This is also referenced in their submission to the First Party appeal. However, no further analysis is provided

within the Planner's Report, and their assessment remains relatively silent on the acceptability of the proposal, or otherwise, from a renewable energy policy perspective and whether the proposed development is consistent with the relevant Wind Energy Development Strategy. As I have touched on in Section 5 of this Report, the 2021-2027 DP is subject to a draft Ministerial Direction pursuant to Section 31(3) of the 2000 Act, the operative part of which states as follows:

"The Planning Authority is hereby directed to take the following steps with regard to the 'wind energy strategy' within the Development Plan:

- a. Reinstate sections 11.4 and 11.5.1 of the draft Development Plan, including the identification of 201 MW renewable energy to meet the objective for the generation of 100% of electricity needs from renewable sources for the county by 2030 consistent with the Climate Action Plan.
- b. Amend the adopted wind energy strategy map (reference Figure 11.4) to ensure consistency with the renewable energy target at (a) above as follows:
 - i. Reinstate areas designated at Templeorum/Mullenbeg to 'acceptable in principle' in accordance with the 'draft wind energy strategy' of the draft Plan.
 - ii. Reinstate areas designated at Castlebanny to 'acceptable in principle' in accordance with the 'draft wind energy strategy' of the draft Plan.
 - iii. Reinstate the 3 no. smaller areas to the south of the county as 'acceptable in principle' in accordance with the 'draft wind energy strategy' of the draft Plan."

8.2.4. The areas identified in the draft direction had been designated 'Not Normally Permissible' and 'open for consideration' under the adopted plan. Pursuant to Section 31(6)(a) of the 2000 Act, the matters referred to in the draft direction including the area designations do not have effect and are suspended. Further, under Section 31(6)(b) of the 2000 Act, where there are corresponding matters under the development plan being replaced (in this case the 2014-2020 DP) to those matters which have been suspended, those corresponding matters apply instead. In *'Save the South Leinster Way'*, the court considered the concept of 'corresponding' and concluded that *"corresponding relates to the extent of the provision itself, not the amorphous rationale of the provisions. The fact that the reason for the provision has change here since*

2014 is not decisive." The Court also commented that "*something can't cease to be corresponding by reason of immaterial differences. So, if a new provision partly corresponds to an old provision, but any differences are not material in a particular context, then that can't prevent the application of the section*". The evident corresponding matters in the circumstances of that case were the land zonings and associated restrictive policies regarding the size of wind farm developments.

8.2.5. Within Section 6.4 of the Applicant's Planning Report, it is argued that the Wind Energy Development Strategy Areas and its associated policies cannot be taken into consideration due to the draft Ministerial Direction. Furthermore, it is their view that the previous 2014-2020 DP has since expired, and it is therefore implied that it cannot be relied upon. In the absence of a local Wind Energy Development Strategy for Kilkenny, it is the Applicant's view that there is sufficient policy direction at national, regional and local level to enable the Planning Authority to assess the proposed development on its merits. This issue has been raised by a number of Third Party observers and they have obtained legal advice on the matter. Having regard to Section 31(6)(b) of the 2000 Act, it is their contention that Figure 10.2 of the 2014-2020 DP has not ceased to have effect and represents the spatial categorisation of the County in relation to the potential provision of wind energy developments to which the Planning Authority must have regard, notwithstanding the coming into effect of the 2021-2027 DP.

8.2.6. At the time of writing, the proposed development has been assessed in line with the adopted relevant policies of the 2021-2027 DP, whilst noting that the draft ministerial direction remains extant. I have reviewed both the Draft 2021-2027 DP and the adopted 2021-2027 DP and the rationale as to why the draft Ministerial Direction was necessitated. One of the reasons for the draft Ministerial Direction included:

- "The Development Plan contains conflicting objectives on renewable energy sustainable development and climate action such that the adopted Plan, without providing sufficient compensatory measures, significantly reduced the extent of the areas indicated as 'acceptable in principle' that were identified in the draft Development Plan as being necessary to achieve the target of 201MW required to ensure that 100% of electricity demand for Kilkenny is met from renewable sources by 2030 and to ensure consistency with the climate action plan."

When comparing the draft and adopted plans, it is evident that there was a reduction in the adopted plan of c. 15,500ha in the total area of lands that had been previously identified as being 'acceptable in principle' for wind energy developments. It is critical to note that the location of the subject site was not the subject of the draft Ministerial Direction, with those areas confined to the southern reaches of the county. I am therefore satisfied that the designation of the application site is not a corresponding matter relating to the 2014-2010 DP and would be unaffected by the draft Ministerial Direction as the OPR's concerns related to identified areas within the southern extent of the county only. On this basis, it is my view that the provisions of the adopted plan are in force and Section 31(6)(b) of the 2000 Act does not have effect in the case of the subject proposal.

8.2.7. Under the adopted 2021-2027 DP, the county has been divided into three policy areas for the development of wind farms, based on an assessment of viability against other considerations, that being "Acceptable in principle", "Open for Consideration" and "Not normally permissible". Wind energy developments are divided into five categories depending on their scale, as follows: (a) Individual wind turbines, (b) Auto producer, (c) Small scale wind developments/Community Schemes (Compliant with the RED II Directive definition of community), and (d) Large scale wind development. A matrix is also provided in the 2021-2027 DP that outlines which of the various category scales will be considered in each Wind Strategy area. Given its projected capacity, the proposed development would fall within the category of a large scale wind development. The policy notes that large-scale wind energy developments will, in usual circumstances, only be considered in 'Acceptable in principle' areas. The rationale behind this policy is to minimise the visual impacts of such large-scale developments, in addition to effects on the environment of County Kilkenny as a whole, as well as to facilitate appropriate grid connections.

8.2.8. It is relevant to note that under the Draft 2021-2027 DP, all turbines within the proposed wind farm site fell within an 'acceptable in principle' area. The mapping was then modified slightly under the adopted plan, insofar as 2 no. turbines now appear to fall within an 'open for consideration' area (i.e. Turbine Nos. T06 & T07). From the mapping provided within the Applicant's Planning Report (Figure 6-2 Kilkenny County

Council Local Authority Wind Strategy Areas Map - Proposed Wind Farm location), T05 also appears to straddle the boundary between the 2 no. designations. Whilst a rationale for the revision to this mapping is not provided within the adopted 2021-2027 DP, the lands which are designated 'acceptable in principle' generally align with the mapping (Figure 1 (Wind Atlas 2013 Wind speeds of >7.5 m/s at 75m above ground level) of Appendix K) for the areas of the county where wind speeds of 7.5 metres per second or above were identified. It was determined within the plan that these areas of extensive wind energy resources should be targeted and formed part of a four-step approach to identifying suitable areas for wind energy development (i.e. 'sieve mapping').

8.2.9. It is noted within the Applicant's Planning Report that the policy adopted in the 2021-2027 DP effectively limits all wind energy developments (bar small installations below 5MW) to the 'acceptable in principle' areas. As discussed above, it is their contention that this policy cannot be applied to the subject proposal as the Wind Energy Strategy Areas for Kilkenny are currently not in effect, and as such there is no contravention of this policy. Notwithstanding the Applicant's view, I have determined that the relevant provisions of the adopted 2021-2027 DP are in force. In this regard, 2-3 no. turbines fall within this 'Open for Consideration' designation. In terms of Section 11.5.2 (Wind Energy Development Strategy) of the adopted 2021-2027 DP, it is relevant to again highlight the specific wording of the policy, where it states that 'large-scale wind energy developments will, in usual circumstances, only be considered in 'Acceptable in principle' areas'. As mentioned, the rationale behind this policy is to minimise visual impacts, environmental effects and to facilitate appropriate grid connections.

8.2.10. Unfortunately, an explanation as to what may constitute circumstances which are other than usual, has not provided in the plan. In my view, this leaves scope for evaluative planning judgement as to what circumstances might otherwise justify other wind energy developments in areas which are not 'acceptable in principle'. In light of the wording of this policy and the methodology adopted in the 2021-2027 DP, i.e. targeted the areas of the county with the highest wind speeds, it is reasonable in my view to conclude that there are instances where a degree of flexibility could be applied on a case-by-case basis, particularly in what may represent a transitional area between the

two designations. This is relevant in the case of the subject proposal, where the portion of the site that is designated as 'open for consideration' forms a small pocket of land that is essentially 'sandwiched' between 'acceptable in principle' lands (i.e. to its north, west and east). Whilst I acknowledge that the villages of Tullaroan and Kilmanagh are located to the north and south of the site respectively, there are no specific environmental, heritage or landscape designations, in my view, that would warrant the exclusion of these lands for further consideration. I also refer to my detailed assessment of Chapter 13 of the Applicant's EIAR (Landscape and Visual). Here, I found that whilst the proposed development may give rise to significant visual effects for some of the nearest local residential receptors, noting the characteristics and value of the receiving landscape, the separation distances provided, the absence of significant effects on tourism and cultural heritage assets and the State's need to transition to renewable energy sources and rapidly accelerate the delivery of projects of this nature, I am firmly of the view that these effects are not sufficient to warrant a refusal of permission. My assessment of the Applicant's EIAR has also demonstrated that the proposed development will not give rise to significant effects on biodiversity or the site's hydrological and hydrogeological environment, once the suite of mitigation measures are applied.

- 8.2.11. I note that Figure 11.4 (Wind Energy Strategy) of the 2021-2027 DP identifies the various exclusion areas across the county i.e. areas of landscape and heritage sensitivity and the minimum exclusion zones for certain designated settlements, none of which apply to the subject site. It would appear that the lands in question have been included as 'open for consideration' and therefore excluded from the 'acceptable in principle' designation, solely or predominantly on the basis of having recorded wind speeds of less than 7.5 metres per second. However, when examining the current online mapping for the SEAI 2013 Wind Speed Data, wind speeds in the range of 7.5-7.7m per second are in fact recorded around the location of the 3 no. turbines in question and a conflict therefore arises between the wind speeds identified in Figure 1 of Appendix K (2021-2027 DP) and the current online wind speed mapping. For this reason, and the fact that the 2021-2027 DP contains a degree of flexibility as outlined above, I am satisfied that their siting within an 'open for consideration' designation alone, would not constitute a material contravention of the 2021-2027 DP. Further,

whilst I do not consider the proposed development to be a contravention of the 2021-2027 DP, if on the contrary same constituted a contravention, I do not consider it would amount to a material contravention. I also note that this has not been raised as an issue by the Planning Authority nor did it form a reason for refusal. Irrespective of this, it is acknowledged the proposed development must accord with the wide range of development plan policies that apply to developments of this nature, most notably the Development Management Guidance, contained within Section 11.5.3 of the 2021-2027 DP. Furthermore, the 2006 WEDG (and draft 2019 WEDG)) 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. There is also an emphasis on the protection of European sites, biodiversity, hydrology, landscapes, cultural heritage, residential amenity etc. Along with other matters, these issues are addressed in detail in the Environmental Impact Assessment and Appropriate Assessment chapters of this report.

Section 37(2) of the Planning and Development Act 2000 (As Amended)

8.2.12. Notwithstanding my conclusions in the foregoing, Section 37(2)(a) of the Planning and Development Act 2000, (as amended), empowers the Commission to grant permission even if a proposed development contravenes materially the development plan. Whilst this not directly relevant to the subject proposal, Section 37(2)(b) indicates that where a Planning Authority has decided to refuse permission on the grounds that a proposed development materially contravenes the development plan, the Commission may only grant permission, where it considers that one of the following circumstances of Section 37 (2) (b) apply. They are:

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

the pattern of development, and permissions granted, in the area since the making of the development plan.

8.2.13. Whilst section 37(2)(b) is not engaged in this appeal, it is noteworthy to consider the nature of statutory criteria which would justify a grant of permission in material contravention of the development plan in those circumstances. Should the Commission form a view that the proposed development would result in a material contravention of the 2021-2027 DP, due to the siting of 2-3 turbines within lands designated as 'open for consideration', the Commission may wish to exercise its discretion under section 37(2) of the Act, and grant permission given the strategic national, and indeed European, importance of the proposed development. In terms of Section 37(2)(b)(i) (Strategic or national importance), I have touched on the binding targets that Ireland is required to achieve in respect of the delivery of renewable energy, which includes the rapid deployment of onshore wind. Under Section 11.4 (Kilkenny Targets) of the 2021-2027 DP, it is noted that County Kilkenny will use 633 Gigawatt hours (Gwh) of electricity. This equates to 253MW of energy, or 2.09% of the Country's 12.1 GW combined onshore and offshore renewable energy target. Within the Applicant's Planning Report, it indicated that the proposed development will contribute towards achieving this important target by installing 49MW of installed capacity to the national electricity grid or 19% of the 253MW needed. Over its lifetime, the development has the potential to displace 1,105,230 tonnes of CO₂ which is a significant reduction in GHG emissions, with the CO₂ losses due to the project offset within approximately 34 months of operation. It also has the potential to generate 137,356 MWh per annum, sufficient to supply 32,703 Irish households annually. This would contribute to the achievement of European and National renewable energy targets, and in particular the objectives of the Climate Action Plan which seek to realise a 51% reduction in greenhouse gas emissions and increase reliance on renewables from by 2030, of which a substantial amount could be met by on-shore windfarms. It is also important to highlight the recent and ongoing geopolitical tensions which are having a significant impact on Ireland's security of energy supply. The delivery of renewable energy projects of this nature will support the country's transition towards greater energy independence and strengthen its resilience against future geopolitical shocks. For these reasons, I am satisfied that the proposed development can be

deemed to be of national importance, as its delivery and energisation would make a significant contribution to the achievement of the binding national targets for renewable energy, reduction in carbon emissions and greater energy independence.

8.2.14. In terms of Section 37(2)(b)(iii) of the Act, I note that it is also Government policy to accelerate the provision of renewable energy to decarbonise the economy and deliver on targets contained within the Climate Action Plan and is supported directly by the provisions of the NPF and RSES for the Southern Region. NPO 70 of the NPF confirms the government's intention to "Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a climate neutral economy by 2050". The RSES also recognises the pronounced need to decarbonise the southern region, and specifically in respect of electricity "to achieve national and EU targets will require investment in measures to develop alternative renewable energies with greater interconnection to energy resources ... ". I refer the Commission to Section 5 of this Report, where I have outlined the relevant national planning policy including the applicable NPOs. I have also considered the RSES, and I refer the Commission thereto. Overall, if the Commission, contrary to my opinion, considers the proposed development materially contravenes the 2021-2027 DP, I am satisfied that permission for the proposed development should be granted in material contravention of the 2021-2027 DP having regard to the NPF and the relevant RSES for the area in particular RPO's 56, 87, 95, 98, 219 and 221 which seek to increase the use of renewable energy sources across the key sectors of electricity supply, to leverage the Region as a leader and innovator in sustainable renewable energy generation and to integrate renewable energy sources into the grid. Furthermore, the RSES supports the Southern Region as a Carbon Neutral Energy Region, and the proposed development would contribute to Having regard to the above, should the Commission not agree with my assessment that the proposed development does not constitute a material contravention of the Development Plan, I am satisfied that the commission is not precluded from granting permission by virtue of the provisions of Section 37(2)(a) of the Planning and Development Act, 2000 (as amended) and I have set out above national and regional policy support for such an approach.

8.3. Wind Farm Layout & Separation Distances

- 8.3.1. Throughout many of the submissions on file, concerns have been raised regarding the overall scale of the proposed turbines and the inadequacy of the separation distances provided from sensitive receptors within the site's vicinity. It was also the Planning Authority's view that the scale of the development was unprecedented in Kilkenny due to the size of the turbines and their location on lowlands surrounded and closely overlooked by a significant number of residences. As indicated, the 7 no. wind turbines will have an overall turbine tip height of 185m, a rotor blade diameter of 163m; and hub height of 103.5m. I note that larger turbines, with similar tip heights, are now common to the onshore market in Ireland and have been permitted across the country. I also note that several wind farm applications of a comparable scale within County Kilkenny are currently under consideration by the Commission. The Applicant's consideration of reasonable alternatives (Chapter 3 of the EIAR) has considered the use of smaller turbines on the site to achieve a similar output. However, it was determined that a larger number of smaller turbines would be required and would consequently result in the wind farm occupying a greater footprint, with a larger amount of supporting infrastructure being required (i.e., roads etc) and increasing the potential for environmental impacts to occur. Full consideration of the overall scale of the structures and its associated impacts is addressed in my assessment of Chapter 5 (Population and Human Health) and Chapter 13 (Landscape and Visual) of the EIAR.
- 8.3.2. It is acknowledged within the draft WEDG 2019 that the potential for visual disturbance can be considered as dependent on the scale of the proposed turbine and the associated distance. Thus, a setback which is the function of size of the turbine should be key to setting the appropriate setback. Whilst no minimum setback distances are prescribed within the WEDG 2006, the Applicant has confirmed that the layout of the wind farm has been designed to ensure that setbacks from residential dwellings exceed the minimum distance of 500m and the 4 x maximum tip height (i.e. 740m) as set out in the draft WEDG 2019. There are a total 45 no. sensitive receptors located within 1km of the proposed turbine locations. The closest sensitive receptor, belonging to an involved landowner, is located over 500m from the nearest proposed turbine (T4), i.e. over the minimum recommended setback for properties involved in the project (500m). It is also noted that the closest third-party sensitive receptor is located greater than 750m from the nearest proposed turbine (T3). In this regard, I am satisfied

that the minimum setback distances recommended in the draft WEDG 2019 have been adhered to and have informed the layout of the proposed wind farm, such that unreasonable visual impacts on existing residents will not arise.

- 8.3.3. Mr Con Sheehan, Consulting Land Surveyor, on behalf of KBT Responsible Energy has prepared submissions at application and appeal stage and has consistently raised concerns regarding the inadequacy of the separation distances provided between the proposed turbines. Mr Sheehan outlines that he has been working in a professional capacity, mapping distances and dimensions of various wind farms across the country on behalf of certain residents who have complaints of noise nuisance created by their operation. He outlines that the spacing of certain turbines relative to each other is a significant factor in wake turbulence, creating noise nuisance for nearby residents. In his submission, he has referred to the High Court Judgements of *Byrne & Anor v Abo Energy Ireland Ltd & Ors* [2025] IEHC 330 and *Webster & Anor v Meenacloghspar (Wind) Limited* [2024] IEHC 136, where it is claimed that inadequate separation between turbines contributed to turbulence and noise nuisance. The issue of turbine layout optimisation and the potential for wake effects has also been raised within the commissioned opinions by Grosvenor Consulting and Huson & Associates (KBT Responsible Energy submissions), where it is noted that it is customary in the design of a wind farm to take account of the distances between wind turbines to minimise noise emissions and to maximise efficiency. The various professional opinions highlight that the distance between the wind turbine towers fall short of the minimum recommended distances outlined in Section 5.13 (Windtake) of the WEDG 2006. They argue that the Applicant has misinterpreted the WEDG 2006, by focusing solely on the layout of the proposed turbines, taking into account the development potential of an adjoining site for a wind farm, rather than considering the separation distances between the turbines within the proposed development itself. It is the observer's view that the policy (Section 5.13) of the WEDG 2006 is for the design and layout of the developments to take account for turbulence and wake effects, and this consideration is not limited to the neighbouring sites. Mr Sheehan also contends that the separation distances between the turbines could constrain the optimisation of the wind farm layout and raises concerns as to whether the Applicant could obtain a warranty from the turbine manufacturer. Furthermore, Mr. Sheehan has opined that the proposed met

mast will be ineffective due to its poor siting and the resulting turbulence from adjacent turbines. He has further identified a number of potential consequences arising from the incorrect siting of meteorological masts, including inaccurate wind resource assessment, suboptimal energy capture, turbulence and shear mischaracterisation and obstructions and flow distortion.

- 8.3.4. When examining Section 5.13 of the WEDG 2006, it is clear in my view that this policy relates directly to safeguarding the development potential of adjoining sites. I also note that this policy remains largely unchanged in the draft WEDG 2019 (Section 4.9.6) and this does not relate to separation distances within a development. The Applicant has outlined within the EIAR and their appeal that the proposed wind turbine layout has been optimised using wind farm design software (WindPro) to maximise the energy yield from the proposed wind farm, while maintaining sufficient distances between the proposed turbines to ensure turbulence and wake effects do not compromise turbine performance. I note that the increased height and blade length of modern turbines are noted to capture more wind energy at lower wind speed and more consistent wind given the higher altitude with less turbulence created by surrounding vegetation and buildings. In addition, the modern wind turbine design generally incorporates features which allow for wake adjustments. Having regard to the above, I note that the spacing of turbines and number of turbines are commercial decisions within the overall iterative design process and I am satisfied that the proposals are consistent with Section 5.13 of the WEDG 2006. In terms of Mr Sheehan's claims regarding the temporary met mast structure being erected on site for longer than what was permissible, I note that issues concerning unauthorised development is a matter for the respective Planning Authority and the Commission has no involvement in the enforcement process.

8.4. Visual Impact & Residential Amenity

- 8.4.1. When examining the Planning Authority's assessment, it is evident that their first reason for refusal largely derives from their consideration of landscape and visual effects and the relevant chapter of the EIAR (Chapter 13). Whilst they have indicated that a number of contributing factors were considered in relation to impacts on landscape, including the LVIA, public submissions, visits to both the subject site and a similarly scaled operative wind farm in Co. Monaghan, the reason for refusal appears

to be entirely based on the commissioned independent review of the application and EIAR. Within their assessment, it is stated that the cumulative effects of the proposed development would impose an unreasonable and disproportionate environmental loading on the character of a rural area with a locally concentrated population, due principally to the combined effect of potential visibility, noise, flicker and disturbance of access, during a prolonged period. Whilst the Planning Authority acknowledge that the separation distances provided from residences comply with the minimum standards (i.e. WEDG 2006 & draft WEDG 2019), they have formed the view that the cumulative effects will, arguably, exceed the threshold of what a community can be reasonably expected to tolerate. They go on to note that guidelines and precedence do not offer reliable relevant thresholds for cumulative effects and previous guidelines are also inapplicable on account of turbine heights which now exceed anything that was considered likely at the time of the preparation of the guidelines. Third Party observations at application and appeal stage have also consistently raised concerns regarding residential amenity impacts which I have addressed under the main topics below and made reference to the EIA in Section 9 of this Report, where applicable.

8.4.2. In terms of visual intrusion, I have already acknowledged in Section 8.2 above that residual significant effects will arise for some of the nearest residential properties which are located in the immediate surrounds of the wind farm site. These impacts arise due to the overall scale and prominence of the proposed turbines and their siting relative to the properties, a number of which have elevated views towards the development. For the reasons outlined above, this in my view would not warrant a refusal of permission. Whilst undoubtedly the turbines will form a visually prominent feature in the landscape, particularly from these properties, I am satisfied that the proposed development, individually or cumulatively, would not dominate the visual amenity of these dwellings. In that context, I also note that the prescribed setbacks in the draft WEDG 2019, which are designed to mitigate visual impacts, have been exceeded in the development's design. I refer the Commission to my consideration of Chapter 13 of the EIAR for further analysis.

8.4.3. Noise related impacts are a significant issue raised by Third Party observers and I note that the observations from KBT Responsible Energy have included

commissioned opinions from Grosvenor Consulting (Planning & Noise Consultancy Services), Huson & Associates, Mr Con Sheehan and the International Acoustics Research Organisation (IARO). I have engaged with these submissions, and I have addressed noise in Section 9.11 of this report. Overall, I am satisfied that the operational noise levels can be controlled by noise limits, and the predicted noise levels, individual and cumulatively, subject to mitigation measures, will not exceed the level recommended in the WEDG 2006. Whilst the Planning Authority have highlighted concerns regarding associated construction phase impacts, it is considered that significant effects will not arise in the case of the subject proposal, once mitigation is applied and suitable conditions are complied with.

- 8.4.4. Disturbance of access and associated traffic related impacts is also cited in the Planning Authority's first reason for refusal. It is acknowledged that traffic and transport impacts associated with projects of this scale have the potential to adversely affect residential amenity and may give rise to varying degrees of disturbance, inconvenience and stress for local residents. This is particularly the case where construction activities extend over prolonged periods. Increased volumes of construction traffic, including HGVs can also contribute to temporary impacts such as noise, dust, delays and an overall reduced ease of movement on the surrounding local road network. However, these impacts are temporary in nature and can be appropriately managed and mitigated through the implementation of robust traffic management measures and ongoing engagement with the local community. I note that this is comprehensively addressed in Section 9.12 of this report, where it is found that significant effects will not arise
- 8.4.5. In terms of shadow flicker, I note that I have addressed this matter in Section 9.8 of this report and I have recommend the inclusion of a condition which will require the use of turbine control measures to ensure that shadow flicker is eliminated at any affected property (involved landowners not included), thereby safeguarding the residential amenity of neighbouring properties.
- 8.4.6. Having regard to the above, it is considered that the Applicant's assessment is sufficiently comprehensive to come to a reasoned conclusion on residential amenity

impacts. Overall, I would not agree with the Planning Authority's view that the cumulative effects of the proposed development exceed the threshold of what a community can be reasonably expected to tolerate. I must note that it is not clear from the assessment how such a threshold was identified by the Planning Authority, nor the evidential basis upon which it was concluded that it would be exceeded. Whilst I fully acknowledge the concerns of the neighbouring communities and I accept that the proposal will give rise to a degree of cumulative visual, environmental and residential amenity impacts, particularly for those residing in closest proximity to the development, such effects are not considered to be so significant in my view to render the proposal unacceptable nor do they outweigh the overall benefits of the proposed development which I have already discussed. In reaching this view, I have had regard to the character of the receiving landscape, the design and layout of the proposed development and the separation distances provided from neighbouring residents. It is therefore considered that a refusal of permission would not be warranted on the basis of residential amenity impacts.

8.5. Drinking Water Supplies

- 8.5.1. Third Parties have highlighted the presence of a number of public and group water schemes within the wider area, including the source protection zones that underlie or are hydrologically connected to the site and sections of the proposed GCR. Dr. Pamela Bartley (Hydro G), engaged by KBT Responsible Energy, prepared submissions at the application and appeal stages. These, along with other submissions from the Kilkenny West Group Water Scheme Cooperative Society, have been received and I have outlined the key issues they have raised elsewhere in this report (Appendix 4 & 5 and Section 9.11). In summary, it has been contended that insufficient information has been provided to demonstrate that the proposed development would not adversely affect these drinking water sources. They have opined that these concerns are compounded by the underlying geological and hydrogeological characteristics of the site, whereby portions of the wind farm site are classified as having "high", "extreme" or "Rock at or near Surface or Karst" groundwater vulnerability, thereby increasing the susceptibility of the underlying aquifers to contamination from pollutants. In this context, it has been submitted that any accidental discharge or release of contaminants during construction could rapidly infiltrate groundwater and adversely

affect its quality. Furthermore, concerns have been raised that the Applicant has not sufficiently demonstrated that the proposed mitigation measures are robust enough to prevent significant impacts to these sensitive hydrogeological receptors. It was also the Planning Authority's view that the Applicant had failed to demonstrate that the proposed development will not lead to unacceptable risks to groundwater within groundwater and surface water abstraction catchment zones, or impact on existing water services infrastructure contrary to public health.

8.5.2. I have addressed this matter in further detail in my assessment of Chapter 9 (Hydrology and Hydrogeology) of the EIAR, wherein the various group water schemes and public water supplies, together with their interactions with the infrastructure associated with the proposed development, are examined and assessed. As part of my analysis, I have had regard to the further site investigations undertaken by the Applicant at appeal stage, with particular regard to the additional groundwater investigations carried out in the vicinity of T7 and at the location of the proposed borrow pit. I have also had regard to the commentary provided by the Commission's Senior Environmental Scientist (See Appendix 7 of this Report) who has undertaken a review of the application documents, the Applicant's FIR and the various Third Party submissions. When considered in conjunction with suite of mitigation measures, I am satisfied that it has been adequately demonstrated that the proposed development will not give rise to significant adverse effects on groundwater quality, flows or supplies in the area and it is considered that existing public water supplies, group water schemes and private domestic wells in the surrounding area will not be adversely impacted by the proposed wind farm development. In advance of this consideration, my assessment also examines the potential for impacts on both ground and surface water. Here I determined that once the mitigation measures are applied, together with the additional conditions recommended herein, I am satisfied that proposed development would not give rise to significant adverse effects on groundwater or surface water quality and flows. I refer the Commission again to my assessment of Chapter 9 of the EIAR for a more detailed examination of this issue.

8.6. Flooding

8.6.1. Although the Planning Authority does not appear to have meaningfully engaged with

the issue of flooding within their assessment, they nevertheless arrive at a conclusion that the Applicant had failed to adequately consider recent downstream flood events nor did they adequately demonstrate that the substantial works proposed would not lead to an increase in flood risk potential downstream of the wind farm site. This conclusion appears to derive, at least in part, from the detailed concerns raised by Third-Party observers throughout the course of the application. Of note, a submission prepared by Dr. Pamela Bartley (on behalf of KBT Responsible Energy) raised significant concerns regarding the potential implications of the proposed development for downstream receptors. In this regard, substantial concern had been expressed regarding the absence of detailed hydraulic modelling to determine the extent to which the proposed development may alter flow characteristics, increase flood risk or affect downstream lands. Therefore, it was their view that the potential impacts on downstream receptors remained uncertain and insufficiently quantified. Further concerns were raised regarding the alterations to the Tullaroan Stream within the site boundary, and the Applicant's failure to adequately incorporate or assess those modifications within the submitted Flood Risk Assessment. It has been argued that these existing alterations may materially influence the hydraulic behaviour of the watercourse and therefore should have formed part of a comprehensive assessment of flood risk associated with the proposed development.

8.6.2. Noting the various concerns raised by Third Parties and the history of flood events immediately downstream of the site within the village of Kilmanagh, the Commission requested the Applicant to submit an updated FRA which included detailed site-specific hydraulic modelling of the Tullaroan Stream. It was noted that this FRA should examine the potential impact on the existing floodplain or on flood risk elsewhere downstream and shall also have regard to the alterations that had been undertaken to the Tullaroan Stream within the boundaries of the site. The updated FRA focussed on two main hydrological/hydraulic aspects of the development:

- The impact of the proposed wind farm infrastructure, namely the internal wind farm road network, new stream crossings, hardstands and turbines on the hydrology of the Tullaroan stream catchment and Breaghagh Tributary catchment at this location, and,
- The flood risk both upstream and downstream of the proposed wind farm

(attention is given to Kilmanagh area also) by comparing existing and design water levels and flow rates.

It is noted that the channel alterations within the site are also included in the modelled scenarios. I note that the detailed site-specific flood modelling concludes there will be no significant increase in flood water levels and flood flows downstream of the wind farm site arising from the proposed development, and the downstream areas include the village of Kilmanagh and the associated amenity pitches (hurling pitch). The proposed development includes mitigation for drainage discharge controls for protection of water quality and attenuation of runoff to greenfield flows. The proposed mitigation also includes the attenuation of drainage to greenfield runoff rates, so after mitigation is included, the net effect is “no change” in flow rates. Whilst I acknowledge that continued concerns were raised by Dr. Bartley in her review of the Applicant’s FIR, I refer to the commentary of the Commission’s Senior Environmental Scientist (See Appendix 7 of this Report) who is satisfied that the potential for the proposed development to exacerbate the potential for downstream flood risk has been adequately addressed in the Applicant’s updated assessments. It is noted that none of the turbine bases or the spoil management areas are located within the indicative flood maps on flood maps.ie with regard to both fluvial and pluvial flooding and the additional hydraulic modelling for the Tullaroan stream has corroborated the findings of the original flood risk assessment and the footprint of the site is 0.22% of the catchment north of Kilmanagh and as such, the potential for the site to impact downstream flows is limited. Furthermore, they are satisfied that proposed mitigation measures (as referenced above) will allow for all waters from the drainage network for the site to leave at existing greenfield run-off rates. Overall, I would concur with this view, and it is considered that the potential for the proposed development to contribute to or exacerbate flooding either on site or elsewhere downstream is limited.

8.7. Other Matters

Equine Receptors

- 8.7.1. Observers had highlighted that existing operating equine facilities had not been identified or assessed as sensitive receptors in the EIAR. In response, the Applicant in their appeal acknowledged that there was an incorrect reference, in Chapter 5 of the EIAR, to the closest stud farm being Whytemount Stud, located in Kells, Co.

Kilkenny. However, they have now confirmed that the closest registered stud farm is in fact Bluegate Stud, located c. 2.65km south of T7. They also acknowledge that horses on lands within the townland of Knockeenglass are referenced within the Third Party submissions on file. I note that submissions have also been received from Tom Comerford and Dr. Ingelise Stuijts who have raised similar concerns. In the absence of national policy or guidance in relation of the development of wind farms near stud farms/equestrian centres, the Applicant has referred to the British Horse Society's 'Advice on Wind Turbines and Horses - Guidance for Planners and Developers' which states the following in relating to the siting of wind turbines in the vicinity of equine businesses;

- 'The British Horse Society strongly recommends that the views and concerns of local equestrians should be recognised and taken into account when determining separation distances and that normally a minimum separation distance of 200m or three times blade tip height (whichever is greater) will be required between a turbine and any route used by horses or a business with horses.'

The Applicant has indicated that Bluegate Stud is located significantly outside the Shadow Flicker study area (1.69km) and the predicted cumulative 35db noise contour. As mentioned, horses on lands within the townland of Knockeenglass are also referenced and it is noted that landholdings within this townland, owned by landowners that are not involved in the proposed development, are located in excess of 570m from the closest proposed turbine (T07). Therefore, in these instances, the proposed turbines are at a distance beyond that of the British Horse Society's recommended minimum separation distance of 555m separation distance (based on three times the proposed turbine blade tip height of 185 metres) between a turbine and any equine facility. While I acknowledge that the setback of T7 from Dr. Stuijts's dwelling exceeds the recommended minimum separation distance, her submission does not clarify which specific parcel(s) of land are used for grazing horses. Irrespective of this, noting the lack of guidance on the matter within this jurisdiction and in the absence of any peer reviewed scientific evidence which indicate that wind farms have a negative adverse effect on equine interests, I am satisfied that the proposed development will not have a significant adverse effect on equine interests within the area.

Procedural Matters

8.7.2. Third Parties have contended that the Applicant had misrepresented the company structure in the community engagement and the significant concerns in relation to compliance, enforcement and liability have been raised. Submissions have noted that a Special Purpose Vehicle (SPV) is being used as a measure to protect the interests and assets of the owners. This is particularly the case where they are engaged in high-risk environmental construction activity, such as the proposed wind farm development. They have also highlighted the Applicant's involvement in the Meenbog wind farm project where a significant peat slide occurred during the construction phase and a significant number of departures from the associated planning permission were identified. It is contended that the Applicant's track record and legacy of issues associated with that development raises concerns regarding compliance and the potential for enforcement issues to arise in the future. It is confirmed within the First Party appeal that the Applicant, Briskalagh Ltd, is an associated company of Enerco Energy Ltd., an Irish-owned company based in Cork. It is also acknowledged that the developer of the Meenbog Wind Farm, Planree Ltd, is an associate company of Enerco Energy Ltd. However, it is their contention that the peat slide was not attributed to any negligence by the developer and it is confirmed that Planree Ltd continue to work with the relevant Authorities to resolve the issues at that development, which they note is a clear indication of Enerco's commitment to follow through on the delivery of all their projects. Whilst the resident's concerns are acknowledged, I note that it is common practice in the Irish renewable energy sector for parent companies to establish dedicated companies for individual wind projects. This approach is acceptable in my view. I also note that a wide range of enforcement powers are available to Planning Authorities under the Planning and Development Act, 2000 (as amended) and the efficacy or otherwise of these powers or the performance of a Planning Authority is not a material consideration for the Commission. The Commission does not have enforcement powers, or an enforcement role and this matter is not within the jurisdiction of the Commission.

8.7.3. Observers have identified a number of non-compliances with the Planning Regulations and examples are provided with respect to deficiencies in the application drawings in general, and the updated drawings submitted to the Commission by way of further information. I note that the matter of validation is the role of the respective Planning

Authority. Notwithstanding this, I am satisfied that there is adequate information before the Commission in order to comply with the relevant legislative provisions and discharge its statutory function as the competent authority.

8.8. Consideration of Conditions

- 8.8.1. As permission has been refused for the proposed development, no conditions have been recommended by the Planning Authority, or their internal departments. However, a number of Prescribed Bodies have recommended suitable conditions in the event of a grant of planning permission. I have summarised these conditions in the below table, together with information on their inclusion or exclusion in the recommended schedule of conditions to this report.

Table: Consideration of Conditions

DHLGH, Development Applications Unit - Archaeology		Included/Excluded in Schedule of Conditions
	Geophysical survey and test trench excavation recommended as FI.	Included as Condition No. 16
DHLGH, Development Applications Unit - Archaeology		
Appropriate Assessment	Recommendation for FI in relation to further surveys for Otter. Recommendation for FI in relation to noise levels associated with HDD on the River Nore Crossing and associated disturbance on Kingfisher. Surface Water Protection Measures.	Otter and Kingfisher matters addressed through the Commission's FI request. Surface Water Protection Measures addressed through appeal and Applicant's FIR. It is also considered that this is covered by the scope of Condition No. 5
Birds	Recommended condition for time of vegetation removal works.	It is considered that this is covered by the scope of Condition No. 4
Bats	Recommendation for FI in relation to farm complexes within the wind farm site and bridges along the proposed GCR.	Matters addressed through appeal and Applicant's FIR. It is also considered that this is covered by the scope of Condition No. 4
Badger	Recommendation for a pre-construction Badger survey.	It is considered that this is covered by the scope of Condition No. 4
Amphibians and Reptiles	Concerns highlighted regarding absence of dedicated surveys.	Matters addressed through appeal and Applicant's FIR.
Habitats	Details around planting plan and location of reinforcement planting.	It is considered that this is covered by the scope of Condition No. 4
HSE		Included/Excluded in

		Schedule of Conditions
Public consultation	Complaints procedure	It is considered that this is covered by the scope of Condition No. 9
Shadow flicker.	Compliance with draft WEDG 2019 recommended.	It is considered that this is covered by the scope of Condition No. 4
Land, soils and geology.	Compliance with mitigation.	It is considered that this is covered by the scope of Condition Nos. 4 & 9
Water.	Compliance with mitigation and recommendation for all foul waster to be taken off site and treated.	It is considered that this is covered by the scope of Condition Nos. 4 & 9
Air	Compliance with mitigation.	It is considered that this is covered by the scope of Condition Nos. 4 & 9
Noise and vibration	Recommendation for noise monitoring, community engagement and limiting construction hours.	It is considered that this is covered by the scope of Condition Nos. 4 & 9
HSE Emergency Management Health		Included/Excluded in Schedule of Conditions
No specific observations to make in respect of application		NA
Inland Fisheries Ireland		Included/Excluded in Schedule of Conditions
	Recommendation to consult with IFI at design stage.	It is considered that this is covered by the scope of Condition No. 9
	Requirement for method statements	It is considered that this is covered by the scope of Condition Nos. 4 & 9
	Compliance with mitigation.	It is considered that this is covered by the scope of Condition Nos. 4 & 9
	Various recommendations to protect ground and surface water quality.	It is considered that this is covered by the scope of Condition Nos. 4 & 9
	Monitoring and records	It is considered that this is covered by the scope of Condition Nos. 4 & 9
	Appointment of suitably qualified person to implement and oversee environmental mitigation measures.	It is considered that this is covered by the scope of Condition Nos. 4, 9 & 11
Irish Aviation Authority		Included/Excluded in Schedule of Conditions
	Aeronautical obstacle warning lights	Included as Condition No. 15
	As constructed coordinates	Included as Condition No. 15
	Pre-commencement approval of crane activity	Included as Condition No. 15
Transport Infrastructure Ireland		Included/Excluded in Schedule of Conditions
	Grid Connection Route	Matters addressed through appeal and Applicant's FIR. It is also considered that this is

		covered by the scope of Condition Nos. 4 & 10
	Abnormal Weight Loads	Matters addressed through appeal and Applicant's FIR. It is also considered that this is covered by the scope of Condition No. 10
Uisce Eireann		Included/Excluded in Schedule of Conditions
	Impact to Public Drinking Water Sources	Matters addressed through appeal and Applicant's FIR. It is also considered that this is covered by the scope of Condition Nos. 4, 9 and 17
	Interactions with UE assets	Matters addressed through appeal and it is considered that this is covered by the scope of Condition No. 17

9. Environmental Impact Assessment

9.1. Introduction & Statutory Provisions

- 9.1.1. The European Union Directive 2014/52/EU, amending Directive 2011/92/EU, on the assessment of the effects of certain public and private projects on the environment, requires Member States to ensure that a competent authority carries out an appraisal of the environmental impacts of certain types of projects, as listed in the Directive, prior to development consent being given for the project. The EIA Directive has been transposed into Irish Law, with requirements now set out in the PDA 2000 and the PDR 2001.
- 9.1.2. Part 1 of Schedule 5 of the PDR 2001 includes a list of projects for which mandatory EIA is required. Part 2 of Schedule 5 provides a list of projects where, if specified thresholds are exceeded, an EIA is also required. The proposed development falls within the definition of a project under the EIA Directive as amended by Directive 2014/52 (execution of constructions works) and falls within the scope of Class 3 (i) of Part 2 of the Fifth Schedule of the Regulations:

3. Energy Industry

- (i) 'installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output of greater

than 5 megawatts’.

- 9.1.3. The proposed development with a total of 7 no. turbines and with an estimated combined generating capacity of 49MW exceeds these thresholds and is therefore subject to mandatory EIA.

9.2. EIA Structure

- 9.2.1. This section of the report comprises the environmental impact assessment (EIA) of the proposed development in accordance with Planning and Development Act 2000 (as amended) and the associated Regulations, which incorporate the European directives on environmental impact assessment (Directive 2011/92/EU as amended by 2014/52/EU). Section 171A of the Planning and Development Act, 2000 (as amended) defines EIA as:
- a. consisting of the preparation of an Environmental Impact Assessment Report (EIAR) by the applicant, the carrying out of consultations, the examination of the EIAR and relevant supplementary information by the Commission, the reasoned conclusions of the Commission and the integration of the reasoned conclusion into the decision of the Commission, and
 - b. including an examination, analysis, and evaluation, by the Commission, that identifies, describes and assesses the likely direct and indirect significant effects of the proposed development on defined environmental parameters and the interaction between these factors, and which includes significant effects arising from the vulnerability of the project to risks of major accidents and/or disasters.
- 9.2.2. Article 94 of the Planning and Development Regulations, 2001 and associated Schedule 6 set out requirements on the contents of an EIAR.
- 9.2.3. This EIA section of the report is therefore divided into two sections. The first section assesses compliance with the requirements of Article 94 and Schedule 6 of the Regulations. The second section provides an examination, analysis and evaluation of the development and an assessment of the likely direct and indirect significant effects of it on the following defined environmental parameters, having regard to the EIAR

and relevant supplementary information:

- population and human health,
- biodiversity, with particular attention to species and habitats protected under the Habitats Directive 92/43/EEC and the Birds Directive 2009/147/EC,
- land, soil, water, air, and climate,
- material assets, cultural heritage, and the landscape,
- the interaction between the above factors, and
- the vulnerability of the proposed development to risks of major accidents and/or disasters.

9.2.4. The assessment also provides a reasoned conclusion and allows for integration of the reasoned conclusions into the Commission's decision, should they agree with the recommendation made. Adequacy of the consultations carried out by the applicant is also considered below.

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

9.3.1. Compliance with the requirements of Article 94 and Schedule 6 of the Regulations is set out below.

Article 94(a) Information to be contained in an EIAR (schedule 6, paragraph 1)
<i>A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development (including the additional information referred to under section 94(b)).</i>
A comprehensive description of the development is contained in Chapter 4 of the EIAR including location, layout, project components, site activities, access and transportation, drainage, construction management and methodologies, community gain, operation and decommissioning.
<i>A description of the likely significant effects on the environment of the proposed development (including the additional information referred to under section 94(b))</i>
An assessment of the likely significant effects of the development (direct, indirect and cumulative) on the different environmental parameters, is carried out for each of the technical chapters (topic Chapters 5 to 17) of the EIAR. Section 2.8 of EIAR Chapter 2 sets out the overall approach to cumulative impact assessment and this is addressed in further detail within each technical chapter. I am satisfied that the assessment of significant effects is comprehensive and robust and enables decision making.
<i>A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development (including the additional information referred to under section 94(b)).</i>
The EIAR includes designed in mitigation measures and measures to address potential adverse effects identified in technical studies and are provided in each of the technical chapters of the EIAR and the associated appendices. The various mitigation and monitoring measures are also collated and summarised in Chapter 18 (Schedule of Mitigation) of the EIAR. Mitigation measures comprise standard good practices and site-specific measures and are largely capable of offsetting significant

adverse effects identified in the EIAR.
<i>A description of the reasonable alternatives studies by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment (including the additional information referred to under section 94(b)).</i>
A description of the alternatives considered is provided in Chapter 3 of the EIAR. The alternatives considered include, 'do nothing', alternative site locations, alternative renewable energy technologies alternative project design options, alternative grid connection design options and alternative mitigation measures. I consider that the description of alternatives is reasonable and satisfactory in the context of the proposed development. Further analysis is provided in my assessment of Chapter 3 below.
Article 94(b) Additional information, relevant to the specific characteristics of the development and to the environmental features likely to be affected (Schedule 6, Paragraph 2).
<i>A description of the baseline environment and likely evolution in the absence of the development.</i>
A detailed description of the baseline environment is included in each of the technical chapters of the EIAR and I am satisfied that it is sufficient to enable the assessment of likely effects and to enable decision making.
<i>A description of the forecasting methods of evidence used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved.</i>
Forecasting methods and/or evidence to identify and assess significant effects are included in the EIAR, as required for the relevant environmental topics. It is noted that that no technical difficulties were encountered in the preparation of the EIAR (Section 1.9 of Chapter 1). Having reviewed the EIAR, I am satisfied that there are no significant impediments to the assessment.
<i>A description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it.</i>
This issue is specifically dealt with in Chapter 16 of the EIAR. Specific risks have been identified in relation to the project's vulnerability to contamination and fire/explosion. These risks are reasonable and are assessed in my report.
Article 94c A summary of the information in non-technical language.
A non-technical summary of the EIAR is provided by the Applicant and satisfactorily describes the likely environmental effects of the development in a concise and comprehensive manner and written in a way that is easily understood by a lay member of the public.
Article 94(d) Sources used for the description and the assessments used in the report.
The sources used to inform the description, and the assessment of the potential environmental impact are set out in each chapter. I consider the sources relied upon are generally appropriate and sufficient.
Article 94(e) A list of the experts who contributed to the preparation of the report.
A list of the various experts who contributed to the report are set out in Section 1.8 and Table 1-3 in Chapter 1 of the EIAR. Further details of the competence and qualifications of each individual contributor is provided in each relevant chapter of the EIAR. Overall, I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality.

9.4. Alternatives

9.4.1. Issues Raised

- 9.4.1.1. As part of the Planning Authority second reason for refusal, it was determined that the EIAR's consideration of alternatives, including cable routes, was not found to meet the relevant statutory requirements. As I have noted in Section 6 of this report and the supporting appendices, similar concerns had been raised by a number of Third Party observers. Noting those concerns, the Commission also requested the Applicant by

way of FI to provide a rationale for the identification of Ballyragget 110kV substation as the optimum connection node for the proposed development. Furthermore, they were requested to outline why 'Proposed Grid Connection Underground Cabling Route Option No. 1' was discounted in their consideration of alternatives, despite this route being adopted for the permitted Farranrory grid connection route.

9.4.2. **Legislative Context**

9.4.2.1. Under the provisions of Article 5(1)(d) of the 2014 Directive, it is a requirement that an EIAR contain: "(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". I note that alternatives are considered under Chapter 3 of the EIAR under the following headings:

- 'Do-Nothing' Alternative,
- Alternative Site Locations,
- Alternative Renewable Energy Technologies,
- Alternative Project Design Options,
- Alternative Grid Connection Design Options, and,
- Alternative Mitigation Measures.

'Do Nothing' Alternative

9.4.2.2. A 'do nothing' alternative would be to leave the site as it is, with no changes made to the current land-use practices. However, it is stated that the opportunity to capture the available renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. Furthermore, the opportunity to generate local employment, local authority development contributions, rates and investment in the local area would also be lost. As a result of the positive environmental effects, the Do-Nothing' scenario was not the chosen option. The existing land uses can and will continue in conjunction with the proposed development. A comparison of the potential environmental effects of the 'Do-Nothing' Alternative when compared against the chosen option of developing a renewable energy project are presented in Table 3-1 of the EIAR.

Alternative Site Locations

9.4.2.3. It is noted that the site has been identified as having potential for a wind energy development as a result of a nationwide search of suitable lands and it is confirmed that the selection process was constraints and facilitators led. A nationwide constraints analysis was undertaken and included avoidance of environmental designations (Natura 2000 sites), review of national, regional and local policies and objectives, suitable wind speeds, adequate setbacks from sensitive receptors, proximity to national grid nodes, avoidance of direct impacts on known cultural heritage assets, access and constructability. It is noted that site selection for the development of a wind farm must be suitable for consideration under a number of criteria, such as:

- Environmental Sensitivities: Located outside of EU Natura 2000 sites; locations outside of National designations; located outside of Article 17 Annex I Habitats;
- Grid Connection: Access to the national electricity grid possible within a viable distance;
- Sensitive Receptors: Capable of complying with required setbacks from sensitive receptors;
- Site Scale: Sufficient area of unconstrained land that could potentially accommodate a wind farm development and turbine spacing requirements.

Factoring all required environmental constraints into the project design, a site of considerable scale, with an estimated installed capacity of 49MW, and potential to power approximately 32,703 Irish households with renewable energy and displace 31,578 tonnes of carbon dioxide per annum (1,105,230 tonnes over the 35-year operational life), the site was considered appropriate for wind energy development and would represent a positive contribution to National and EU climate action targets.

Alternative Renewable Energy Technologies

9.4.2.4. When considering other renewable energy technologies in the area, the Applicant considered offshore wind and commercial solar energy production as an alternative to the proposed wind farm. It is noted that Enerco Energy Ltd has a keen interest in offshore wind farms and has explored potential offshore sites. However, due to delays with the regulatory process for offshore development, a combination of both onshore and offshore wind farm development will continue to be required to deliver on the Country's ambitious renewable energy targets. As such, their primary focus remains to be onshore wind farms, and they will continue to explore potential development of

offshore in tandem with delivering suitable sites onshore such as the proposed development.

- 9.4.2.5. In terms of solar energy, it is noted that a larger development footprint would be required to achieve the same maximum estimated electricity output from solar energy as is expected from the proposed wind farm (c. 49MW). The permanent footprint of the proposed development measures c. 8.75ha (0.875% of c. 1,000ha site) compared to a solar PV array of c. 78.4ha which would equate to 7.84%. A comparison of the potential environmental effects of the development of a solar PV array when compared against the proposed development is presented in Table 3-2 of the EIAR. Having regard to this analysis, the proposed development was considered to be the most efficient method of electricity production with the lesser potential for significant environmental effects.

Alternative Project Design Options

Alternative Turbine Numbers and Model:

- 9.4.2.6. The proposal includes the installation of 7 no. 7MW turbines which will have an estimated installed capacity of 49 MW. Whilst this capacity could also be achieved using smaller turbines (for example 2.5 MW machines), this would necessitate the installation of over 19 no. turbines to achieve a similar output. This would result in greater development footprint, a larger amount of supporting infrastructure being required (i.e., roads etc) and increasing the potential for environmental impacts to occur. It is stated that the proposed number of turbines takes account of all site constraints and the distances to be maintained between turbines and features such as roads and houses, while maximising the site's wind energy potential.
- 9.4.2.7. It is confirmed that the turbine model to be installed will have an overall ground to blade tip height of 185m; a rotor diameter 163m; and a hub height of 103.5m. It is the Applicant's view that the use of alternative smaller turbines would fail to make the most efficient use of the wind resource and would potentially require a larger development footprint and potentially lead to additional environmental effects. A comparison of the potential environmental effects of the installation of a larger number of smaller wind turbines when compared against the chosen option is provided in Table 3-3 of the

EIAR.

Alternative Turbine Layout and Development Design:

9.4.2.8. It is stated that the development's design has been an informed and collaborative process from the outset, involving the designers, developers, engineers, landowners, environmental, hydrological and geotechnical, archaeological specialists and traffic consultants. The overall aim being to reduce the potential for environmental effects while designing a project capable of being constructed and viable. In terms of 'Constraints and Facilitators Mapping', the constraints mapping process involved the placing of buffers around different types of constraints so as to clearly identify the areas within which no development works will take place. The constraints map is provided in Figure 3-1 of the EIAR and encompasses the following constraints and associated buffers which allowed for a viable area to be identified:

- Sensitive Receptors: a minimum 740-metre setback from third party sensitive receptors and a minimum 500m setback from sensitive receptors involved in the proposed development (achieving the Guidelines recommended setback of 500m and 4 x tip height separation distance from third party sensitive receptors in line with the draft Guidelines).
- Hydrology: Watercourses plus 50m buffer.
- Archaeology: Archaeological Sites or Monuments: 30m buffer, plus 'Zone of Notification' as required by the National Monuments Service (ROI). There are two recorded monuments within the EIAR Site Boundary.
- Habitats and Biodiversity: Bat roost plus 200m plus blade length buffer. Siting of infrastructure so as to minimise loss of habitats of Local Importance (higher value) and higher.

It is noted that the turbine layout was also informed by the results of ecological assessments, hydrological and geotechnical investigations, noise assessments, landscape and visual and the separation distance to be maintained between turbines. Thus, it is stated that the design was an iterative process, where findings at each stage of the assessment were used to further refine the design, always with the intention of minimising the potential for environmental impacts.

Alternative Turbine Layout Iterations:

9.4.2.9. The final turbine layout is based on the results of all site investigations and takes account of all site constraints and the distances to be maintained between turbines and from houses, roads, etc. It is stated that the number of turbines and the proposed layout have been revised and amended to take account of the physical constraints of the site and the requirement for buffer zones and other areas in which no turbines could be located. It is also noted that the selection of the turbine number and layout has also had regard to wind-take and the separation distance to be maintained between turbines, as well as landscape and visual, noise and shadow flicker impacts. There were a number of reviews by the wind farm design team of the specific locations of turbines during the optimisation of the site layout and Figure 3-2 to 3-5 of the EIAR shows the evolution of the turbine layout. An analysis of each layout iteration is also provided. It is the Applicant's contention that the final chosen turbine layout is the optimal layout given it has the least potential for environmental effects. Table 3-4 of the EIAR provides a comparison of the potential environmental effects of initial iterations of the turbine layout as compared against the final turbine layout.

Alternative Road Layout and Borrow Pit:

9.4.2.10. Approximately 6km of new internal tracks are required for the development along with c. 1.8km of existing farm tracks, which are currently used by the landowners in their daily farming activities, some which require upgrading/widening to facilitate the movement of abnormal loads. For the final design iteration, an additional northern entrance was included in order to facilitate the construction of the proposed borrow pit and to reduce the level of construction traffic passing through Kilmanagh to the south. An alternative option would be to construct a new road network, having no regard to existing roads or tracks. This approach was not favoured, as it would require unnecessary disturbance to the site and create the potential for additional cut and fill material to be used in the construction of new road networks.

9.4.2.11. In terms of the borrow pit, 2 no. test pit locations were selected near at the north of Site (north of T01) and to the south (south of T07) following geotechnical investigations. Trial pits were undertaken at these locations to determine a potential suitable location for a borrow pit. The findings of the geological site investigations concluded in the identification of 1 no. borrow pit (15,272sq.m.) within the site with a

potential of providing 70,000m³ of construction stone material. The extraction of material from the borrow pit will be during the construction phase and rock breaking and blasting are potential methods of extracting material. Processing and crushing of stone material will also be required at the borrow pit to achieve the grading requirements for use in construction. It is also noted that engineering fill and higher quality, surfacing granular fill and sand will be sourced from local, authorised quarries. There are approx. 19 no. licenced quarries located within 20km of the site which have been selected for the purposes of assessment throughout this EIAR, the locations of which are shown in Figure 4-28. An alternative was the option of sourcing all stone and materials from a licensed quarry or quarries. However, the movement of the volume of material required for the construction of a 7 no. turbine wind farm would result in a significant increase in construction traffic and heavy loads, in combination with a potential for an increase in noise and dust emissions along the haul routes and was therefore considered a less preferable option. It is stated that the cost of importing the required volume of crushed stone was also a factor in choosing to obtain stone from an on-site borrow pit. Tables 3-5 & 3-6 of the EIAR provides a comparison of environmental effects when compared against the chosen option.

Alternative Turbine Component Delivery Option

- 9.4.2.12. In terms of alternative ports of entry, Belview Port (Waterford), Dublin Port, Shannon-Foyes Port (Limerick), Cork and the Port of Galway were considered. It is stated that there are clear access routes for all five ports utilising the motorway network to the proposed haul route to the site. Regardless of which port is chosen, the components will approach the site via the M9 to the east. For the purpose of the EIAR, Belview Port was selected as the port of entry for the proposed turbines.
- 9.4.2.13. When considering the alternative component delivery routes, the optimal delivery route was deemed to be the M9, N10, N76, R695, and L1009, which has been subject to autotracks assessment and shows that accommodation works are not required along the delivery route itself, and with the construction of a temporary abnormal load entrance off the L1009. It is confirmed that all construction traffic will use designated haul routes only, as agreed with the local authority. The delivery of turbine components including blades, tower sections and nacelles is a specialist operation owing to the

oversized loads involved and the turbine blades will be delivered to site using a Super Wing Carrier.

Alternative Site Access Points

- 9.4.2.14. In terms of the abnormal load entrances, it was concluded that a separate entrance for abnormal loads and concrete deliveries would be constructed, with all other Heavy Goods Vehicles (HGVs) and construction phase vehicles using a separate entrance to the north of the Site. The abnormal load entrance will be temporary in nature and will be reinstated once all turbine components are delivered. An alternative to this was to take the abnormal loads up the L5023 into existing farm entrances located west of the site or via a new general construction access point. However, due to the necessary land take requirements, and inadequate sightlines, this option was ruled out. For general construction and operation, various existing agricultural entrances were considered. However, a new construction site entrance off the L5024 to the north which achieved the necessary sightlines is proposed, and was considered suitable as an operational entrance for maintenance staff, ESN (for substation access) and for continued farm access.

Alternative Design of Ancillary Structures

- 9.4.2.15. The internal 33kV underground cabling route will follow the internal road network throughout the site, connecting all 7 no. turbines to the onsite 38kV substation. While this means that a longer cabling route will be needed, it was considered the more environmentally prudent option than laying the cable 'as the crow flies'. In terms of the met mast, it is proposed to be located in an agricultural field, which was shown to be an area of low ecological value. As the layout evolved, it is noted that the location of the met mast was moved c. 225m south, in order to accommodate the proposed spoil management area. While other locations were considered, the proposed location was deemed to be most suitable due to the low ecological value of the habitat.

Alternative Grid Connection Design Options

- 9.4.2.16. The proposed onsite 38kV substation is located in the western portion of the wind farm site and is located within an agricultural grassland field of low ecological value and screened from sensitive receptors by vegetation from the west. This location was

deemed to be suitable due to the habitats it is located on, the available natural screening, its proximity to sensitive receptors and the existing ground conditions.

9.4.2.17. In terms of the GCR, underground electrical cables will transmit the power output from each wind turbine to the proposed onsite 38kV substation, and from there to the existing Ballyragget 110kV substation, via an underground electrical cabling route, measuring approximately 23km in length. An alternative to the c. 23km underground cabling route would be to construct an c. 18km overhead line from the proposed onsite substation to the existing 110kV Ballyragget substation. However, it was considered that underground cabling would be a preferable alternative to overhead lines on visual impact grounds. Additionally, consideration was given to installation of the grid connection within private lands adjacent to the public road network. However, this was not deemed to be a feasible option, due to the likely need for constructing at least 18.2km of new roads across private lands to facilitate the construction and operation of the underground cabling.

9.4.2.18. The MW output of the proposed development is such that it needs to connect to a 110kV substation. There are 4 no. existing 110kV electricity substation located within 25km of the Proposed Wind Farm, namely:

- Ballyragget 110kV Substation,
- Kilkenny 110kV Substation,
- Thurles 110kV Substation, and,
- Lisheen 110kV Substation.

9.4.2.19. The Applicant's studies identified Ballyragget 110kV substation as the optimum connection node for the proposed development and an underground GCR to Ballyragget 110kV Substation was considered and assessed to identify whether it was a viable option. As part of the Applicant's FIR, an assessment of the alternative grid connection nodes has now been provided. The analysis demonstrates Ballyragget would be the optimum connection node due to the lower potential effects across multiple environmental considerations, such as air quality, climate and material assets, as well as a reduced construction duration and costs associated given its overall length. Figure 5 of the Applicant's FIR illustrates the 4 no. connection nodes and

associated grid connection routes which were assessed.

9.4.2.20. In terms of the proposed GCR, the assessment outlines 3 no. routes from the proposed wind farm to Ballyragget 110kV substation, which were considered during the iterative design process and a table is provided within the EIAR which compares the environmental effects of each option when compared against the chosen route. The chosen GCR was 'Proposed Grid Connection Underground Cabling Route Iteration No. 3'. This GCR measures c. 23km in length and involves 13 no. identified watercourse crossings. It is stated that this was considered to be the most environmentally prudent and practical option as it was a considerably shorter length of route (6.8km shorter than underground cabling route Option 1) and avoided the potential cultural heritage receptors identified within Ballyragget (Option 2). As noted, the Applicant was requested to outline why Option 1 was discounted in their consideration of alternatives, despite this route being adopted for the permitted Farranrory grid connection route. The Applicant in their response reiterated that the increased length of Option 1 and associated disadvantages had rendered it suboptimal prior to consideration of cumulative effects with the permitted Farranrory Grid Connection. It was also noted that the construction of the permitted Farranrory grid connection is underway and is expected to be completed well in advance of the construction of the proposed GCR and the use of the potential diversion route sections 5 and 6, as per Figures 15-4e and 15-4f of the EIAR, which overlap with the Farranrory grid connection route

9.4.3. **Conclusion**

9.4.3.1. Notwithstanding the concerns raised by the Planning Authority, it is considered that the matter of examination of alternatives has been satisfactorily addressed in the EIAR, and the Applicant's FIR and the level of detail is reasonable and commensurate with the scale of the project. I am satisfied that the process of site selection within the landholding and the possible alternatives across the various elements of the project followed a comprehensive and transparent process. It indicates how the proposed development evolved and how it was adjusted to take into consideration of the site constraints and the range of potential environmental effects. Overall, I am satisfied that the process is robust and that the requirements of the Directive are fully complied with.

9.5. Consultations

9.5.1. A number of observers have highlighted concerns regarding the Applicant's lack of meaningful engagement with the public. It is also the contention of observers that the planning application failed the test of accessibility, completeness, and procedural fairness required for major infrastructure development, therefore violating the Aarhus Convention principle of effective public participation. The application has been submitted in accordance with the requirements of the Planning and Development Act, 2000 (as amended) and Regulations 2001 (as amended) in respect of public notices. Details of the applicants scoping work and consultations are set out in Section 2.7 of the EIAR (Chapter 2). Appendix 2-1 also provides a detailed report of the public consultation exercise that has been carried out. Consultation commenced in November 2022, when a project Community Liaison Officer (CLO) was appointed and an introductory information pack was delivered via door-to-door consultation to all householders within a c. 2km radius of the area of the site. Follow on community interactions included:

- May 2023 - a project update was circulated and included a letter and Frequently Asked Questions (FAQs) from the CLOs interactions with the community.
- August 2023 - correspondence circulated which notified the community about the dates and times of the first Public Information Exhibition (PIE) to be held August 24th, in the Ballycallan Community Hall.
- September 2023 - an updated set of FAQs was circulated which addressed the main concerns raised at the first PIE.
- April 2024 - an updated information pack was circulated which included an updated site layout map and two zone maps showing the dwellings within 2km of the proposed turbines. It is also notified the community about the dates and times of the second PIE May 23rd in the Ballycallan Community Hall.
- July 2024 - T08 was removed from the proposal following feedback from the community and Kilkenny County Council, reducing the overall number of turbines to 7. An updated information pack was circulated to the updated mailing list.
- September 2024 - a further project update was provided to the community with a letter circulated notifying the community that the planning application for the proposed development would be submitted to Kilkenny County Council within

two weeks, and a copy of the press notice text was enclosed. A leaflet was delivered by the CLO to all properties directly accessed off the proposed GCR notifying them about the project and providing some information of the proposed works associated with the underground cabling installation.

- 9.5.2. In November 2022, a dedicated project website was launched, which the Applicant notes provided an additional communication channel to keep members of the public informed. It is confirmed that all information that was made available to the community has been uploaded to the website throughout the consultation period. The Applicant has also indicated that residents were informed throughout the public consultation process about the availability of a community benefit fund, in the event of a grant of planning for the proposed development. Overall, I am satisfied that appropriate consultations have been carried out and that Third Parties have had the opportunity to comment on the proposed development in advance of decision making.

9.6. Compliance

- 9.6.1. Having regard to the foregoing, I am satisfied that the information contained in the EIAR, and the additional information provided by the Applicant at appeal stage is sufficient to comply with Article 94 of the Planning and Development Regulations, 2001 (as amended).

9.7. Assessment of Likely Significant Effects

- 9.7.1. In accordance with section 171A of the Act, this assessment includes an examination, analysis and evaluation of the application documents, including the EIAR, the associated drawings, documents/appendices and the submissions received and identifies, describes and assesses the likely direct and indirect significant effects (including cumulative effects) of the development on the environmental parameters set out in the Regulations and the interaction of these. Each topic section is therefore structured under the following headings:
- Issues raised in the appeal,
 - Examination of the EIAR,
 - Analysis, Evaluation and Assessment: Direct and indirect effects, and,
 - Conclusion: Direct and indirect effects.

9.8. Population & Human Health

9.8.1. Issues Raised

Third Parties

- 9.8.1.1. As detailed earlier in this report, issues have been raised by Third Parties during the application and appeal with respect to the potential impact of the proposed development on residential amenity as a result of shadow flicker, construction disturbance, visual impacts and noise impacts associated with the construction and operational phase and health and safety impacts including the risk of structural failure and ice throw in winter. Concerns have also been raised regarding impacts on public health and in particular, sensitive receptors within the site's vicinity, including schools. A number of observers have also contended that the proposed development would negatively impact property values in the area.

Planning Authority/Prescribed Bodies

- 9.8.1.2. It was the Planning Authority's view that the cumulative effects of visual intrusion, noise, shadow flicker and disturbance of access would give rise to excessive levels of adverse effects on residential amenity in the area and this formed the first reason for refusal. A report is on file from the HSE which provides recommendations with respect to noise and shadow flicker.
- 9.8.1.3. I note that the issues raised in relation to noise, landscape and visual effects and traffic (inc. emissions) are addressed in the different technical chapters of the EIAR and dealt with in the corresponding environmental topic sections of this report.

9.8.2. Examination, analysis and evaluation

Context

- 9.8.2.1. Chapter 5 of the EIAR considers the potential effects of the proposed development on population and human health. In terms of methodology, a desk-based assessment using sources and guidelines (see Section 5.1.2) was undertaken to examine relevant information pertaining to the population impact assessment. Information on population statistics, employment and social data for the relevant Electoral Divisions (EDs) were obtained from the Central Statistics Office (CSO) for census years 2016 and 2022. The Population Study Area for the population assessment focuses on the EDs within

and adjacent to the site, namely Ballycallan, Kilmanagh, and Tullaroan. To assess the population in the vicinity of the GCR, 252 no. properties located within 100m of the GCR were identified.

9.8.2.2. In terms of shadow flicker, the current adopted guidance in Ireland is derived from the WEDG 2006 and the 'Best Practice Guidelines for the Irish Wind Energy Industry' (Irish Wind Energy Association, 2012). The WEDG 2006 state that at distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low. Therefore, the study area adopted for the shadow flicker assessment is 10 rotor diameters of the proposed turbine locations (i.e. for the proposed development, this is assumed at 1.63km based on a rotor diameter of 163m). The WEDG 2006 recommend that shadow flicker at neighbouring offices and dwellings within 500m of a proposed turbine location should not exceed a total of 30 hours per year or 30 minutes per day. It is stated that the shadow flicker methodology and assessment within the chapter are based on compliance with the WEDG 2006, which remain to be the current adopted guidelines. However, it is also noted the proposed turbines can be brought in line with the requirements of the draft WEDG 2019 through the stricter implementation of the mitigation measures outlined in Section 5.10.3.2.7 of the EIAR.

9.8.2.3. For the purposes of the Applicant's shadow flicker assessment, the software package WindPRO: Shadow – Version 4.0.531 has been used to predict the level of shadow flicker associated with the proposed wind farm development. All inhabitable dwellings within 1.63km of the proposed turbines have been considered as part of the Applicant's shadow flicker assessment. It is noted that there are 164 no. properties located within the study area (Figure 5-5 of the EIAR). Of these, a total of 63 no. properties are theoretically predicted to experience shadow flicker. The Shadow Flicker Study Area is shown in Figure 5-5 of the EIAR. It is noted within the EIAR that there are no registered thoroughbred stud farms located within the Shadow Flicker Study Area, with the closest registered stud farm being Whytemount Stud, located in Kells, Co. Kilkenny, c. 14.5km south of the nearest proposed turbine.

Baseline

9.8.2.4. As noted, the 'Population Study Area' was defined in terms of EDs with the proposed

wind farm site lying within three (3) No. EDs: Ballycallan, Kilmanagh and Tullaroan. The Population Study Area has a population of 1,343 persons as of 2022. It is noted that there are 45 no. sensitive receptors located within 1km of the proposed turbine locations. The closest sensitive receptor, belonging to an involved landowner, is located over 500m from the nearest proposed turbine (T4), i.e. over the minimum recommended setback for properties involved in the project (500m). The closest third-party sensitive receptor is located greater than 750m from the nearest proposed turbine (T3), i.e. over the recommended 4x tip height setback (740m) from properties not involved in the project (as recommended in the draft WEDG 2019). In order to assess the population in the vicinity of the GCR, a review of properties and planning applications in the vicinity of the underground electrical cabling route was carried out and identified 256 no. properties located within 100m of the GCR.

9.8.2.5. This Chapter of the EIAR provides information on population trends, population density, household statistics, age structure for the Population Study Area, the county and the state. It also provides baseline information on the economic status of the Population Study Area and employment and investment potential in the Irish wind energy industry.

9.8.2.6. The settlement of Kilmanagh is located directly south of the proposed wind farm site, and the settlement of Tullaroan is located c. 2.7km north of the nearest turbine. Other settlement areas in the wider region include Callan (c. 8.5km to the south), Urlingford (c. 14km north-west), Ballyragget (c. 16.4km north-east), and Kilkenny City (c. 8.5km east). All centres provide retail, recreational, educational, and religious services. It is noted that the nearest primary school is St. Aidan's National School in Kilmanagh. Beyond that is Scoil Ruadhain Tullaroan, located c. 2.9km north-west of the nearest turbine. In terms of amenity or community facilities, Graigue Ballycallan GAA is located directly south of the site in Kilmanagh. The River Rangers AFC is also located 3.3km southeast of the nearest proposed turbine. With respect to 'tourism', it is noted within the EIAR that the nearest identified tourist attraction is the Ballykeefe Amphitheatre, located within the old Ballykeefe Quarry. This is an outdoor amphitheatre with crowd capacity of 850 people and is located c. 2.6km to the south of the site. National Monuments within 10km of the nearest turbine have been identified with the closest being Tullaroan Church, c. 2.1km from the nearest proposed turbine, T3.

9.8.2.7. In terms of property values and wind farms, the EIAR summarises the largest and most recent studies from the United States and the UK and also provides a summary of an Irish working paper by the Centre for Economic Research on Inclusivity and Sustainable (CERIS). It is indicated that the literature demonstrates that there is insufficient evidence from the scientific literature and studies conducted to determine that there is the potential for a significant effect on property values as a result of the proposed wind farm. In terms of grid infrastructure, it is indicated that Eirgrid conducted a literature review and evidence-based field study (2016) on the effects of high voltage transmission development on patterns of settlement and land use. It is noted that this study has established no evidence of any significant impact arising from the construction or existence of transmission infrastructure in terms of patterns of settlement and land use. However, transmission infrastructure can be a local physical constraint on development.

9.8.2.8. In terms of the results of the Applicant's shadow flicker assessment, it is noted that the WindPRO computer software was used to model the predicted daily and annual shadow flicker levels in significant detail. Based on the assumptions set out in Section 5.2.3.5.2 (Assumptions and Limitations) of the EIAR, a sunshine factor of 29.44% has been applied and an approximation of the 'estimated actual' annual shadow flicker occurrence has been calculated and is presented for each receptor in Table 5-13 of the EIAR. The predicted shadow flicker levels have been modelled for all 164 no. sensitive receptors located within the Shadow Flicker Study Area and the results indicate that:

- 101 sensitive receptors are theoretically predicted to experience zero shadow flicker;
- 63 sensitive receptors are theoretically predicted to experience some shadow flicker;
 - o Of the 63 sensitive receptors, 41 sensitive receptors are theoretically predicted to experience shadow flicker that exceeds the WEDG 2006 for daily and/or annual shadow flicker. It is noted that 5 of these 41 sensitive receptors are involved landowners.
- The annual threshold of over 30 hours for shadow flicker (WEDG 2006) is predicted to be exceeded at 3 sensitive receptors once the regional sunshine

average factor of 29.44% has been considered. It is noted that 1 of these 3 sensitive receptors is an involved landowners.

Due to the separation distance between the proposed turbines and all surrounding proposed, permitted, or operational wind farms, it is indicated that there is no potential for cumulative shadow flicker effects.

Potential Effects

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

Table: Summary of Potential Effects

<i>Do Nothing</i>	The site will continue to function as it does at present, with no changes made to the current land-use and potential for impacts on population and human health through the construction, operation and decommissioning of the proposed development would not occur. However, the opportunity to capture part of Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources by 2030 and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would also be lost.
<i>Construction Phase</i>	<i>Population</i> No impact on the population of the area in terms of changes to population trends or density, household size or age structure. <i>Employment and Investment</i> It is proposed to construct the wind farm and grid connection concurrently which would require approximately 100 employees in total, with an estimated 80 jobs focussing on the construction phase of the proposed wind farm and 20 jobs on the GCR. The construction phase of the wind farm will last between 12-18 months. A long-term positive effect on the local skills base as a result of an influx of skilled people into the area and the potential transfer of skills. <i>Land Use Patterns & Activities</i> Wind Farm - During the construction phase there may be slight interference with agricultural practices where farm practises may be redirected to other fields temporarily. GCR - Local temporary traffic disruptions are likely along the proposed GCR. However, once the construction of each element is complete, agricultural practises can return in the areas surrounding the onsite infrastructure and traffic flow will resume as normal along public roads. The proposed works will be rolling in nature; c. 100m to 200m will be constructed along the GCR at any one time. <i>Property Values</i> Wind Farm - There is the potential for short-term slight impacts on property values located within 1km of the proposed turbines during the construction phase.

	GCR – None. <i>Tourism</i> Wind Farm - Given that there are currently no tourism attractions specifically pertaining to the site, there are no impacts on tourism associated with the construction phase. GCR - Whilst the route shall be located within the public road network for the majority of its length, tourists seeking to travel to various attractions in the wider landscape during the construction phase, can utilise other routes and therefore will not be significantly impacted by the rolling construction phase. <i>Residential Amenity</i> Wind Farm - There is the potential for impacts on residential amenity during the construction phase of the proposed wind farm due to air, traffic, noise and vibration emissions due to the presence of additional traffic and plant machinery. GCR - Potential for impacts on residential amenity due to the construction phase due to the potential for traffic disruptions. <i>Health</i> Wind Farm - Construction sites and the machinery used on them pose a potential health and safety hazard to construction workers if site rules are not properly implemented. This will have a short-term potential significant negative impact on health and safety. GCR - Construction will include working under existing overhead transmission lines near Ballyragget substation, which may impact on electrical infrastructure and supply in the area and along a local road which may give rise to traffic impacts. Furthermore, working in the cavity of power lines and traffic flow is potential health and safety hazard for construction workers. This will have a short-term potential significant negative impact on health and safety. <i>Air Quality: Dust and Exhaust Emissions</i> Wind Farm - Potential dust and exhaust emission sources during the construction phase which the potential to cause a nuisance to sensitive receptors in the immediate vicinity of the wind farm site. GCR - Potential dust and exhaust emission sources during the construction phase include the construction phase. The exit via the L5024 to the north of the site has the potential to result in the transfer of mud to the public road, particularly if the weather is wet. This may cause nuisance to road users and local residents. These impacts will have a short-term, slight, negative impact on air quality. <i>Water Quality</i> Wind Farm - The construction phase ground works and use of plant on site may give rise to the potential release of suspended solids and hydrocarbons into surface and groundwaters. The pre-mitigation impact on water quality is assessed as negative, imperceptible, indirect, long term, unlikely effect on down gradient private water supplies. GCR - There are a number of Group Water Schemes located within and in close proximity to the GCR. There are 13 no. watercourse crossings located along the proposed GCR. The proposed onsite 38kV substation is

	located in c. 30m from an identified watercourse within the site. The potential sources of suspended sediment include runoff from spoil excavated from the proposed grid connection infrastructure and entering surface or groundwater systems. <i>Noise & Vibration</i> Wind Farm - There will be an increase in noise levels in the vicinity of the site during the construction phase, as a result of heavy machinery and construction work which has the potential to cause a nuisance to sensitive receptors located closest to the site. GCR - There will be an increase in noise levels in the vicinity of the site during the construction phase, as a result of heavy machinery and construction work which has the potential to cause a nuisance to sensitive receptors located closest to the GCR works. <i>Traffic & Transport</i> Wind Farm - The proposed TDR is described in detail in Chapter 4: Description of the Proposed Project of the EIAR. Other non-turbine construction traffic e.g., Heavy Goods Vehicles (HGVs) and Light Goods Vehicles (LGVs) movements involved in the delivery of construction related materials to the wind farm will enter the site at a new entrance located off the L5024 to the north. This will have a temporary slight negative effect on traffic users on the delivery routes. GCR - Materials to be used to construct the proposed onsite 38kV substation will be delivered to the site via the L5024 and will enter from the north via the main construction entrance. This may have a negative temporary effect on existing road users. By its nature, the effects of the traffic volumes associated with the construction of the proposed GCR and diversions on the network will be transient, will be temporary and will be slight. <i>Major Accidents and Natural Disasters</i> Wind Farm - The scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during the construction is identified as 'Contamination' of the Site and risk of 'Fire/Explosion' during construction. GCR – The scenario with the highest risk score in terms of the occurrence of a major accident and/or disaster during construction is identified as 'Contamination' of the Site and risk of 'Fire/Explosion' during construction. <i>Shadow Flicker</i> Any shadow flicker effects that occur in the commissioning phase of the proposed turbines will be short in duration and is dealt below in terms of the potential operational impacts.
Operational Phase	<i>Population</i> None. <i>Employment and Investment</i> On a long-term scale, the proposed development will create c. 2-3 jobs during the operational phase relating to the maintenance and control of the proposed development, having a long-term slight positive effect. The injection of money in the form of Community Gain income and landowner payments to the landowners who are participating in the proposed development, where a rental agreement has the potential to result in an increase in household spending and demand for goods and

	services in the local area. In addition, rates payments for the proposed development will contribute significant funds to Kilkenny County Council, which will be redirected to the provision of public services within the county. This will have a long-term slight positive indirect effect. Should the proposed development qualify under the Renewable Energy Support Scheme (RESS), a Community Benefit Fund of €2 per megawatt hour will be available to local residents under the Community Benefit Fund. Based on this value, the proposed development could generate up to €314,000 for the Community Benefit Fund for the first 15 years of operation of the proposed development (up to €137,000 per annum if it does not qualify). <i>Land Use Patterns & Activities</i> Wind Farm - Farming practices will not be impacted during the operational phase. Its small-scale relative to the site and population study area combined with its ability to coexist with ongoing site activities and activities within the landscape indicate that the proposed wind farm will not impact significantly on other land uses within the site and the wider area. GCR - No significant impact on other land-uses within the site and the wider area anticipated. <i>Property Values</i> Wind Farm – Available scientific literature demonstrates that there is insufficient evidence from studies conducted to determine that there is the potential for a significant effect on property values. However, there is the potential for short-term slight impacts on property values located within 1km of the proposed turbines during the early operational phase of the proposed wind farm. GCR – There is no potential for impact on property values in the area. <i>Tourism</i> Wind Farm - The nearest notable tourist attraction is Ballykeefe Amphitheatre, located within the old Ballykeefe Quarry c.3km south-east of the nearest proposed turbines. There will be no theoretical or actual visibility of the proposed development from this location. Based on the literature review, there are no impacts determined to arise. GCR - There will be no visibility of this element of the proposed GCR during the operational phase and therefore no effects are deemed to arise. <i>Residential Amenity</i> Wind Farm - Potential impacts could arise primarily due to noise, shadow flicker or changes to visual amenity. It is noted that the noise and vibration assessment is detailed in Chapter 12 and visual impact is addressed in Chapter 14 (Landscape and Visual). GCR - Potential impacts during the operational phase of the proposed substation could arise primarily due to noise and changes to visual amenity. Detailed noise modelling has been carried for the proposed substation (Chapter 12) and the visual effects of the 38kV onsite substation and the underground electrical cable have been assessed in Chapter 14 of this EIAR also. The nearest sensitive receptor is located c. 240m south-west of the onsite substation and will be further screened by hedgerows and topography. The proposed GCR is located underground. Therefore, no residential amenity effects are deemed to arise.

	<i>Health</i> Wind Farm - Rigorous safety checks and continued maintenance are conducted on the turbines and ancillary infrastructure during operational phase to ensure there are no health and safety risks posed by the proposed wind farm. This will have a potential long-term, slight impact on health and safety during the operation phase. GCR - Rigorous safety checks and continued maintenance are conducted on the substation and ancillary infrastructure during design, construction, commissioning and operation to ensure the risks posed to staff and landowners are negligible. This will have a potential long-term, slight impact on health and safety during the operation phase. <i>Air Quality: Dust and Exhaust Emissions</i> Wind Farm - The proposed wind farm will require daily visits of maintenance staff in LGVs and will produce dust and other emissions. However, the proposed wind farm will generate electricity from a renewable source, contributing to a positive impact on air quality which is a long-term moderate positive effect on Air Quality. GCR - The sources of dust and other emissions will be from infrequent visits by maintenance staff to the 38kV on-site substation in light good vehicles (LGVs) approximately one or two visits per day. Maintenance of the on-site substation infrastructure may, on occasion, generate of small volumes of dust and exhaust emissions. <i>Water Quality</i> Wind Farm - All permanent drainage controls will be in place and the disturbance of ground and excavation works will be complete. Some minor maintenance works may be completed, such as maintenance of site entrances, internal roads and hardstand areas. These works would be of a very minor scale and would be very infrequent. It is not envisaged that any significant refuelling works will be undertaken on site. There will be a long-term imperceptible impact on human health due to water quality. GCR - All permanent drainage controls will be in place and the disturbance of ground and excavation works will be complete. Some minor maintenance works may be completed, such as maintenance of site entrances, internal roads. These works would be of a very minor scale and would be very infrequent. There is a small risk associated with the release of hydrocarbons from site vehicles, although it is not envisaged that any significant refuelling works will be undertaken on site during the operational phase. There will be a long-term imperceptible impact on human health due to water quality. <i>Noise & Vibration</i> Wind Farm - An assessment of the operational wind turbine noise levels has been undertaken in accordance with best practice guidelines and procedures (Chapter 12). It is indicated that the predicted noise levels will be within best practice noise criteria curves recommended in the Guidelines. GCR - The predicted noise level from the operation of the proposed substation at the nearest sensitive receptor is 24 dB LAeq,T. This level of noise is considered low, and it is concluded that there will be no significant noise emissions from the operation of the proposed substation. <i>Traffic & Transport</i> Wind Farm - Major component failures are considered unlikely and

	therefore the presence of abnormal load vehicles and HGVs at the site is considered extremely rare. Should a turbine component need replacing, the measures detailed in Chapter 15 will be implemented. All site visits for maintenance and inspection purposes for the proposed wind farm will be done so via LGVs with one or two LGVs each day. GCR - Visits to the on-site substation by Eirgrid/ ESBN and/or the wind farm operator for maintenance and inspection purposes will be done via LGVs with one or two visits per day. <i>Major Accidents and Natural Disasters</i> Wind Farm - The scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during operation is identified as 'Fire/Explosion' during operation. Grid Connection – The scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during operation is identified as 'Fire/Explosion' during operation. <i>Shadow Flicker</i> Wind Farm - Assuming worst-case conditions, a total of 41 sensitive receptors may experience daily shadow flicker in excess of the Guidelines threshold of 30 minutes per day. Of the 41 no. sensitive receptors predicted to experience daily shadow flicker in excess of the current Guidelines threshold of 30 minutes per day, 5 no. are participating landowners. 36 no. properties may be subject to mitigation measures in order to ensure the Guideline's 30-minute daily and/or 30-hour annual shadow flicker thresholds are not exceeded. GCR – There is no potential for the proposed GCR infrastructure to cause shadow flicker, and so no effect is predicted.
<i>Decommissioning Phase</i>	The wind turbines are expected to have a lifespan of approximately 35 years. Following the end of their useful life, it is indicated that they may be replaced with a new set of turbines, subject to planning permission being obtained, or the wind farm may be decommissioned fully. The proposed GCR (substation and underground cabling) will remain in place as it will form part of the national electricity grid under the control of ESBN / EirGrid. Any effect and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent, and the mitigation measures outlined below will be implemented during the decommissioning phase also. A Decommissioning Plan (DP) has been prepared and is included as Appendix 4-5. It is indicated that the DP follows the most up to date NatureScot guidance.
<i>Cumulative Effect</i>	Cumulative and in-combination effects impacts have been considered within Section 5.10.5 of the EIAR, the findings of which are summarised as follows: <i>Employment and Investment</i> Cumulative projects within 20km of the proposed development which may be proposed, permitted or operational/existing contribute to short term employment during the construction stages and provide the potential for long-term employment resulting from maintenance operations. This results in a long-term slight positive effect. <i>Property Values</i> It is concluded that there is the potential for a short-term negative not significant impact on property values within 1km of the proposed turbines of the proposed wind farm. There are no other cumulative turbines located

	within 2km of the proposed turbines and so this area within 1km, where there is potential for impacts on property values, will not overlap with any other cumulative turbines. On that basis it is concluded that there is no potential for cumulative effects on property values to arise. <i>Tourism</i> It is indicated that the conclusions from available research indicate that there is a generally positive disposition among tourists towards wind development in Ireland. It is on this basis that it can be concluded that there would be a long-term imperceptible cumulative effect from the proposed development and other wind farm developments in the area. <i>Health & Safety</i> The proposed development will have no effects in terms of health and safety. It is assumed also that all mitigation measures in relation to the other cumulative projects will also be implemented. It is on this basis that it can be concluded that there would be a long-term imperceptible cumulative effect from the proposed development and other developments in the area. <i>Air Quality</i> During the construction phase of the proposed development and the construction phase of other developments within 20km of the wind farm site that are yet to be constructed, there will be minor emissions from construction plant and machinery and potential dust emissions associated with the construction activities. However, there will be no significant cumulative negative effect on air and climate once the mitigation is implemented. The nature of the proposed development and other wind energy developments within 20km are such that, once operational, they will have a cumulative long-term, moderate, positive effect on the air quality and climate. <i>Traffic & Transport</i> Construction of the proposed development at the same time as cumulative projects located in the surrounding area has the potential to give rise to cumulative impacts on traffic. It is noted that there is a permitted but not yet constructed additional turbine that will extend the existing Foyle wind farm, located c. 2.5km from the site. The construction of this turbine, if it occurs at the same time has the potential to give rise to cumulative effects on traffic. Therefore, there is the potential for short-term slight effects to arise as a result of the combination of the construction of the proposed development along with nearby cumulative permitted and proposed projects. However, the mitigation measures in relation to traffic (Chapter 15) will ensure that any cumulative effects that arise will be short term in duration and imperceptible in significance. <i>Shadow Flicker</i> It is noted that no dwellings may be impacted by shadow flicker from the proposed project in combination with other existing, permitted, or proposed wind farms. <i>Services</i> The rate payments from the proposed development and other projects in the area will contribute significant funds to Kilkenny County Council, which will be redirected to the provision of public services within the County. In addition, the injection of money into local services through the establishment of community benefit funds is also expected to be a long-

	term positive cumulative effect.

Mitigation

9.8.2.10. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

Construction Phase	<i>Property Values</i> - Mitigation relevant in the corresponding chapters: Chapter 10 Air, Chapter 12 Noise and Vibration, Chapter 14 Landscape, and Chapter 15 Material Assets, will be implemented in order to reduce insofar as possible, impacts on property values at properties. - The proposed wind farm has been designed in accordance with the parameters set out in the WEDG 2006 and with cognisance of the draft WEDG 2019, adhering to the required setback distances from sensitive receptors set out in those documents. <i>Tourism</i> - The EIAR refers to the mitigation measures proposed in relation to traffic management. <i>Residential Amenity</i> - All mitigation relevant in the corresponding chapters: Chapter 10 Air, Chapter 12 Noise and Vibration, Chapter 14 Landscape, and Chapter 15 Material Assets, will be implemented in order to reduce insofar as possible, impacts on residential amenity. <i>Health</i> The proposed development will be constructed in accordance with all relevant Health and Safety Legislation. Furthermore, the mitigation proposed is summarised as follows: - Health and Safety Plan will address the Health and Safety requirements in detail. - All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. - Goal posts will be established, where necessary, under overhead electricity lines for the entirety of the construction phase. - The suitability of machinery and equipment for use near power lines will be risk assessed. - All staff will be trained on operating voltages of overhead electricity lines running the site. - Barriers will run parallel to the overhead line at a minimum horizontal distance of 6m on plan from the nearest overhead line conductor wire. - When activities must be carried out beneath overhead lines, a Site-specific risk assessment will be undertaken prior to any works. - Information on safe clearances will be provided to all staff and visitors. - Signage indicating locations and health and safety measures regarding overhead lines will be erected. - The construction of the GCR will be in phases. Goal posts will be established under the 110kV and 38kV overhead lines and remain in place for the duration of the works in this area.

	- All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. - The scale and scope of the project necessitates that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed. Their various duties are detailed within the EIAR. <i>Air Quality: Dust and Exhaust Emissions</i> - All mitigation as outlined in Chapter 10 Air Quality will be implemented in order to reduce insofar as possible, impacts on air quality. <i>Water Quality</i> - A bespoke drainage design which includes but is not limited to interceptor drains, check dams, swales and ponds will be implemented on the site as detailed in Chapter 9. <i>Noise & Vibration</i> - Best practice measures for noise control will be adhered to on-site during the construction phase as detailed in Chapter 12. <i>Traffic & Transport</i> - A complete Traffic and Transport Assessment (TTA) has been carried out, the results of which presented in Chapter 15: Material Assets. The Plan will be developed and implemented to ensure any effect is short term in duration and imperceptible in significance during the construction phase.
Operational Phase	<i>Property Values</i> - As above for construction phase, it is also indicated that from available literature that does identify a short-term decrease in property values, all note that the decrease in value reduces and becomes statistically insignificant, in general, 5 years after the commencement of the operational phase. <i>Residential Amenity</i> - There are no turbines proposed within 740m (4 x tip height) of any third-party sensitive receptors. - All mitigation measures outlined in Chapter 12 (Noise), shadow flicker (Section 5.9 of this EIAR) and visual (Chapter 14) in this EIAR will be implemented in order to reduce insofar as possible, impacts on residential amenity. - A 2.6m high palisade fence will be erected around the substation which will be painted RAL 6005 (green) to help blend the substation infrastructure in with the surrounding rural landscape. <i>Health</i> - Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. - Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed, faded, or are becoming hidden by vegetation or foliage, with prompt action taken as necessary. - Signs will also be erected at suitable locations across the site as required for the ease and safety of operation of the wind farm.

	- The proposed substation, which will be operated by Eirgrid/ESBN will be locked and fenced off from public access. - The substation will be operational remotely and manually 24 hours per day, 7 days a week. Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link. - Periodic service and maintenance work which include some vehicle movement. - Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications. A Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation. Access for emergency services will be available at all times. The components of a wind turbine are designed to last up to 30-35 years and are equipped with a number of safety devices to ensure safe operation and regular maintenance of the turbines will be carried out by the turbine manufacturer or appointed service company. <i>Water Quality</i> - As above for construction phase and see mitigation measures detailed in Chapter 9. <i>Noise & Vibration</i> - Noise and vibration mitigation and monitoring proposals are set out in Chapter 12. <i>Major Accidents and Natural Disasters</i> - Development will be designed and built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. A Risk Management Plan will be prepared and implemented. - The proposed development will also be subject to a fire safety risk assessment which will assist in the identification of any major risks of fire on site, and mitigation of the same during operation. <i>Shadow Flicker</i> Where daily or annual shadow flicker exceedances are predicted at any of the identified 36 no. sensitive receptors, a site visit will be undertaken firstly to determine the presence of existing screening and window orientation at each potentially affected property. This will determine if the receptor has an actual line of sight to any turbine and actual potential for shadow flicker to occur. Once this exercise is completed and all of the potentially affected properties, the following measures will be employed. Screening Measures - including: - Installation of appropriate window blinds in the affected rooms of the residence; - Planting of screening vegetation; - Other site-specific measures which might be agreeable to the affected party and may lead to the desired mitigation. Wind Turbine Control Measures - If it is not possible to mitigate any identified shadow flicker limit exceedance locally using the measures detailed above, wind turbine control measures will be implemented. A shadow flicker control unit allows a wind turbine to be programmed and controlled using the wind farm's Supervisory Control and Data Acquisition

	(SCADA) system to change a particular turbine's operating mode during certain conditions or times, or even turn the turbine off if necessary. Table 5-10 of the EIAR lists the 41 no. sensitive receptors at which a shadow flicker mitigation strategy may be necessary to ensure the Guidelines 30-minute per day shadow flicker threshold is not exceeded (5 of which are participating landowners). The SCADA control system would be utilised to control shadow flicker in the absence of being able to agree alternative mitigation measures with the relevant property owner. Table 5-11 of the EIAR displays the 3 no. third-party sensitive receptors which are predicted to receive in excess of the Annual Shadow Flicker Limit of 30 hours per year. It is contended that this demonstrates that using the turbine control system, it will be possible to reduce the level of shadow flicker at any affected property to below the daily guideline limit of 30 minutes, by programming the relevant turbines to switch off at the required dates and times. Should a complaint or query in relation to shadow flicker be received within 12 months of commissioning of the wind farm, field investigation/monitoring will be carried out by the wind farm operator at the affected property. It is again noted that the proposed development can be brought in line with the requirements of the WEDG 2019 should they be adopted during the planning application process for this development.

Residual Effects

9.8.2.11. The residual effects from the construction and operational phase of the proposed development are identified in the below table.

Table: Residual Effects

	Construction Phase	Operational Phase
<i>Population</i>	No residual impacts	No residual impacts
<i>Employment and Investment</i>	Short-term, slight, positive indirect effect.	Long-term, slight, positive indirect effect on employment and investment.
<i>Land Use Patterns & Activities</i>	Negative, direct, slight, permanent impact on land use and a negative, direct, slight short term impact on activities.	Negative, direct, not significant, permanent effect on land use and activities.
<i>Property Values</i>	Short term, negative, not significant impact on property values.	Short term, negative, not significant impact on property values.
<i>Tourism</i>	Short term, negative, imperceptible impact on tourism in the wider landscape.	Long-term, imperceptible, negative impact of visitor experience to attractions in the wider landscape.
<i>Residential Amenity</i>	Short-term, negative, slight impact on residential amenity.	Negative, moderate, long-term impact on residential amenity.
<i>Health</i>	Short-term, slight, negative residual effect on health and safety.	Imperceptible.
<i>Air Quality: Dust and Exhaust Emissions</i>	Short-term, slight, negative effect on air quality.	Long-term, overall moderate, positive effect on Air Quality.
<i>Water Quality</i>	Short-term, imperceptible, negative effect on water quality.	Long term, imperceptible impact on human health due to water quality.

<i>Noise & Vibration</i>	Negative, not significant and brief to short-term.	The predicted residual operational turbine noise effects at the closest noise sensitive locations range from not significant to imperceptible.
<i>Traffic & Transport</i>	Short-term slight negative residual effect on local road users.	Long term, negative imperceptible impact on local road users.
<i>Major Accidents and Natural Disasters</i>	The risk of a major accident and/or disaster during the construction phase is considered 'low'.	The risk of a major accident and/or disaster during the operational phase is considered 'low'.
<i>Shadow Flicker</i>	N/A	Long-term, imperceptible negative residual effect from shadow flicker on human health.

Assessment

9.8.2.12. I have examined, analysed and evaluated Chapter 5 of the EIAR and all of the associated documentation and submissions on file in respect of population and human health. I have inspected the application site and the surrounding area. In addition, I have had regard to the policy outlined in the 2021-2027 DP. As noted, there are numerous inter-related environmental topics described in detail throughout the EIAR which are of relevance to human health. During the various phases of development, noise, air, water, traffic and landscape and visual are the key environmental factors that will have an impact on population and human health. I note that each topic will be addressed in further detail in my assessment of the individual chapters of the EIAR. Notwithstanding the location of the wind farm site relative to the existing settlements of Tullaroan, Kilmanagh, and Ballycallan, I am satisfied that the construction and operational phases of the development will not give rise to significant adverse effects on employment in the area, settlement or land use patterns, baseline population or demographic trends. The Applicant has also outlined that there are employment opportunities during the construction phase and economic benefits associated with the community gain proposal which can have slight positive effects during the construction and operational phase. I acknowledge the concerns raised by observers that the proposed development may discourage young people from staying in the locality and will contribute to rural decline, and I note that the following sections address the potential for various population and human health related impacts which include:

Shadow Flicker

9.8.2.13. The shadow flicker study area was set at 1.63km from the proposed turbines (163m

rotor diameter x 10). As detailed above, 164 no. properties are located within the study area and of these, a total of 63 no. properties are theoretically predicted to experience shadow flicker. On the basis of the analysis provided in Table 9 of the EIAR, it is predicted that 41 no. properties may experience shadow flicker levels that exceed the WEDG 2006 thresholds of 30 minutes per day/30 hours per year. Of the 41 no. properties, 5 are identified as involved landowners. It is noted that the annual threshold of over 30 hours for shadow flicker (WEDG 2006) is predicted to be exceeded at 3 no. sensitive receptors, once the regional sunshine average factor of 29.44% has been considered (i.e. inclusive of 1 no. involved landowner).

9.8.2.14. Where the shadow flicker exceedances are predicted, the mitigation strategy includes a site visit to determine the presence of existing screening and window orientation at each potentially affected property (i.e. actual potential for shadow flicker to occur). Once this exercise is completed, measures to be employed include:

- Installation of appropriate window blinds in the affected rooms of the residence;
- Planting of screening vegetation;
- Other site-specific measures which might be agreeable to the affected party and may lead to the desired mitigation.

If agreement can be reached with the homeowner, then it would be arranged for the required mitigation to be implemented in cooperation with the affected party as soon as practically possible and for the full costs to be borne by the wind farm operator. Furthermore, if it is not possible to mitigate any identified shadow flicker limit exceedance locally using the measures detailed above, wind turbine control measures will be implemented (i.e. SCADA system). Table 5-10 of the EIAR lists the days per year and the turbines that could be programmed to switch off at specific times, in order to reduce daily shadow flicker to a maximum of 28 minutes, which is below the WEDG 2006 limit of 30 minutes.

9.8.2.15. Whilst the Applicant has outlined that the proposed turbines could be brought in line with the requirements of the draft WEDG 2019 through the stricter implementation of the wind turbine control measures, it is their view that the WEDG 2006 is still the current, adopted guidance that must be adhered to by both developers and planning authorities. Thus, it is their view that the inclusion of a condition arising from guidance

that is still in draft format would be contrary to any grant of planning permission. Notwithstanding the Applicant's position, I would have concerns regarding the practicality of the Applicant's mitigation strategy, particularly the elements which rely on measures such as additional planting and blind installation at affected properties to reduce impacts. Overall, I consider the provisions of the draft WEDG 2019 with respect to shadow flicker represent best in practice in Ireland. For this reason, I recommend the inclusion of a condition which will require the use of turbine control measures to ensure that shadow flicker is eliminated at any affected property (involved landowners not included). The condition should also include a requirement for the submission of a monitoring report to demonstrate the effectiveness of the turbine control measures. Compliance with this condition will ensure that adverse impacts on nearby properties will not arise as a result of the proposed development. I note that cumulative impacts in terms of shadow flicker are not anticipated to arise given the separation distances from existing, permitted or proposed wind farms.

Property Values

9.8.2.16. A number of Third Party observers have raised concerns regarding the potential impact of the proposed development on property values, and it has been highlighted that this potential loss in value poses an unfair economic impact on those who have invested in their homes. Noting the proximity of the proposed turbines to existing dwellings and their unprecedented scale and height, it is contended that the development would have a disproportionate impact on those living closest to the development. I also note that professional advice has been provided by a real estate agent to demonstrate that a number of observer's properties would be devalued by the proposed development (Property appraisals have included as appendices to a number of submissions). Whilst valuations for the properties have been provided (figures redacted) for a pre-lodgement of application (100%), lodgement (70%) and operational phase (50%) of the wind farm, they have failed to provide any supporting evidence or methodology to justify how these specific figures were derived. I am not satisfied that conclusive evidence has been provided within these submissions to demonstrate that the proposed development would result in a devaluation of property, particularly at the level identified in these submissions.

9.8.2.17. As noted, a summary of the largest and most recent studies from the UK and the

United States on property values and wind farms is provided in Section 5.7 of the EIAR. This section also summarises an Irish working paper by the Centre for Economic Research on Inclusivity and Sustainable (CERIS 2023, 'Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach'). This paper suggests a potential 14.7% decrease in property values within 1km of a turbine and I note that a number of Third Party observers were not satisfied that this potential impact had been dismissed by the Applicant on the basis of the limited sample size in this study. It is the Applicant's contention that the literature described in this Chapter demonstrates that there is insufficient evidence from the studies conducted to determine that there is the potential for a significant effect on property values as a result of the proposed wind farm. From the literature provided by the Applicant, a common theme across a number, appears to be a diminishment of property values for those living in close proximity to the development. However, the studies have shown that this decline was found to recover post construction, a theme also observed in the Irish case study. Nonetheless, the Applicant has acknowledged that there is the potential for short-term slight impacts on property values located within 1km of the proposed turbines during the early operational phase of the proposed wind farm. It is also relevant to note that there is evidence of potential positive effects associated with community gain proposals. Furthermore, I refer to my assessment of noise, traffic (see below) and shadow flicker above, where I have concluded that significant effects on residential receptors will not arise once mitigation is taken into account. On the basis of the available literature and my assessment of the potential impacts of the development on the various environmental factors, I find it reasonable to conclude that once mitigation is adhered to, the proposed development is not likely to result in significant impacts on property values in the area.

Schools

- 9.8.2.18. A key concern raised by a number of Third Party observers was the potential impact of the development on existing schools in the area, both during the construction and operational phases. In particular, it was their contention that the Applicant had failed to adequately assess the impacts to St. Aidan's National School, Scoil Ruadhain and Giant Steps Montessori. Regardless of the mitigation proposed, it has been stated that the health and well-being of young children will be adversely affected, particularly those who present with sensory difficulties. I note there are a number of submissions

on file from the owner of the Giant Steps Montessori who has repeatedly raised concerns regarding the misidentification of her school as H093 (Receptor ID) in the Applicant's various assessments. She has confirmed in her submissions that her home is located at H104 (i.e. c. 1km to the east of T7) and her business also operates from the same premises. Notwithstanding these concerns, it would appear from reviewing the Applicant's documentation and from my observations on site that they have correctly identified the observer's home as H104. They have also identified the Montessori school as H093 which appears to be the existing building immediately to the north of the observer's home. Whilst it may very well be the case that the observer also runs her business from her home (H104), I note that both buildings have been included in the Applicant's noise and shadow flicker assessments. Whilst this chapter has identified that mitigation would be required in the case of flicker for both receptors, I have recommended that a condition be included which would eliminate this impact through the use of turbine control measures. As noted elsewhere in this report, noise levels are deemed to fall within acceptable limits. Although I acknowledge that concerns have also been raised regarding traffic impacts associated with the construction phase, I note that this local road has not been identified as a construction haul route by the Applicant. Therefore, I am satisfied that undue effects will not arise.

9.8.2.19. St. Aidan's NS (H081) is centrally located within the village of Kilmanagh, and the Applicant has confirmed that the school was considered in both the shadow flicker and noise impact assessments as contained within the EIAR. Owing to the distance and siting (i.e. to the south) of the school relative to the proposed wind farm, shadow flicker is not anticipated to arise. In addition, the Applicant has confirmed that there are no predicted exceedances of the turbine noise limits at this location. In terms of impacts associated with the construction phase, I note that traffic related impacts are addressed elsewhere in this report. However, I am satisfied that it has been demonstrated that significant effects will not arise once the proposed mitigation measures are taken into account.

9.8.2.20. Scoil Ruadhain NS is located to the north of the village of Tullaroan, at a distance of c. 2.9km from the proposed wind farm. In response to the concerns of the Third Party observers, the Applicant has indicated that flicker is not a concern at this property

given its location outside the Shadow Flicker study area (1.69km). This is reasonable in my view. Furthermore, the school is located outside of the predicted cumulative 35dB noise contour and therefore, was noted included in the operational phase noise impact assessment. However, it is noted that the school is located along the proposed GCR and construction haul route and potential construction phase noise effects on sensitive receptors along the GCR has been assessed in Chapter 12 of the EIAR. Overall, it was determined the potential noise construction effect at sensitive receptors located adjacent along the GCR is considered to be brief, negative but not significant on account of the rolling nature of the works area. On balance, I am satisfied that the schools in the vicinity of the subject site have been given due consideration in the various assessments and I am satisfied that it has been adequately demonstrated that significant effects on these sensitive receptors will not arise as a result of the proposed development.

Safety & Public Health

- 9.8.2.21. Observers have raised concerns regarding the potential impact of the proposed development on human health, including impacts from electromagnetic fields (EMF). Health and safety related concerns have also been highlighted given the overall scale of the project. Within this chapter, the Applicant has referred to the various sections of the EIAR that deal specifically with land, soils, geology, water, air quality, climate, noise and vibration and roads and traffic and any potential for significant health and safety impacts during the construction and decommissioning phases have been identified, with appropriate mitigation measures set out. Overall, it has been determined that no significant effects will arise on the various environmental factors. Notwithstanding this, I fully acknowledge that psychological stress may arise for those residents who have opposed the proposed development, particularly those who live in close proximity to the site. However, noting the separation distances provided from various residential receptors (i.e. WEDG 2006 and draft WEDG 2019 compliant), the conclusions I have reached regarding potential noise impacts, and the requirement for the Applicant to eliminate shadow flicker at sensitive receptors within the study area, I am satisfied that the operational phase of the development will not give rise to any significant adverse effects on public health.

9.8.2.22. In terms of EMF, the Applicant notes that the provision of underground electric cables of the capacity proposed is common practice throughout the country and it is contended that the installation to the required specification does not give rise to any specific health concerns. They go on to note that the extremely low frequency (ELF) electric and magnetic fields (EMF) associated with the operation of the proposed cables fully comply with the international guidelines for ELF-EMF set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP), a formal advisory agency to the World Health Organisation, as well as the EU guidelines for human exposure to EMF. Accordingly, there will be no operational impact on properties (residential or other uses) as the ICNIRP guidelines will not be exceeded at any distances even directly above the cables. This is a reasonable conclusion in my view.

9.8.2.23. In terms of safety concerns regarding risks associated with structural failure and ice throw in winter, I note that the EIAR refers to the WEDG 2006 which identifies no specific safety considerations in relation to the operation of wind turbines and confirms that the blades are designed in such a way that ice throw/projection is not a significant risk. In addition, the designs are such that will prevent an increase in the likelihood of lightning strikes. Taking into consideration the separation distances provided from existing properties and the guidance provided in the WEDG 2006, I am satisfied that no public safety issues arise from the proposed development.

Conclusion: Direct and Indirect Effects

9.8.2.24. The submission of the Planning Authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. Overall, it is considered that the Applicant has provided sufficient survey data to enable assessment of likely effects on the various environmental factors. I am therefore satisfied that the potential for significant adverse effects on population and human health during the construction, operational and decommissioning phases can be avoided, managed, and mitigated by measures that form part of the proposed scheme, the mitigation measures and through adherence suitable conditions. In this regard, the proposed development would not have any unacceptable direct, indirect or cumulative impacts on population and human

health.

9.9. Biodiversity (excluding birds)

9.9.1. Issues Raised

Third Parties

- 9.9.1.1. As detailed earlier in this report, issues have been raised by Third Parties during the application and appeal with respect to the potential impact of the proposed development on biodiversity. Issues raised include impacts on plants/trees (poor species knowledge), lack of information on invasive species, tree felling, ecological value of tree lines and hedgerows, missing information on species surveyed on site, inadequate surveying and mapping of mosses/liverworts/lichens, impacts on aquatic life (invalidation of survey results through watercourse alterations, etc.), impacts on mammals (conflicting information on Otter holts, validity of surveys and absence of mitigation, validity of Badger surveys and the absence of an assessment of impacts on water quality and effects on SAC and annexed species from construction works), impacts on bats (adequacy of survey work, concerns with respect to hedgerow removal), lack of surveys for amphibians/reptiles and the failure of the EIAR and NIS to comply with EU Law (Habitats Directive).

Planning Authority/Prescribed Bodies

- 9.9.1.2. The issues raised by the Planning Authority with respect to biodiversity include the adequacy of the survey work (Badgers, Otters, Bats, Reptiles and Amphibians), inadequate mapping of the hydrological network of watercourses and wet drains within the site, inaccuracies in the baseline studies, absence of a hedgerow appraisal, absence of information regarding invasive species along the GCR, inadequate identification of tree felling within bat felling buffers, impacts associated with the turbine delivery route and lack of specificity in the Biodiversity Management and Enhancement Plan (BMEP).
- 9.9.1.3. Within their report on file, the Department of Housing, Local Government & Heritage (NPWS) have noted concerns with respect to conflicting information within the NIS and EIAR in relation to the presence of Otters on the windfarm site, adequacy of the survey work undertaken for Bats including the absence of bat activity surveys for

Complex 3 and the numerous bridge crossings, recommendation for a pre-construction badger survey to be undertaken, the absence of amphibian or reptile surveys and the inadequate assessment of hedgerows within the site.

9.9.1.4. Examination, analysis and evaluation

Context

9.9.1.5. Chapter 6 of the EIAR assesses the likely significant effects (both alone and cumulatively with other plans and projects) that the proposed development may have on biodiversity and sets out the mitigation measures proposed to reduce or offset any potential significant effects that are identified. The following appendices accompany the Chapter:

- Appendix 6-1 Botanical Study.
- Appendix 6-2 Bat Report.
- Appendix 6-3 Aquatic Baseline Report.
- Appendix 6-6 Biodiversity Management and Enhancement Plan.

9.9.1.6. In terms of the methodology, a desk-based scoping study was carried out using various data. In addition, the Applicant's consultants undertook scoping exercise and copies of all scoping responses are included in Appendix 2-1. Field surveys of the biodiversity of the entire site, including the entire site boundary and GCR were undertaken on various dates between July 2023 and 2024. The various surveys are summarised in the below table.

Table: Survey Type.

Survey Type	Description
<i>Multi-disciplinary Walkover Surveys (including habitats)</i>	Multidisciplinary walkover surveys were undertaken on 27 th July 2023, 28 th July 2023, 24 th August 2023, 21 st February 2024, 22 nd February 2024, 12 th March 2024, 2 nd April 2024, 16 th April 2024, 27 th June 2024, 29 th July 2024. It is indicated that all areas were surveyed within the optimal survey period for vegetation surveys/habitat mapping, i.e. April to September (Smith et al., 2011).
<i>Dedicated Habitat and Vegetation Composition Surveys</i>	Detailed botanical surveys of the proposed development infrastructure were undertaken on 27 th July 2023, 28 th July 2023, 24 th August 2023, 21 st February 2024, 22 nd February 2024. This also included detailed habitat classification and assessment at targeted locations within the Site, with relevés undertaken within representative habitats at each turbine base and associated infrastructure, see Appendix 6-1 for all relevé data.
<i>Badger/Mammal survey and camera trap set up</i>	Surveys were conducted on the 12 th March 2024, 2 nd April 2024 and 16 th April 2024. Areas identified as providing potential habitat for badger were subject to specialist targeted survey. The badger survey was conducted adhering to best practice guidance (NRA, 2009b) and CIEEM best practice competencies

	for species surveys. Otter surveys were conducted adhering to best practice guidance (NRA, 2009b) and CIEEM best practice competencies for species surveys. Where otter signs were observed these were mapped. If a potential holt was identified, camera traps were deployed. A search for Marsh Fritillary (<i>Euphydryas aurinia</i>) was carried out on the NBDC biodiversity map online viewer on the 5 th July 2024. It is indicated that no suitable habitat Marsh Fritillary habitat was recorded within the windfarm site during the multidisciplinary walkover surveys
Otter Survey	Areas identified from the desktop study and during the multi-disciplinary walkover survey as providing potential habitat for otter were subject to specialist targeted survey. The otter surveys of watercourses were conducted on 28 th June, 15 th July and 19 th August 2019, 26 th June 2023 and 18 th January 2024. The survey involved a search for all otter signs e.g. spraints, scat, prints, slides, trails, couches and holts. In addition to the width of the rivers/watercourses, a 10m riparian buffer (both banks) was considered to comprise part of the otter habitat (NPWS 2009).
Bat Surveys	Bat surveys carried out between 18th May 2023 – 12th October 2023 in accordance with NatureScot, 2021.
Aquatic/Freshwater Invertebrate Surveys	Aquatic habitats and species were assessed during the multi-disciplinary walkover surveys and where appropriate, dedicated aquatic habitat and fisheries surveys were undertaken. The dates provided were 13 th September 2023, 14 th September 2023, 21 st March 2024, 22 nd March 2024, 27 th June 2024 and 29 th July 2024. Aquatic Habitat Assessments/ Appraisals were undertaken in order to determine the riverine habitat type present at each of the survey locations within and in the vicinity of the site. Electro-fishing operations for the purpose of forming baseline fisheries data of the proposed wind farm were undertaken on the 13 th and 14 th of September 2023

Baseline

9.9.1.7. Section 6.5.1 of the EIAR describe the findings of the desk study and it provides a baseline of the ecology known to occur in the existing environment, having regard to Special Areas of Conservation (SACs), Special Protection Areas for Birds (SPAs), Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs). Table 6-4 of the EIAR then identifies designated sites within the Likely Zone of Impact (Zol) of the proposed development. It is noted that the AA Screening and Natura Impact Statement (NIS) that accompanies this application identifies the following European Sites as being within the Likely Zol:

- River Barrow and River Nore SAC [002162], and,
- River Nore SPA [004233]

The following Nationally Designated Sites were also identified as being within the likely zone of impact:

- River Nore/Abbeyleix Woods Complex pNHA [002076], and,
- Inchbeg pNHA [000836]

9.9.1.8. It is noted that no Article 17 habitats were recorded within the wind farm site. A section

of [91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles was mapped adjacent to the Freshford local road (L-1002), south of Freshford Town which occurs within Browns Wood. However, it is stated that the works associated with the proposed GCR will not impact on this habitat, as all works will be carried out within the existing road infrastructure. In summary, no Habitats Directive Annex I habitats have been recorded within or immediately adjacent to the proposed wind farm or proposed GCR. The proposed wind farm site is hydrologically connected to the River Barrow and River Nore SAC via the Tullaroan Stream and the Munster River. The length of this hydrological connection is c. 5.7km. The proposed GCR crosses the River Barrow and Nore SAC and the River Nore SPA.

- 9.9.1.9. A summary and description of the various habitats recorded within the site is summarised in the below table.

Table: Recorded Habitats.

Wind Farm Site	
Habitats	Description
<i>Improved Agricultural Grassland (GA1)</i>	The majority of the wind farm site comprises of extensively managed Improved agricultural grassland (GA1) habitat (Plate 6-1). Turbines 1 to 6 are proposed within GA1 habitat. Similarly, temporary construction compounds, new roads and hardstands are primarily proposed in this habitat throughout the site. Overall, this habitat is deemed to be of a low biodiversity value.
<u>Woodlands</u> <i>Conifer Plantation (WD4), Mixed Broadleaved/Conifer woodland (WD2), Broad-leaved woodland (WD1), and, Semi-Natural woodland (Wet willow-alder-ash woodland) (WN6)</i>	T7 is proposed within Conifer plantation (WD4) habitat in the west of the site. Approximately 3.6ha of this habitat will be removed to facilitate the development and the felled commercial forestry will be replaced on a hectare for hectare basis. Broad-leaved woodland (WD1) dominated by ash and alder was recorded adjacent to T7, in the south-west of the wind farm (Plate 6-4). An ash plantation was recorded in the west of the site (Plate 6-5) and small pocket of this habitat was also recorded adjacent to T6. A small pocket of natural colonised woodland was recorded in the north of the wind farm site (Plate 6-6 & Plate 6-7). This woodland is located entirely outside of proposed infrastructure footprint areas and this habitat will not be impacted by the development. The ground conditions within this habitat were wet underfoot. This habitat covers c. 3.3ha and is located c. 125m southwest of T1 and has been classified as a mosaic between Wet willow-alder-ash woodland (WN6) and Scrub (WS1). It is noted that this woodland does not conform to an Annex I habitat
<i>Dry meadows and Grassy verges (GS2), Spoil and Bare Ground (ED2), Treeline (WL2), Recolonising Bare Ground (ED3)</i>	Dry meadows and grassy verges (GS2) were recorded bordering the existing farm tracks throughout the site (Plate 6-8). This habitat was also recorded along the public road on the proposed grid connection underground cabling route. A mature, dense hedgerow (WL1) with individual mature ash trees classified as treeline (WL2) border the fields located adjacent the existing farm tracks in the west of the wind

	farm. Existing roads and farm tracks classified as Spoil and bare ground (ED2) were recorded in the north, south and west of the site (Plate 6-8), with some adjacent areas categorised as Recolonising bare ground (ED3) (Plate 6-9).
<i>Hedgerow (WL1)</i>	Field boundaries and margins within the wind farm site were delineated by unmanaged and managed Hedgerow (WL1) habitat (Plate 6-10 - Plate 6-12).
<i>Buildings and artificial surfaces (BL3)</i>	Farm buildings, cattle sheds and feed stores were recorded within the centre of the wind farm's site classified as Buildings and artificial surfaces (BL3) habitat. Additionally, old stone buildings classified as buildings and artificial surfaces (BL3) were recorded within the centre of the site (Plate 6-13).
<i>Drainage Ditches (FW4)</i>	The majority of field margins within the wind farm site were delineated by Drainage ditches (FW4) (Plate 6-14 & Plate 6-15). It is noted that several of these drainage features had flowing water present during the surveys undertaken and are likely to connect to the Tullaroan Stream or associated tributaries.
<i>Eroding/Upland Rivers (FW1)/Depositing/lowland River (FW2)</i>	The Tullaroan Stream is mostly categorised as Eroding/Upland river (FW1)/Depositing/lowland river (FW2) and is located within the centre and west of the wind farm site flowing in a south-eastern direction (Plate 6-16). Small meandering sections of the Tullaroan stream are categorised as Depositing Lowland River (FW2). The habitats recorded adjacent the Tullaroan Stream mainly include improved agricultural grassland (GA1) that is actively used by grazing livestock. There are three tributaries that flow into it. Ripples and glides were recorded as the watercourse meanders and pools in areas. There are a total of 6 no. watercourse crossing locations over natural watercourses (rivers and streams), 2 of which involved upgrades to existing structures. The proposed new watercourse crossings will be bottomless or clear span culverts, ensuring no instream works are necessary. It is stated that these watercourses are all tributaries to the Tullaroan Stream.
Infrastructure	
Location	Habitats
<i>Turbine Hardstand Locations</i>	T1 to T6 are proposed within Improved Agricultural Grassland GA1 habitat and T7 is proposed within Conifer Woodland WD4 habitat in the west of the site.
<i>Met Mast</i>	The met mast is proposed in the east of the site within Improved agricultural grassland (GA1) habitat and adjacent Hedgerow (WL1) habitat.
<i>Spoil Management Areas and Borrow Pit</i>	The proposed borrow pit is located in existing grazed and heavily poached grassland habitat categorised Improved agricultural grassland (GA1) located in the north of the site. Spoil management areas are proposed in 5 no. locations throughout the site. The habitats recorded in these areas consist entirely of improved agricultural grassland (GA1).
<i>Proposed Substation and Construction Compound</i>	Habitats recorded in this vicinity include grazed grassland categorised as Improved Agricultural grassland (GA1) and Treeline (WL2) (Plate 6-24). A Drainage ditch (FW4) was recorded at the treeline north of the proposed substation and water was present at the time of surveying. Additionally, an unmapped watercourse described as a small stream categorised as eroding/upland watercourse (FW1) was recorded west of the proposed substation.
<i>GCR Turbine Delivery Route</i>	The proposed GCR will join the public road classified as Buildings and artificial surfaces (BL3). The cable will pass beneath the River Nore

	via HDD. Improved agricultural grassland (GA1) habitat was also recorded along the GCR. Hedgerow (WL1) and treeline (WL2) habitats exist along proposed GCR. The grassy verges across much of the proposed GCR contained species typical of Dry meadows and grassy verges (GS4) which were not mapped due to their small size and mosaic-like occurrence throughout and along the route. Several Drainage ditches (FW4) with and without water present were recorded along the Proposed GCR during the surveys undertaken. Several watercourses are culverted, box culverted, or bridges created to allow watercourses to pass beneath the roads. There are a total of 10 no crossings over EPA mapped watercourses along the proposed GCR, comprising of 7 no. existing bridge crossings, 2. no existing culvert crossings and 1 no. new proposed crossing. These include: - An existing bridge crossing along a local road in the townland of Oldtown over the EPA mapped Tullaroan watercourse (EPA Code: 15T22); - 2 no. existing bridge crossings along a local road in the townland of Brittas (to the north and south of Brittas crossroads) over the EPA mapped Blackbottom stream (EPA Code: 15B83); - An existing crossing (concrete pipe) along a local road in the townland of Picketstown over the EPA mapped Arigna River (EPA Code: 15A01); - An existing bridge crossing over a local road between the townlands of Ballyroa (Grace) and Ballyroe over the EPA mapped Ballylarkin Stream (EPA Code: 15B85); - An existing bridge crossing over the Monabrika Stream (EPA Code: 15M30) to the south of Freshford; - An existing bridge crossing along New Bridge Street (R694) in Freshford over the Nuenna River; - An existing culvert crossing along the R694 over the Lismaine Stream (EPA Code: 15L16) between the townlands of Sweethill and Clone; - An existing crossing along the R694 over the Lisdowney Stream (EPA Code: 15L02) at Grange Bridge; and, - A new proposed crossing under the Nore River to the south of Ballyragget 110kV substation. An additional 3 no. crossings along the proposed GCR which are over watercourses which are not included in the EPA blueline database. These are at existing bridge and culvert crossings. In terms of the Turbine Delivery Route, habitats recorded along the route include Dry meadows and grassy verges (GS2), Drainage ditches (FW4), Stone walls and other stonework (BL1), Hedgerow (WL1) and Treeline (WL2).

9.9.1.10. In terms of invasive species, no Third Schedule Alien Invasive species listed on the Third Schedule of the European Communities (Birds and natural Habitats) Regulations, 2011 were recorded within the footprint of the proposed wind farm or proposed GCR during the survey conducted. Japanese knotweed (*Fallopia japonica*) was recorded along the proposed turbine delivery route (Plate 6-25). However, it is

indicated that the delivery of turbines will not interact with this stand of Japanese knotweed.

9.9.1.11. The below following table provides a summary of the results of the dedicated faunal walkover surveys undertaken within the site. Additional faunal signs/sightings were also recorded during other surveys including bat surveys and bird surveys.

Table: Recorded Fauna.

Fauna	Description
Bats	<u>Roost Surveys</u> <u>Farm Complex 1</u> 4 no. structures and their associated outbuildings containing potential suitable bat roost features were identified within the wind farm site. During the summer inspection 2 no. brown long-eared bats were observed roosting within the seed sacks. Butterfly and moth wings in addition to bat droppings were found dispersed around the building. The building was assessed as having Moderate roosting potential. The second stone building (Grid Ref: S 39920 54421) was also assessed as having Moderate potential to house roosting bats. <u>Derelict Buildings</u> Located c. 425m to the south-west of Farm Complex 1 are two derelict stone block structures, positioned 125m north of the nearest proposed turbine (T6). Despite no evidence of bats found during the 2023 inspections, these structures were assessed as having Moderate suitability for roosting bats. <u>Farm Complex 2</u> A second farm complex is situated in the south-east of the Proposed Wind Farm (Grid Ref: S 40863 53902). The inhabited dwelling and connected shed were both assessed as having Low roosting suitability. The open-fronted hay storage shed was assessed as having Moderate suitability for roosting bats due to the presence of the felt underlining. The hay storage and dairy sheds to the north lacked the necessary protection and appropriate conditions that could be used by bats and were universally assessed as having Negligible suitability for roosting bats. Although no evidence of roosting bats were found within the derelict building, the structure was assessed as having Moderate suitability for roosting bats. <u>Farm Complex 3</u> A third farm is present adjacent to Farm Complex 2. This farm is not contained within the wind farm site and is situated c. 600m from the nearest proposed turbine location (T4). The inhabited dwelling is modern and displayed no obvious access points for bats and was precautionarily assessed as having Low suitability to support roosting bats. The stone shed is of stone block construction with a pebble dash finish and was assessed as having Moderate suitability to support roosting bats. All galvanized metal sheds on the farm are open-faced and exposed to the elements and were assessed as having Negligible roosting suitability <u>Tree Inspections</u> A summary of trees/tree groups of note within an 87m radius (requiring removal) of the proposed turbine locations, their general location, PRFs and respective suitability for bat roosting, are outlined in Table 4-6 and the Tree Inspection map (Figure 4-1) in the Bat Report Appendix 6-2). It is indicated

	that the wind farm site contains a number of mature trees, hedgerows and treelines. Some of these features will require removal to facilitate the bat felling buffer and several trees proposed for removal provide potential suitable habitat for roosting bats. However, no evidence of roosting bats was identified during the ground level assessment. <i>Emergence Surveys</i> The spring dusk emergence survey was conducted by two surveyors on the 31st May at Farm Complex 1 with particular focus on the shed containing hanging seed sacks. This specific structure was confirmed as a roost, prompting a subsequent survey in summer by two surveyors. Bats were again observed emerging from the roost during this follow-up survey. Concurrently, on the same date, another team of surveyors examined derelict buildings located c. 400 meters south-west of Farm Complex 1. While no bats were observed emerging from these structures, a number of bats were seen foraging around the treeline and other structures. An emergence survey was also conducted on 12th October during the autumn period at Farm Complex 2 in which two pipistrelles were observed emerging from the open-fronted hay shed, with two other species recorded foraging around the farm. Table 4-8 of the Bat Report summarises the findings of the bat activity surveys carried out on the structures. <i>Manual Transects</i> Manual transects were undertaken in spring, summer and autumn 2023. Bat activity was recorded in all seasons. A total of 2,049 bat passes were recorded, including emergence survey activity. In general, soprano pipistrelle (n=940) was recorded most frequently, followed by common pipistrelle (n=885). Leisler's bat (n=159), Myotis spp. (n=53) and brown long-eared bat (n=12) were less frequent. <i>Ground-level Static Surveys</i> In total, 64,224 bat passes were recorded across all deployments. In general, common pipistrelle (n=23,217) occurred most frequently, followed by soprano pipistrelle (n=21,410) and Leisler's bat n=14,362). Instances of Myotis spp. (n=4,484), Brown long-eared bat (n=673) and Nathusius' pipistrelle (n=78) were recorded less frequently during the 2023 survey period.
<i>Otter (Lutra lutra)</i>	Potential otter trails (depressed grass) were recorded along several areas adjacent to the Tullaroan stream. Spraints and slides were recorded along the southern section of the Tullaroan stream (Plate 6-28). Habitat suitability for otter was typically good, given the presence of multiple watercourses, suitable food source and suitable supporting habitat such as riparian trees and riverbanks. A potential otter holt was recorded by the banks of the Tullaroan stream within the wind farm site on the 26th February 2024. A camera trap was deployed on the 12th March 2024 for 3 weeks to investigate if this area was being utilised by otters (Plate 6-29). No evidence of otters using this location was recorded during the 3-week period. A camera trap was placed on a second potential otter holt which was recorded in the south of the wind farm on the banks of the Tullaroan stream on the 12th March 2024 (Plate 6-30). No footage of the otter was recorded utilising the holt. One audio recording of a potential otter was recorded over a three week period. Taking a precautionary approach, the audio recording would suggest that otter are likely to be active within the area and may use this holt on occasion. A potential otter couch was recorded on the banks of the River Nore c. 240m south the proposed drilling pit location of Watercourse Crossing no. 13 on the proposed GCR. An otter spraint and prints were recorded by the River

	Nore c. 185m north of the drilling pit location. No potential otter holts or evidence of otter were recorded directly adjacent to the proposed works areas. No other signs of otter, including resting or breeding sites were recorded within the site. However, the watercourses within and downstream of the site were assessed as providing suitable commuting and foraging habitat for the species and are likely to be utilised by otter, at least on occasion. There is potential for otter to utilise all watercourses within and downstream of the site for foraging and commuting. It is indicated that the proposed development will not result in a loss of any habitat for otter.
<i>Badger (Meles meles)</i>	Signs of badger were recorded throughout the wooded area in the west of the wind farm site including latrines, snuffle holes and paths (Plate 6-29 – Plate 6-30). A potential badger sett was recorded in the south-west of the site adjacent (within 50m) to the existing farm track to be upgraded. One badger was recorded exiting the potential sett over the 2-week period (Plate 6-31). It is stated that the sett is unlikely to be actively used but may be used on occasion by individual local badgers. Additionally, badger prints were recorded in agricultural grasslands in the east of the wind farm site (Plate 6-32). No signs of badger activity were recorded along the proposed GCR. However, it is likely that badgers use the adjoining agricultural grasslands for foraging at least on occasion. Snuffle holes were recorded adjacent the River Nore c. 100m north of the proposed GCR.
<i>Reptiles and Amphibians</i>	No amphibians or reptiles were identified during the surveys conducted. However, given that several watercourses and drainage ditches exist within the site, it is likely the site supports amphibians and reptile species at some local level. Therefore, given these habitats are widespread in the common surrounding areas, the proposed development will not result in a significant loss to habitat for amphibians or reptiles
<i>Other Fauna</i>	Mammal scat likely to relate to fox, pine marten and mink were recorded on multiple occasions throughout the wind farm site. A single fox was seen in the centre of the wind farm site during the surveys carried out. Camera trap footage deployed within the wind farm site captured images of fox, pine marten and mink (Mustela vison). A large fox den was recorded c. 140m from the proposed GCR, adjacent Ballyragget 110kV substation. A potential small mammal burrow was recorded in the north of the wind farm site, located c. 60m from a proposed new site access road (Plate 6-36). Droppings likely to be pine marten (Martes martes) were recorded by the watercourse in the centre of the wind farm site. Small burrows recorded in the woodland areas in the north and west of the wind farm site are likely to be used by smaller mustelids (Plate 6-33 -Plate 6-35). No signs of red squirrel were identified during the surveys conducted. The woodland habitat within the wind farm site provides suitable habitat for pine marten and red squirrel and as such, red squirrel and pine marten boxes will be utilised to create suitable habitat for these protected species. Irish hare (Lepus timidus ssp. hibernicus) and rabbit (Oryctolagus cuniculus) were observed on occasion within the wind farm site. Rabbit burrows were recorded in the north of the wind farm site (Plate 6-38 & Plate 6-39) and in the boundary hedgerows delineating agricultural fields along the proposed

	GCR, north of the River Nore. A fox den was recorded c. 135m from the proposed GCR.
Fisheries and Aquatic Fauna	
Wind Farm	The survey locations are shown in Figure 1-1 of the Aquatic Baseline Report for proposed wind farm and the report provides the following conclusions: Both eroding/ upland rivers (FW1) and depositing/ lowland rivers (FW2) were present within and in the vicinity of the proposed wind farm. Watercourses were historically modified and displayed issues with excess siltation. Within the proposed wind farm site, there were sections of watercourse on the Tullaroan Stream that had been recently altered with bank alterations, riverbed alterations and river course diversion noted. Q-values recorded within and in the vicinity of the proposed wind farm were predominantly Q3 Poor with one sample location assigned Q3-4 Moderate. Salmonid, lamprey and European eel habitat was predominantly poor and moderate across the study area for the proposed wind farm with one location displaying good habitat for salmonid spawning, nursery and holding as well as good spawning habitat for lamprey. Atlantic salmon was found within surveys on the Tullaroan stream which flows through the proposed wind farm. While brown trout was found at all survey locations, lamprey were not found, and European eel was present in one survey location. There was no positive eDNA results for freshwater pearl mussel or white-clawed crayfish at any survey location. There were however strong positive results for crayfish plague. No otter holts were recorded during surveys. However, otter spraint and prints were recorded showing use of the area by otter. A kingfisher was observed flying upstream on the Tullaroan Stream watercourse. However, no kingfisher burrows were noted within the vicinity of any survey point
Grid Connection	The survey locations are shown in Figure 1-2 of the Aquatic Baseline Report for proposed GCR, and the report provides the following conclusions: Both eroding/ upland rivers (FW1) and depositing/ lowland rivers (FW2) were present along the proposed GCR. Watercourses were historically modified and commonly displayed issues with excess siltation. Q-values recorded within and in the vicinity of the proposed wind farm ranged from Q3 Poor to Q4 Good. Seven of the watercourses sampled received Q3-4 Moderate and Q3 Poor and at present. Salmonid, lamprey and European eel habitat ranged from poor to moderate to good along the proposed GCR. A number of locations (e.g. GR-1, GR-9, GR-12) displaying moderate to good habitat for salmonid spawning, nursery and holding as well as moderate to good spawning and nursery habitat for lamprey and locations GR-12 and GR-13 provided good habitat for European eel. A dead salmonid parr was found at sample location GR-2, salmonid alevins were recorded at sample site GR-8 and a brook lamprey was recorded at sample location GR-1. No otter holts were recorded during surveys. However, otter prints were recorded 60m upstream of sample location GR-13 showing use of the area by otter. A kingfisher was observed flying upstream on the River Nore however no kingfisher burrows were noted within the vicinity of any survey point.

9.9.1.12. Table 6-10 of the EIAR lists all the identified receptors and assigns them an ecological importance in accordance with the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). In addition, a rationale is provided for this determination, and it identifies the habitats and species that are Key Ecological

Receptors (KERs). The various KERs that have been identified include:

KER	Level of Importance	Rationale for inclusion
European Designated Sites: River Barrow and River Nore SAC [002162] River Nore SPA [004233]	International Importance	These sites are assigned International Importance and included as a KER as there is potential for indirect effects on these European sites via water pollution.
Nationally Designated Sites: Inchbeg pNHA [000836] River Nore/Abbeyleix Woods Complex pNHA [002076]	National Importance	These sites are assigned National Importance and included as a KER as there is potential for indirect effects on these National sites via water pollution.
Scrub (WS1) Hedgerow (WL1) Treeline (WL2) Mixed broadleaved/conifer woodland (WD2)	Local Importance (higher value)	Gorse scrub, hedgerow, treeline and woodland habitats identified within the site have been classified as a habitat of Local Importance (higher value) as it provides nesting/ roosting habitat, cover, commuting corridors, foraging habitat and serve in maintaining connectivity to the wider landscape for a variety of local and protected fauna. There will be some loss of these habitats to facilitate the construction.
Eroding/upland rivers (FW1)	Local Importance (Higher Value)	6 no. EPA mapped watercourses occur within the wind farm site. One unmapped watercourse was identified by T3 and one unmapped watercourse was identified by the proposed substation location. These Rivers and Streams have been assigned Local importance (Higher Value) as they connect to downstream waterbodies, including the Munster River which forms part of the River Barrow and River Nore SAC River, which is of international importance
Drainage ditches (FW4)	Local Importance (Lower Value)	Drainage ditches are found throughout the wind farm site along field boundaries and particularly throughout felled conifer woodland. They are highly modified and species poor where they occur but do provide some connectivity with natural watercourses within the wind farm site.
Otter	International Importance	Multiple EPA mapped watercourses were recorded within the site. Evidence of otter such as couches, spraints and a potential otter holt was recorded within the proposed wind farm adjacent to the Tullaroan Stream. The site provides suitable supporting habitat for local otter. At the northern end of the proposed salmonid parr, evidence of otter was recorded by the River Nore in the form of print, slides, spraint and a potential couch. The River Nore is likely to provide suitable supporting habitat for otter.

		Two new roads are proposed to cross the Tullaroan Stream and an unmapped watercourse within the wind farm site. Therefore, the proposed development has the potential to result in indirect effects on the receptor (as a result of deterioration in habitat or disturbance during construction/decommissioning).
Badger	Local Importance (Higher Value)	The habitats within the wind farm site have the potential to provide suitable supporting habitat for local badgers. Signs of badger such as snuffle holes and latrines were recorded in the woodland habitats in the south of the wind farm site.
Pine Marten	Local Importance (Higher Value)	No signs or significant suitable supporting habitat for pine marten was identified along the proposed GCR. The wind farm site provides suitable foraging and breeding habitat for pine marten. Potential Pine Marten scat was also recorded within the study area and given that the species is known to inhabit the area, potential for direct and indirect impacts on pine marten are therefore considered further. No signs or significant suitable supporting habitat for pine marten was identified along the proposed GCR.
Red squirrel	Local Importance (Higher Value)	The wind farm site provides suitable foraging and breeding habitat for red squirrel. Woodland habitat adjoining the proposed GCR may also provide suitable habitat. Given that the species is known to inhabit the area, potential for direct and indirect impacts on red squirrel are therefore considered further
Bats	Local Importance (Higher Value)	Two bat roosts were recorded within the existing farm buildings located in the centre of the wind farm site. The linear vegetative habitats within and surrounding the wind farm site are likely to be utilised by a bat population of Local Importance (higher value). As such, the site has the potential to provide suitable supporting habitat for roosting, foraging and commuting bats. Bats are likely to forage and commute within the vicinity of the proposed development. Therefore, the proposed development has the potential to result in direct and indirect effects on the receptor.
Aquatic and Fisheries Species	Local Importance (Higher Value)	Watercourses downstream of the wind farm site and along the proposed GCR are known to support a number of aquatic species (see Section 6.4.3.4 of the EIAR and Appendix 6-3 Aquatic Baseline Report). No fish were recorded within the watercourses within the wind farm site (e.g. survey locations A1, A2 and A5). However, watercourses within the site are

		hydrologically linked to downstream watercourses (and aquatic fauna within them) which have been assigned as of International Importance due to their designation as an SAC or as QIs of the SAC (e.g. otter, Freshwater Pearl Mussel, white-clawed crayfish, lamprey spp.). Known populations of salmon and eel downstream would also be considered of Local Importance (Higher Value). There is potential for indirect effect on these features as a result of impacts on water quality.

Potential Effects (Do-Nothing Scenario)

- 9.9.1.13. The EIAR notes that if the proposed development were not to proceed, the lands within the site would continue to be managed as commercial forestry and as heavily managed improved agricultural grassland with associated grazing. Timber in the woodland habitats would likely be harvested as it matures, followed by the subsequent afforestation. The other habitats identified within the site including hedgerow, watercourses and associated habitats, would likely remain in a similar condition. The general biodiversity on the site would likely remain similar to its current state as activity levels and land use would not change significantly. However, it is stated that the opportunity to capture part of Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. In addition, the opportunity to provide an area of hedgerow enhancement and creation, riparian planting along a section of the Tullaroan Stream and the implementation of pine marten and red squirrel nest boxes would be lost.

Potential Effects (Construction Phase)

- 9.9.1.14. The extent of habitat loss of each KER and the potential significant effects of the proposed development on the various KERs arising from the construction phase is summarised in the below tables.

Table: Summary of the Potential Effects during the Construction Phase (Habitats & Fauna)

Construction Phase	
Groundwater, Surface Watercourses and Sensitive Aquatic	Direct Impacts (mortality) As no instream works are proposed, it is considered that there is no potential for direct impacts on any aquatic receptors associated with the proposed GCR.

Faunal Species	<u>Indirect Impacts (water quality)</u> Apart from the proposed substation, a hydrological buffer zone of 50m will be maintained from watercourses as a preventative measure associated with surface water drainage and pollution control. There is a risk that pollutants and sediment laden surface water run-off could discharge to surrounding ditches and watercourses impacting on sensitive watercourses and aquatic species downstream. <u>Groundwater</u> It is indicated that there are no karst features in the area of the wind farm site or along the TDR. However, a section of the proposed GCR is underlain by a Regionally Important Karst Aquifer. A small number of karst features were mapped over 400m from the proposed GCR which are outside the Zol of the proposed development. No groundwater level impacts are predicted from the construction of the proposed GCR, access roads, substation compound, or met mast due to the shallow nature of the excavations proposed (i.e. 0 - ~1.2m). Significant impacts on groundwater are not predicted to occur given the low permeability nature of the underlying bedrock aquifers within the wind farm site and the low potential for groundwater dispersion and movement within the underlying aquifer
Hedgerow, Treeline and Woodland habitats	The development will result in the loss of c. 1,388m of linear habitat. A small amount of treeline will be lost and the majority of 1,388m to be removed consists of hedgerow habitat. The loss is anticipated to facilitate the development's footprint throughout the site, including bat buffers. Approximately 29ha. of woodland habitat was recorded in the south-west of the site and 4.3ha will be removed. Approximately 3.57ha of conifer forestry (WD4) and approximately 0.73ha of mixed broadleaved/conifer woodland (WD2) habitat will be felled as part of the wind farm.
Badger	<u>Habitat Loss/Fragmentation</u> No significant overall loss or fragmentation of badger foraging habitat is anticipated at any geographic scale. <u>Direct Mortality/Disturbance</u> In the absence of mitigation, the construction works proposed in close proximity to the potential active sett has the potential to cause tunnel collapse as well as disturbance to badgers within the sett. Although, the recorded active badger sett is likely to be an outlier sett to some local badgers, there is potential this sett could become increasingly active in the future. The risk of tunnel collapse also carries a risk of mortality to badgers and a risk of loss of sett habitat for the local population of badgers. This would be considered significant at the local geographic scale in the absence of mitigation.
Otter	<u>Habitat Loss/Disturbance/Mortality</u> Significant effects regarding habitat destruction, barrier effect, disturbance and mortality are not anticipated. <u>Habitat Degradation (impacts on water quality)</u> A new clear span bridge is proposed to cross the Tullaroan stream in the west of the site. Any potential disturbance to otter will be a short-term, slight negative effect associated with the installation of the proposed watercourse crossings. In the absence of mitigation, the indirect effect of water pollution on otter during construction has the potential to be a short-term impact. The magnitude of any such impact is likely to be moderate as apart from the substation, all major infrastructure such as turbine bases and construction compounds are located over 50m from any natural watercourse and the proposed new crossing of the Tullaroan stream will be a clear span structure.

Bats	<u>Loss or Damage to Commuting and Foraging Habitat</u> The loss or degradation of commuting/foraging habitat has potential to reduce feeding opportunities and/or displace bat populations. Loss of foraging and commuting habitat will result from the implementation of felling buffers, as well as road widening, and construction works. Tree felling and hedgerow removal will be required within and around the development footprint to allow for the construction of the turbine bases, access roads, underground cabling, and the other ancillary infrastructure. A small section of the wind farm site is located on commercial forestry. Approximately 1,388m of linear features, including treelines and hedgerows (excluding felled forestry) are proposed to be removed as a result of these buffers and road construction works. The wind farm site is ecologically connected to the wider landscape via linear habitats. The resulting loss of foraging habitat and linear commuting habitat represents a potential long-term impact on bats at the local level. <u>Loss of, or Damage to Roosts</u> <i>Structures</i> 4 no. structures, and their associated outbuildings, were identified within the wind farm site and were subjected to inspections and dusk activity surveys. Three roosts were identified within two of the farm complexes, each with fewer than 10 observations of emerging bats. These structures and the surrounding linear habitat features will be retained and avoided. <i>Trees</i> A potential for indirect effects on bats was identified in the form of loss of roosting habitat resources, as well as direct effects such as temporary disturbance and harm or death as a result of the proposed tree felling. No trees will be removed along the proposed GCR. <i>Watercourse, Culvert and Drain Crossing Infrastructure</i> Bridges and culvert crossings along the proposed GCR were assessed as having Negligible to Moderate value for roosting bats. The water crossing infrastructure along the GCR will not be altered as the options for crossing bridges do not require any works to be carried out on the bridge structure itself, i.e. the bridge culvert. Some mature trees will be removed to facilitate watercourse crossings within the wind farm site. No roosts were recorded in these locations. The proposed works have the potential to cause temporary disturbance to roosting bats. <u>Displacement of Individuals or Populations</u> A number of treelines and hedgerows within the turbine felling buffers to be removed provide potential roosting and foraging/ commuting habitat. Factors such as increased noise and artificial lighting during construction have the potential to lead to displacement effects on bats where working hours coincide with periods of bat activity.
Red Squirrel/Pine Marten	<u>Habitat Loss/Fragmentation</u> Woodland habitats provide suitable foraging and breeding habitat for both species. Approximately 29ha of woodland habitat was recorded in the south-west of the site and 4.3ha will be removed. The proposed development will result in the loss of approximately 3.57ha of conifer forestry (WD4) and approximately 0.73ha of mixed broadleaved/conifer woodland (WD2). No significant overall loss or fragmentation of red squirrel or pine marten habitat is anticipated at any geographic scale. <u>Disturbance/Mortality</u> Whilst no breeding sites for these species were recorded, baseline surveys identified that the windfarm site as being utilised by a local red squirrel and

	pine marten population. Any potential for physical damage or significant disturbance of occupied breeding sites (if established prior to construction) for these species has been identified as significant at the local geographic scale in the absence of mitigation

Potential Effects (Operational & Decommissioning Phase)

9.9.1.15. In terms of the operational phase, it is indicated that the proposed development will not result in any additional land take or loss of any habitats and as such there is no potential for any significant effects in this regard. It is noted that the proposed development has the potential to result in enhancement of the surrounding areas through management of habitat enhancement and creation, that will be implemented during the construction phase. A summary of potential effects during the operational and decommissioning phase is detailed below.

Table: Summary of the Potential Effects during the Operational and Decommissioning Phase (Habitats & Fauna)

Operational Phase		
Rivers, and Aquatic Species	Streams, Sensitive Faunal	<u>Proposed Wind Farm (including Proposed Grid Connection on-site substation)</u> Progressive replacement of the vegetated surface with impermeable surfaces could potentially result in an increase in the proportion of surface water runoff reaching the surface water drainage network. This could potentially increase runoff from the site and increase flood risk downstream. During storm rainfall events, additional runoff coupled with increased velocity of flow could increase hydraulic loading, resulting in erosion of watercourses and impact on aquatic ecosystems. Surface waters in the vicinity and downstream of the wind farm site (Tullaroan Stream and associated tributaries) and associated aquatic species could be impacted. <u>Proposed GCR</u> No change in surface water runoff rates will result as the trench and road surface will be reinstated.
Otter		It is stated that the operation of the proposed development will not result in any additional habitat loss or deterioration, nor will it result in a significant increase in anthropogenic activity. There is no potential for significant negative effects in terms of disturbance on non-volant terrestrial fauna including badger and otter that were identified as KERs during the operational phase of the development. The potential for significant effects on otter is restricted to indirect effects on their habitat resulting from water pollution and disturbance during the construction phase (as discussed above).
Bats		There is no potential for loss or fragmentation of foraging or roosting habitat for bat species during the operational phase of the proposed development as there will be no additional loss of any habitats following construction. Activity levels for low-risk species at the site including Myotis species and brown long eared bat (lesser horseshoe bat were not recorded during dedicated bat surveys) were low. Given the low levels of activity recorded, no significant effects on these species are anticipated.

	Overall risk levels for these high collision risk bat species (Leisler's bat, Nathusius' pipistrelle, Common pipistrelle and Soprano pipistrelle) was assigned as Low-Medium, with High seasonal peaks recorded for some species. Site-level collision risk for high collision risk bat species was typically Low to Medium. The operation of the proposed wind farm has the potential to result in a long-term effect on Pipistrelle and Leisler's bat species as a result of mortality due to collision. The magnitude of this effect in the absence of mitigation is moderate on the basis that no significant roosts were identified in the immediate vicinity of the turbines and the median level of activity is considered moderate (on a precautionary basis). No significant effects are anticipated at any other geographic scale.
Decommissioning Phase	
There will be no additional habitat loss associated with the decommissioning of the proposed development and therefore there will be no significant effects in this regard. No large-scale excavations or earthworks will be required as the development footprint (roads, turbine hardstands and foundations etc.) will be left in situ. There would be no additional or ancillary impacts associated with the decommissioning phase.	
It is indicated that the same mitigation to prevent significant impacts on water quality and associated aquatic fauna and other terrestrial fauna during construction will be applicable to the decommissioning phase. An outline Decommissioning Plan is attached in Appendix 4-4 of the EIAR. The CEMP for the proposed development provides the details of the mitigation and best practice that will be employed to avoid any potential for significant residual effects on biodiversity during decommissioning of the proposed wind farm. In addition, it is stated that the measures incorporated into the construction phase, including specific mitigation provided in relation to water quality (as per Chapter 9: 'Hydrology and Hydrogeology'), will be implemented during decommissioning	

Designated Sites

- 9.9.1.16. As indicated, the proposed GCR runs adjacent to the River Barrow and River Nore SAC, while watercourses within the wind farm site have a direct hydrological link to the River Barrow and River Nore SAC. The HDD launch pit is located within the River Barrow and River Nore SAC, thus a potential for likely significant effect was therefore identified for both the River Barrow and River Nore SAC and the River Nore SPA. The is addressed in the Applicant's NIS where it is concluded that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.
- 9.9.1.17. As indicated, the Inchbeg Woods pNHA and the River Nore/Abbeyleix Woods Complex pNHA are identified as being within the ZOI and as KERs. Any potential for impacts on the above listed nationally designated sites via the deterioration of water quality have been robustly blocked through the implementation of the mitigation measures outlined in Chapter 9 (Hydrology) of the EIAR which concluded that following the implementation of the mitigation will protect any downstream nationally designated sites and no significant effects will occur.

Cumulative Effects

9.9.1.18. Section 6.9 of the EIAR indicates that the proposed development was considered in combination with other plans and projects in the area that could result in cumulative impacts on biodiversity, including European Sites and Nationally designated sites. This included a review of online Planning Registers and served to identify past and future plans and projects, their activities and their predicted environmental effects. In terms of Plans, the following have been reviewed and taken into consideration as part of the assessment (see Table 6-19):

- Kilkenny County Development Plan 2021 – 2027,
- National Biodiversity Action Plan 2023-2030,
- The Regional Planning Guidelines for the South- East 2010-2022,
- Southern Regional Assembly Regional Spatial and Economic 2020-2040 Strategy (RSES).

9.9.1.19. It is noted that the main likelihood for cumulative effect associated with the proposed development and other developments is assessed to be associated with KERs. However, the likelihood for cumulative non-KER habitat and species impacts has also been considered. In relation to terrestrial habitats and species, a cumulative study area of 1km for the proposed wind farm and 200m for the proposed GCR was chosen. The cumulative study area in relation to aquatic habitats and species follows the rationale that is set out in Chapter 9 (Hydrology and Hydrogeology) of the EIAR. The cumulative assessment of all KERs is identified in the below table.

Table: Cumulative Assessment

KER	Assessment
Water quality, aquatic species and habitats	It is confirmed that the proposed development will not contribute to any existing or likely cumulative pressures or threats. Following the careful project design, implementation of the prescribed best practice and mitigation there is no potential for the proposed development to result in any significant cumulative impact on water quality, aquatic habitats and species
Hedgerow, Treeline and Woodland habitat	The loss of these habitats to facilitate the proposed development will be mitigated through the implementation of the BMEP. Therefore, it is confirmed that proposed development will not contribute to in any significant cumulative impact on treeline, hedgerow or woodland habitat.
Badger	The lands surrounding the site consist primarily of improved agricultural grasslands delineated by hedgerow and treelines with small pockets of broadleaved woodland and conifer woodland are present throughout. These habitats provide highly suitable habitat for badger and following a review of the proposed projects, no large-scale developments that will result in significant habitat loss are proposed. As such, there is no potential for the proposed development to result in any significant cumulative impact on badger

Bats	There is one existing and one permitted wind farm located within 5km of the proposed wind farm, and two existing and one permitted wind farm located within 5km to 10km. There are 3 no. further EIA projects and one extractive industry within 10km. No potential for the proposed development to contribute to any cumulative adverse effects on any bat populations is anticipated when considered in-combination with other plans and projects as fully described above.
Otter	The proposed development will not result in any significant effects on water quality that may provide supporting feeding opportunities for otter (i.e fish stock). Having reviewed other land uses and developments within the defined biodiversity buffer, it is confirmed that the proposed development will not contribute to any existing or likely cumulative impacts on otter
Pine Marten and Red Squirrel	The implementation of the BMEP will also provide for additional riparian woodland planting and the installation of pine martin and red squirrel nesting boxes, to increase breeding opportunities for both species. After a detailed review of the other developments in the cumulative study area for habitats and species the proposed development site, it is contended that no developments resulting in significant woodland loss are proposed. As such, there is no potential for the proposed development to result in any significant cumulative impact on Pine Marten and Red squirrel.
Non-KER Habitats and Species	Such habitats and species included Conifer Plantation, Improved Agricultural Grassland (GA1), reptiles and amphibians. No pathway for significant, individual or cumulative effects were identified.

Mitigation

- 9.9.1.20. The various mitigation measures during the construction and operational phase of the proposed development are summarised in the table below.

Table: Summary of Mitigation

Construction Phase	
Groundwater, Surface Watercourses and Sensitive Aquatic Faunal Species	Detailed mitigation measures in relation to the protection of surface water during construction is detailed in Chapter 9 (Hydrology and Hydrogeology) of the EIAR. In summary the key mitigation measure during the construction phase is the avoidance of sensitive hydrological features, by application of suitable buffer zones. A drainage maintenance plan for the Proposed Project is provided in the Construction Environmental Management Plan (CEMP). Measures to protect groundwater during construction are detailed in Section 9.5.2.5 in Chapter 9 of the EIAR. In relation to new watercourse crossings, Inland Fisheries Ireland (IFI) will be consulted a minimum of four weeks in advance of watercourse crossing works.
Hedgerow, Treeline and Woodland habitats	Treeline and mixed broad-leaved woodland habitats, c. 3,640m of heavily managed hedgerow will be enhanced through additional planting with native species. New native hedgerow habitat will be created in the south and north of the site, c. 270m. It is proposed to incorporate a native vegetated riparian buffer zone adjacent the Tullaroan Stream within the site. A total of c. 1.7ha of riparian planting is proposed to be planted on both banks of the Tullaroan stream.
Badger	- A pre-construction badger survey will be undertaken at the location

	of the identified sett by a qualified ecologist prior to the commencement of any works to determine if the sett is in use and to identify any additional sett entrances that may have been excavated in the intervening period. In addition, a pre-construction badger survey will be carried out at all proposed infrastructure locations. - The identified sett will be monitored for a minimum least 2 weeks prior to construction using a camera trap to determine if it is in use. - If the sett is found to be in use exclusion measures will be put in place prior to construction in line with NRA (2005) Guidelines to ensure that the sett is evacuated. - As per NRA guidelines exclusion from an active sett will only be carried out during the period of July to November inclusive in order to avoid the badger breeding season. - During the breeding season (December to June inclusive), no works will be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts. - Exclusion zone fencing and appropriate signage will be put in place around the main sett which lies outside the construction footprint.
Otter	Specific mitigation is provided in relation to water quality in Chapter 9 of the EIAR. The Applicant also refers to the CEMP that is provided as Appendix 4-3. Mitigation includes: - From a precautionary basis, a pre-commencement otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works. - No works will be undertaken within 150m of any holts at which breeding females or cubs are present. - No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance will also not take place within 15m of such holts, except under licence (TII, 2008b). All of the above works will be undertaken or supervised by an appropriately qualified ecologist. Further, the proposed riparian planting and associated roost systems once established, have the potential to add potentially suitable habitat for otter holts, couches and burrows along the banks of the Tullaroan stream.
Bats	<u>Loss or damage to commuting and foraging habitat</u> Linear vegetation features within the turbine buffer will be removed. A replanting design has been curated to draw bats away from turbine buffers. A total of 1,388m hedgerow/tree habitat will be lost. It is proposed to plant new linear features and bolster existing habitat features to offset any potential loss in linear habitat features and to provide additional new opportunities for commuting and foraging bats. Approximately 3,640m of heavily managed hedgerow will be enhanced through additional planting with native species. It is proposed to plant some native tree species within the hedgerow habitat to further increase the biodiversity value within the Site. New native hedgerow (c. 270m) habitat will be created in the south and north of the site. The enhancement of existing hedgerows and hedgerow creation will improve the ecological value and provide benefits for local biodiversity. <u>Loss of, or damage to, roosts</u> - A pre-commencement survey will be carried out by a suitably qualified ecologist on trees with PRFs proposed for felling. - If a bat roost is identified within any of the trees to be removed/pruned, a bat derogation licence will be obtained from the NPWS, prior to removal and the removal activity will be supervised by a qualified ecologist.

	- On a precautionary basis, works will be undertaken at an appropriate time of year, as determined by a suitably qualified ecologist, to avoid disrupting sensitive life cycle periods for bats. - Tree-felling of mature deciduous trees will be carried out and shall adhere to standard mitigating procedures. Compensation for the loss of trees, alternative potential roosting features will be implemented on a like-for-like basis, through the provision of bat boxes. A count of all potential roosting features lost will be required to ensure all features are accounted for by compensation measures. A replanting and enhancement plan is also proposed to compensate for the loss of commuting and foraging habitat. Where the potential for indirect effects (i.e. disturbance) on bats potentially roosting within watercourse, drain and culvert crossing infrastructure has been identified, the following mitigating procedures are proposed: - An inspection survey will be carried out prior to the commencement of the works to ensure no bats are roosting within the infrastructure. - If the inspection survey cannot provide sufficient data to exclude the presence of a roost (i.e. due to lack of access), an activity survey will also be conducted prior to commencement. - Where evidence of bats is identified during the above pre-commencement surveys, a Derogation Licence will be required from NPWS for the continuation of the works. - The works will be undertaken at an appropriate time of year, as determined by a suitably qualified ecologist, to avoid disrupting sensitive life cycle periods for bats. <u>Displacement of individuals or populations</u> - Noise Restrictions - Lighting Restrictions Additional enhancement planting and hedgerow creation have been proposed to offset the loss of linear commuting and foraging habitat utilised by local bats. In total, 3,910m of hedgerow planting and hedgerow creation are proposed within the site which will create new routes for commuting and foraging bats. The proposed enhancement and creation planting areas within the site have been carefully selected to reduce any risks of bats collision with operational turbines. Whilst no significant effects on roosting species have been identified, the felling of forestry will have a positive effect by opening up large areas of former closed canopy commercial forestry i.e. there will be more linear forestry edge habitat created. This will have a positive impact on bats as it will provide more commuting and foraging opportunities.
Operational Phase	
<i>Rivers, Streams, and Sensitive Aquatic Faunal Species</i>	- Interceptor drains will be installed up-gradient of all Proposed Project infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader; - Swales/roadside drains will be used to collect runoff from access roads and turbine hardstanding areas of the Site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling; - On steep sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off

	the road into swales/road side drains; - Check dams will be used along sections of access road drains to intercept silts at source. - Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, - Settlement ponds have been designed in consideration of the greenfield runoff rate It is noted that the proposed integration of the wind farm drainage with the existing forestry drainage is a key component of the proposed drainage management within the development. Critically, there will be no alteration of the catchment size contributing to each of the main downstream watercourses. All drainage water captured within individual site sub-catchments will be attenuated and released within the same sub-catchments that it was captured.
Bats	In accordance with NatureScot and NIEA Guidance, a minimum 50m buffer to all habitat features used by bats (e.g., hedgerows, tree lines etc.). <u>Blade Feathering</u> On a precautionary basis, and in addition to buffers applied to habitat features, it is proposed that all wind turbines are subject to 'feathering' of turbine blades when wind speeds are below the cut-in speed of the proposed turbine. This means that the turbine blades are pitched at 90 degrees or parallel to the wind to reduce their rotation speed to below two revolutions per minute while idling. This measure has been shown to significantly reduce bat fatalities (by up to 50%) in some studies (NIEA, 2021). <u>Bat Mitigation and Monitoring Plan</u> - The post-construction surveys will be carried out as per the pre-construction survey effort. Post-construction monitoring will include static detector surveys, walked survey transects and corpse searching to record any bat fatalities resulting from collision. - Static monitoring shall take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). - Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with NIEA Guidance. - Monitoring surveys shall continue in Year 2 and 3, and where a curtailment requirement has been identified, the success of the curtailment strategy shall be assessed in line with the baseline data collected in the preceding year(s). <u>Lighting</u> There will be limited illumination of the turbines in the form of aviation lighting. Post construction monitoring will be carried out to assess any potential changes in bat activity patterns and collision risk. Significant effects as a result of lighting are not anticipated; however, if in the course of this monitoring, any potential for significant effects on bats is identified, the site-specific mitigation measures will be reviewed and any changes necessary will be implemented to avoid any such impacts.

Residual Effects

9.9.1.21. The residual effects are summarised as follows:

Table: Residual Effects

Construction Phase	
Groundwater, Surface Watercourses and Sensitive Aquatic Faunal Species	No significant residual effect on aquatic habitats or species as a result of the proposed development. It is noted that the proposed riparian planting will likely improve water quality due to increased buffering which can result in reducing nutrients and sediment release into the Tullaroan Stream.
Hedgerow, Treeline and Woodland habitats	No potential for significant effect exists at any geographic scale. The planting of additional linear habitats will result in a net gain of linear habitats within the site. It is indicated that the proposed enhancements will result in an increase in available riparian habitat and improve the condition of existing linear habitats onsite.
Badger	No potential for any significant residual effect on badger at any geographic scale.
Otter	No significant residual effect on otter as a result of the proposed development. It is indicated that the riparian planting will have potential to create additional otter habitat within the wind farm site.
Bats	No potential for the construction of the proposed development to result in significant effects on the local bat population at any geographic scale. It is indicated that there will be no significant effect on the conservation status of any bat species as defined in 'The Status of Protected Habitats and Species in Ireland' (NPWS, 2019)
Otter	No significant residual effect on otter as a result of the Proposed Project.
Red Squirrel/Pine Marten	No significant negative effects to pine marten and red squirrel is anticipated at any geographic scale.
Operational Phase	
Rivers, Streams, and Sensitive Aquatic Faunal Species	No potential for significant effect has been identified at any geographic scale as a result of the proposed development.
Bats	No potential for significant residual effects on bat species.

Assessment

9.9.1.22. I have examined, analysed and evaluated Chapter 6 of the EIAR and all of the associated documentation and submissions on file in respect of biodiversity. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation and advertisement which included additional details regarding biodiversity. Parties to the appeal have raised a number of issues which I address below.

Habitats

9.9.1.23. As outlined above, the majority of the proposed wind farm site comprises extensively

managed, improved agricultural grassland, within which 6 of the 7 no. turbines are to be located. The various spoil management areas, borrow pit and construction compounds are also generally located within this habitat, while T7 and its associated infrastructure is located within an area of existing conifer forestry. While the overall site is therefore dominated by lower value modified agricultural and commercial forestry habitats, it is acknowledged that the proposed development will give rise to impacts on existing treeline and hedgerow habitats that currently form field boundaries throughout the site. The value that these linear features contribute to local habitat connectivity is acknowledged by the Applicant and they have been identified as KERs. Initial site assessments identified that the proposed development would necessitate the removal of c. 1,388m of treeline and hedgerow habitat in order to facilitate site access and the associated infrastructure. In addition, the development will also require the partial removal of existing woodland habitats within the site boundary. Of the c. 29ha. of woodland habitat currently present within the overall site, c. 3.57ha of conifer plantation forestry is proposed to be removed in the vicinity of T7. Furthermore, c. 0.73ha of mixed broadleaf-conifer woodland will also need to be removed to accommodate the proposed development.

9.9.1.24. The Planning Authority concluded that the proposed development's habitat baseline and botanical study contained notable inaccuracies and inconsistencies. In addition, they have noted that the absence of a sufficient hedgerow appraisal or detailed map showing the full extent of habitats that will be lost. This, in their view presented a significant gap in baseline data to assess potential impacts. I also acknowledge the third-party concerns regarding the adequacy of the Applicant's surveys. Specifically, the ecologist retained by KBT Responsible Energy who identified inaccuracies, a lack of species knowledge and opined the overall poor quality of analysis in the botanical report. Furthermore, I note the commentary of Department of Housing, Local Government & Heritage who sought to clarify whether the hedgerows proposed for removal were unmanaged. They also recommended that replacement planting be completed at the outset of construction to allow the vegetation to mature and develop, and prior to any removal of any habitat.

9.9.1.25. Following my observations on site, I had some concerns that the extent of hedgerow

and tree loss was somewhat underreported along the existing access road leading from the site entrance on the L1009 (Kilmanagh Village) to T7. Similar concerns were noted regarding the treelines and dense hedgerows that enclose a small field located directly to the north-east of T5, adjacent to the proposed spoil management area. The Applicant was therefore requested to respond to this issue and if further hedgerow removal/tree loss was required, this was to be clearly identified, and the extent of habitat loss updated within EIAR. As part of the Applicant's FIR, an additional c. 120m of hedgerow and linear habitat loss was identified and included:

- A 7m section of heavily managed hedgerow at northern site entrance (Plate 1);
- A 15m section of hedgerow at the entrance to the temporary construction compound proposed for temporary removal with reinstatement following construction (Plate 2);
- A 27m section of hedgerow at the temporary site entrance to the south proposed for temporary removal with reinstatement following construction (Plate 3);
- A 72m section of treeline along the access route in the south of the site (Plate 4);
- A 10m section where the access track meets the conifer forestry block south of T7 (Plate 5);
- A 16m section of heavily managed, low-level hedgerow will require removal at the proposed substation entrance (Plate 6).

It is the Applicant's view that the inclusion of this additional hedgerow loss is not of a significant magnitude in the context of the overall assessment and does not alter the findings, conclusions, or significance of effects reported in the EIAR. I note that the extent of the additional linear habitat loss is mapped and identified in Figure 2 of the Applicant's FIR. As identified above, a c. 72m section of treeline along the access route in the south of the site now requires removal which had confirmed my observations on site. While regrettable, the removal of this treeline is unavoidable to facilitate site access, and I am satisfied overall that the Applicant has sought to minimise habitat loss through the development's layout and design and the reuse of existing access roads where possible. I also note that further surveys were undertaken within this area of the site and the Applicant's bat ecologist has confirmed that none of the trees in question contained any potential roosting features (see further

discussion below). However, it is reasonable in my view for a condition to be included which requires the Applicant to fully quantify the total no. of trees to be removed and provide commensurate replacement native tree planting. With the exception of the conifer plantation, this should also have regard to tree felling associated with the bat buffer areas and all tree removal required to provide access throughout the site. Prior to the commencement of development, the Applicant shall be required to submit a tree survey for the written agreement of the Planning Authority, quantifying the full extent of tree loss and the submission of an updated BMEP which provides specific details of the replacement planting.

- 9.9.1.26. Whilst I acknowledge the various parties' concerns regarding the site's hedgerow appraisal and overall hedgerow loss, the Applicant has proposed to enhance c. 3,840m of existing hedgerow habitat and the planting of c. 270m of new hedgerow habitat as a measure to improve ecological value and provide local biodiversity benefits. It is noted within the BMEP that the majority of the existing hedgerows in the southern section of the site are heavily managed and do not support high levels of biodiversity or provide adequate commuting and foraging corridors for local wildlife. The existing hedgerow locations that have been identified as suitable for enhancement planting and hedgerow creation are shown in Figure 1-2 of the BMEP and it is indicated that it is proposed to plant some native tree species within the hedgerow habitat to further increase the biodiversity value. However, it is important to note that the EIAR states that the precise locations for the proposed planting measures remain subject to final agreement with the relevant landowners. In my view, this level of uncertainty is not acceptable, and I share the Planning Authority's concerns regarding the level of detail contained within the Applicant's BMEP. In particular, concerns arise in relation to the proposed monitoring arrangements and the extent of involvement envisaged for the Local Authority's Biodiversity Officer, in terms of overseeing the implementation and ongoing assessment of the biodiversity enhancement measures. Accordingly, I recommend the attachment of a condition requiring the submission of a revised and more detailed BMEP. This revised plan should clearly identify the finalised extent and locations of all enhancement planting, including new hedgerow and tree planting proposals (as discussed above). The BMEP shall also specify the party responsible, on behalf of the Applicant, for appointing and liaising with a suitably qualified ecologist

to undertake the required monitoring. Furthermore, the condition should require that each phase of monitoring and associated reporting be undertaken in consultation with the Local Authority. This process should allow the Local Authority Biodiversity Officer to provide input and feedback on the findings of each monitoring round, and to advise on any necessary remedial or follow-up actions arising from the monitoring results. A condition should also be included which requires the provision of the enhancement planting, including the riparian planting along the Tullaroan Stream, to be provided at earliest stage in the construction process in order to allow for the vegetation to mature and develop. I note that the Applicant has confirmed that they are amenable to this to ensure that the planting is undertaken at the outset of construction. Subject to compliance with these requirements, I am satisfied that the significant impacts on habitats within the wind farm site will not arise and the Applicant's proposals are therefore acceptable in this regard. In response to the Third Party observer's reference to Black Poplar being recorded on the wind farm site and the recommendations for further investigations, the Applicant has confirmed that this species was recorded outside of the infrastructure footprint and will not be lost as a result of the proposed development. This is acceptable in my view.

- 9.9.1.27. In terms of the proposed GCR, I note that the alignment is predominantly located within the existing public road corridor, and having reviewed the documentation submitted by the Applicant, I am satisfied with the conclusions reached in the EIAR. In relation to the Planning Authority's concerns regarding potential impacts on an Annex I habitat (Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]) that is mapped to the south of Freshford adjacent to the L-1002, I have visited the site and have had regard to the publicly available habitat mapping. Overall, I am satisfied that no impacts on this Annex I habitat will arise given the proposed works at this location will be fully contained within the existing public road corridor.

Bats

- 9.9.1.28. The adequacy of the Applicant's assessment of bats has been called into question by the Planning Authority and the Department. Significant concerns were also raised by Third Party observers regarding habitat destruction and its potential impact on the local bat population. The Planning Authority have raised concerns regarding the Applicant's

analysis and assessment of bat species' activity levels within the site. It was also their view that a revised assessment be provided which has regard to the importance of singular bat roosts in trees, with additional information as to their distribution in relation to the proposed project design and supporting works. Furthermore, the Department raised concerns regarding the adequacy of the survey work undertaken for the various farm complexes that exist within the wind farm site. I note that a Bat Survey Report has been included in Appendix 6-2 of the EIAR and provides details of the bat surveys undertaken, including survey design, methods and results, and the assessment of potential effects of the proposed development on bats. In response to the Department's concerns, the Applicant noted that ground-level static detector surveys provided the core dataset for which the bat impact assessment was informed. As part of this, the potential for structures to support bats were assessed and in the context of the existing farm complexes that were identified and surveyed, the identification of bat roosts on the site have been confirmed. However, the Applicant has noted that all structures will be avoided as part of the proposed development, and thus no significant loss or damage to the identified or potential roosts within buildings/structures is anticipated.

- 9.9.1.29. Although the majority of existing trees will be retained, the Applicant acknowledges that limited vegetation clearance is unavoidable to facilitate site access and establish the required 50m bat buffer between trees and turbines. The Applicant notes that the trees/tree groups associated with the proposed bat buffers are assessed in the Bat Survey Report and it was confirmed that no roosts or evidence of roosting bats were identified in trees present within the bat buffers during the surveys. However, it was stated that there were a number of trees that presented Low to Moderate roosting potential and on a precautionary basis, the Applicant committed to undertaking a pre-construction bat survey on any tree proposed for removal which was identified as having potential for roosting bats. Noting the updated guidance from the Department on Regulation 54 derogation process for protected species listed on Annex IV, the Commission requested the Applicant to satisfy themselves that they could comply with this guidance. It was suggested that this may necessitate further surveys to determine whether a derogation may be required. In response to the Commission's request, the Applicant undertook a more detailed assessment in August 2025 of all the trees

proposed for removal to facilitate the bat felling buffers and the infrastructure footprint, including the site entrance (L1009), temporary construction compound, spoil management area, substation entrance, and access track to T7. It is confirmed that this assessment was carried out in line with the updated Collins (2023) guidance, supported by Bat Tree Habitat Key (2018) and was undertaken by a licenced bat ecologist. In total, 83 no. trees were inspected across the site, and none were found to support features suitable for roosting bats. On this basis, the Applicant was satisfied that a derogation is not required. Recognising that tree condition can change over time, the Applicant has also committed to carrying out a precautionary survey prior to felling to confirm the updated baseline status of trees. I note that the application documents, the Applicant's FIR and the various submissions have been reviewed by the Commission's Senior Ecologist, and I refer to their report enclosed as Appendix 6. In summary, she is satisfied that the surveys have been carried out with regard to best practice guidance, that the extent of evidence provided by the Applicant on roosting bats in trees provides sufficient details of bat baseline on the site and that a derogation is not required at this stage. Overall, I would concur with the findings of this report, and I am satisfied that significant effects on bats will not arise as a result of the proposed development. Furthermore, it is considered that the enhancement of existing hedgerow habitats across the site, together with the riparian planting along the Tullaroan Stream will strengthen ecological connectivity across the site and provide enhance foraging and community opportunities for local bat populations.

9.9.1.30. In terms of the structures within the wind farm site and the Department's commentary, I refer to the analysis of the Commission's Senior Ecologist (see Appendix 6 for full details) who is of the view that the survey effort is acceptable on the basis that none of the farm complexes will be removed and thus, no significant loss or damage to the identified roosts can occur. They are also satisfied that it was unnecessary to undertake emergence surveys at Farm complex 3 and taking into consideration the mitigation measures (including bat buffer around turbines), significant impacts on roosting bats at the farm complexes are not anticipated to arise. This conclusion is reasonable in my view.

9.9.1.31. As discussed in further detail in my assessment of Chapter 9 (Hydrology & Hydrogeology), the proposed GCR includes a total of 13 no. watercourse crossings

along the route. It is outlined within this Chapter that potential roosting features were present within a number of the bridges along the route, and a combination of flatbed formation and HDD are proposed at these bridges. I note that the level of noise and vibration associated with the proposed works was unclear and uncertainty therefore remained regarding the potential impact of the works on roosting bats and whether a derogation may be required. In response to these concerns, the Applicant has confirmed in their FIR that a detailed re-inspection was undertaken in August 2025 of the various bridge crossings. While no evidence of roosting was identified during either the 2024 or 2025 inspection surveys, it is confirmed that all bridge crossings were reconfirmed as having Low suitability due to the presence of a small number of potentially suitable gaps/crevices for opportunistic use by individual. As no evidence of bats or roosting activity was recorded at these locations and as no works are proposed on the underside or abutments of the crossing infrastructure, it is contended that a derogation is not required, and no adverse impacts on bats are therefore anticipated. However, on a precautionary basis, and in line with industry best practice, confirmatory pre-construction inspections will be carried out at all crossings assessed as having Low suitability. It is the Applicant's view that this requirement does not represent a lacuna in the survey assessment but reflects standard best practice and the precautionary principle. I note that Commission's Senior Ecologist has reviewed the updated analysis is generally satisfied with the Applicant's response. However, in terms of the confirmatory pre-construction inspections/survey, it is not clear to them whether a daytime roost inspection and/or dusk emergence survey will be carried out as part of the survey. Therefore, they have recommended a condition for dusk emergence surveys to be included in the programme of confirmatory pre-construction bat inspections/surveys at the watercourse crossings. Furthermore, the Commission's Senior Ecologist has noted that artificial lighting may be required during some of the above daytime hours if the crossings were to take place during the autumn/winter months. However, they are of the view that the lighting mitigation measures proposed for bats at the wind farm site (see Section 6.1.2 of Revised bat survey report (Appendix 4 of Applicant's FIR)), if also applied at the watercourse crossings, would be adequate to rule out potential effects of artificial lighting on bats. A suitable condition has therefore been recommended. Subject to compliance with these conditions and the suite of mitigation measures put forward by the Applicant, I am satisfied that significant

adverse effects on bats both within the wind farm site and along the proposed GCR will not arise.

Mammals (excluding Bats)

9.9.1.32. In the case of otter, it was the Planning Authority's view that the surveys were undertaken outside of the optimal period for surveying activity. Concerns were raised that this potential bias in survey timing was not discussed in the EIAR and surveys should have been supplemented to support a comprehensive assessment. The Department also identified conflicting information between this chapter of the EIAR and the NIS in terms of evidence of otter being recorded within the wind farm site. It was their view that the lack of clarification on the status of the otter holts within the site raised questions on the validity of the surveys. As discussed above, Third Party observers also raised concerns regarding conflicting information on otter holts, validity of surveys and the absence of mitigation. As part of their First Party appeal, the Applicant has outlined that the otter surveys throughout 2023 and 2024 were undertaken in full accordance with best practice guidance (NRA, 2009). They confirm that no otter holts were recorded within 200m of any proposed infrastructure and with the exception of a single otter spraint adjacent to the Tullaroan stream, no other evidence of otter was recorded within 150m of any proposed infrastructure. While a potential holt site was recorded on the banks of the Tullaroan stream (within the site), following further investigation (i.e. deployment of camera traps) it was determined not to be a holt and therefore not considered further in the assessment. Although evidence of otter in the form of spraints and tracks was recorded along the proposed GCR, no otter breeding sites were recorded. A potential otter couch was also recorded 240m to the south of the location of the crossing of the River Nore by HDD. However, given the distance between this potential couch and the works associated with the HDD crossing, it was determined that there was no potential for significant effects due to disturbance.

9.9.1.33. It is noted that Otter is a QI species of the River Barrow and River Nore SAC [002162], a designated European site within the proposed development's ZoI. Noting the concerns raised by the Department and having reviewed the totality of the documentation on file, the Commission requested the Applicant to submit a revised NIS that considered and assessed all aspects of the proposed development which

could result in significant effects, including details of all Otter activity across the site (i.e. wind farm site and GCR etc). Furthermore, the Applicant was requested to outline in detail their survey methodology for this QI species both within the proposed wind farm site and along the proposed GCR to determine its adequacy. As part of the Applicant's FIR, a revised NIS was submitted with the survey methodology provided in Section 3.3.1.2 of this document. It is confirmed that an additional survey of previously identified potential otter holts within c. 150m upstream and downstream of any proposed infrastructure, and the proposed HDD location, was carried out in September 2025. Following the updates provided in the revised NIS, the Applicant was satisfied that all aspects of the proposed development which could result in significant effects on Otter have been identified and comprehensively assessed, and where required, appropriate mitigation measures have been prescribed to avoid any adverse effects on site integrity. I note that these considerations are addressed in the Stage 1 AA Screening Report (Appendix 1) and the Stage 2 AA (Appendix 2) appended to this report. The potential for impacts on the River Barrow and River Nore SAC was screened in at Stage 1 on the basis of the potential for indirect impacts given the hydrological connectivity that exists between the application site and this SAC. However, at Stage 2 AA it was determined that adverse effects arising from the proposed development could be excluded on this QI species as direct and indirect impacts would be prevented through adherence with the suite of mitigation measures. I refer the Commission to the Stage 2 AA Report appended to this report as Appendix 2 for full detailed information and assessment and the Report of the Commission's Senior Ecologist. In summary, she is satisfied that the extent of evidence provided by the Applicant on otter provides sufficient details of otter baseline at the site and that direct and indirect effects on otter (including water quality, habitat degradation and disturbance) have been appropriately identified by the Applicant. However, she has identified the potential for disturbance from artificial lighting, if it were required, in the vicinity of the watercourse crossing works during construction and has recommended a suitably worded condition to address same. This approach is acceptable in my view.

- 9.9.1.34. In terms of badger, the Planning Authority again noted that the surveys were carried out at the end of the optimal period for surveying activity, particularly regarding sett activity, and general signs. Third Party observers also questioned the validity of the

badger surveys and concerns were raised regarding the absence of an assessment of impacts. As a badger was recorded using a sett within the wind farm site, they note that this should be clearly identified as a confirmed badger sett, and the word 'potential' should be removed. There is also a recommendation for a pre-construction badger survey within 150m of all work areas given the high suitability of the site for badger. Within their First Party appeal, the Applicant confirms that the word 'potential' used in Section 6.6.4.3 of the EIAR was in reference to the identification of the sett prior to the deployment of the camera trap to confirm activity and usage of the sett. In terms of the adequacy of the Applicant's survey work, I acknowledge that badger surveys are significantly constrained by vegetational cover and season and are best conducted from November to April. It is noted within the NRA 'Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes' that badger territorial activity is high from mid-January to March and surveys at this time are most efficient in identification of badger paths, latrines and feeding signs. Notwithstanding the concerns raised by Third Parties, it is confirmed that site was surveyed throughout March and April and therefore within the optimal period. Furthermore, I would concur with the Department that pre-commencement surveys should be undertaken within 150m of all work areas on the site prior to the commencement of development to identify if there are any new setts on site in the intervening period. I am satisfied that this can be addressed through compliance with an appropriate condition and it is considered that residual significant effects on this species will not arise.

- 9.9.1.35. For other fauna identified as KERs (red squirrel and pine marten), I am satisfied that the Applicant's proposed mitigation measures for disturbance and mortality will preclude significant effects on these species.

Amphibians/Reptiles

- 9.9.1.36. While no amphibians or reptiles were identified during the Applicant's surveys, they do acknowledge that it is likely that the site supports these species at some local level given the presence of several watercourses and drainage ditches on the site. As these habitats are widespread in the surrounding area, it was contended that the proposed development will not result in a significant loss to habitat for amphibians or reptiles. Within their report on file, the Planning Authority had raised concerns that dedicated

surveys were not undertaken for these species. A significant number of Third Party observers shared this concern. Given that suitable habitat exists within site and there was an absence of dedicated surveys for these species, the Commission requested the Applicant to provide a rationale for their exclusion as KERs. Should amphibians or reptiles be included as KERs, it was noted that the EIAR should be updated to include suitable mitigation measures. In response, the Applicant has indicated that the proposed development is not anticipated to result in a significant amount of loss of suitable supporting habitat given its availability in the locality. Furthermore, the loss of such habitat is not considered significant to the degree that it would affect populations of reptiles or amphibians, where they occur, at a local level or greater. In consideration of this, reptiles and amphibians were not regarded as KERs and therefore not considered further in the assessment. Having regard to the Applicant's rationale, the extent of habitat loss across the site, the suite of water quality mitigation measures proposed for the construction stage and considering that no in-stream works are proposed, I am satisfied that there will not be a significant residual impact on amphibians or reptile species. This view is shared by the Commission's Senior Ecologist (Appendix 6 for report) who has also accepted the Applicant's reasoning as to why these species were not included as KERs and as to why specific surveys were not undertaken.

Invertebrates

- 9.9.1.37. A search for Marsh Fritillary (*Euphydryas aurinia*) was carried out on the NBDC biodiversity map online viewer on the 05.07.2024. No records of this species were recorded within hectads S35 and S45 or adjacent to the site boundary and it is confirmed that no suitable habitat Marsh Fritillary habitat was recorded within the wind farm site during the multidisciplinary walkover surveys. Whilst parties to the appeal have noted the potential presence of marsh fritillary within the site, I am satisfied that the Applicant's assessment is satisfactory and that there is no evidential basis for requiring additional survey work regarding this species and that their exclusion as a KER is acceptable.

Hydrology & Aquatic Fauna

- 9.9.1.38. As noted, a detailed Aquatic Baseline Report has been prepared for the proposed development and is provided in Appendix 6-3 of the EIAR. The report acknowledges

that the watercourses within the wind farm site were historically and recently modified, and displayed issues with excess siltation. The following points were noted:

- Salmonid, lamprey and European eel habitat was predominantly poor and moderate across the wind farm's study area, with one location displaying good habitat for salmonid spawning, nursery and holding as well as good spawning habitat for lamprey.
- Atlantic salmon was found within surveys on the Tullaroan stream.
- Brown trout were found at all survey locations.
- Lamprey were not found.
- European eel was present in one survey location.
- There was no positive eDNA results for freshwater pearl mussel or white-clawed crayfish at any survey location. However, strong positive results for crayfish plague were recorded.

It is noted that both eroding/ upland rivers (FW1) and depositing/ lowland rivers (FW2) were present along the proposed GCR and it is acknowledged that watercourses were historically modified and commonly displayed issues with excess siltation. Salmonid, lamprey and European eel habitat ranged from poor to moderate to good along the GCR. A number of locations (e.g. GC-1, GC-9, GC-12) displayed moderate to good habitat for salmonid spawning, nursery and holding as well as moderate to good spawning and nursery habitat for lamprey and locations GC 12 and GC-13 provided good habitat for European eel.

9.9.1.39. Within their assessment of the application, the Planning Authority noted that there were "several" actively flowing streams within the proposed site that are connected to European sites downstream and concerns were raised that these were not adequately mapped. Notwithstanding these concerns, I note that the Applicant's drainage drawings identify the various watercourses on site, including the EPA watercourses, secondary streams and drainage features. Whilst observers were of the view that the aquatic survey results would have been invalidated due to the destruction of the riverbanks, I note that these alterations have been acknowledged within the Applicant's Aquatic Baseline Report and I am satisfied that the surveys were undertaken in line with best practice guidance. I note that the assessment of potential environmental impacts and effects on hydrology, including impacts on water quality,

habitats and aquatic ecology, are considered in the section of this Report dealing with hydrology and hydrogeology and in the Stage 1 AA Screening Report (Appendix 1) and the Stage 2 AA (Appendix 2) appended to this report. As can be seen from these assessments, it is considered that subject to the implementation of the full suite of mitigation measures, no significant adverse effects will arise.

- 9.9.1.40. Concerns were also noted that regarding the adequacy of the assessment of impacts of proposed development on the conservation objectives of white-clawed crayfish. Furthermore, it is noted that the risk of spread of crayfish plague by proposed development during flood events have not been taken into account in the NIS. I note that these issues have been considered by the Commission's Senior Ecologist (Appendix 6 for report) and are addressed further in my appropriate assessment of the proposed development (Appendix 2).

Invasive Species

- 9.9.1.41. Third Parties to the appeal have opined the lack of information regarding the location of Third schedule invasive species on site and along the proposed TDR. It is outlined within the EIAR that a search for Invasive Alien Species (IAS) was conducted during the field surveys, and none were recorded within the footprint of the proposed wind farm or along the GCR. It is acknowledged that Japanese knotweed (*Fallopia japonica*) was recorded along the proposed TDR (Plate 6-25). Whilst minor works and vegetative pruning will be required to facilitate the turbine delivery, it is confirmed that no significant works are proposed along the TDR and the proposed development will not interact with this stand of Japanese knotweed. I am therefore satisfied that its exclusion as a KER is acceptable and does require further assessment.

Conclusion: Direct and Indirect Effects

- 9.9.1.42. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. It is considered that the Applicant has provided sufficient survey data to enable assessment of likely effects on the environment. I am satisfied that potential effects on biodiversity (including habitats and species) as a result of the proposed development would be avoided, managed and

mitigated by the measures which form part of the proposed development, the proposed mitigation measures and through compliance with suitable conditions. I am therefore, satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects on the biodiversity.

9.10. Ornithology

9.10.1. Issues Raised

Third Parties

- 9.10.1.1. As detailed earlier in this report, issues have been raised by Third Parties during the application and appeal with respect to the potential impacts of the proposed development on ornithology. Issues raised include the impact of the onsite watercourse alteration works on Kingfisher, unacceptable risks to Kestrel, lack of assessment of Snipe, Buzzard, Sparrowhawk, deficiencies in methodology to identify target species and collision risk assessments, omission of certain bird species, assessment of only Kingfisher in NIS and no other SCI species, inadequate data set of SCI species recorded, missing relevant literature regarding migratory pathways of recorded species, target species and cumulative impact assessment, inadequate reference to red-listed lapwing, absence of night surveys/Owl sightings, lack of recording of Hen Harrier despite its presence being locally known, lacunae in report, not compliance with CJEU C-258/11 case. It was also noted that there are questions over the reliability of the ornithological results, notably the PIE poster and community information on bird identifications on site that are not included in the final reporting and supporting information.

Planning Authority/Prescribed Bodies

- 9.10.1.2. The issues raised by the Planning Authority with respect to ornithology include the lack of clarity regarding the rationale for choosing the “target species” of birds or how those species were selected, the presentation of information regarding “target species” which omits accounting for the full diversity of bird species recorded on site and the site’s value and function for local and migrating bird species, adequacy of the survey work and assessment of the site’s importance for Red Listed passerine bird species and the adequacy of the collision risk assessment and its methodology.

9.10.1.3. Within their report on file, the Department of Housing, Local Government & Heritage (NPWS) have noted concerns with respect noise impacts associated with the proposed grid connection cabling underneath the River Nore and its potential impact on Kingfisher.

9.10.2. **Examination, analysis and evaluation**

Context

9.10.2.1. Chapter 7 (Birds) of the EIAR assesses the likely significant effects that the proposed development may have on avian receptors. It is noted that particular attention has been paid to species of ornithological importance, which include species with national and international protection under the Wildlife Acts 1979-2012 and the EU Birds Directive 2009/147/EC among other relevant legislation. The Chapter is supported by the following technical appendices:

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

9.10.2.2. In terms of the methodology, a desk study was undertaken to search for any relevant information on species of conservation concern which may potentially make use of the study area. Field surveys were undertaken from April 2021 and May 2023. It is indicated that these surveys form the core dataset for the assessment of effects on ornithological receptors, and it is confirmed that they were undertaken in compliance with NatureScot guidance (SNH, 2017).

9.10.2.3. Field surveys were undertaken during the survey period April 2021 – May 2023, consisting of 2 breeding seasons (April – September) and 2 non-breeding seasons (October – March). In the absence of specific national bird survey guidelines, it is indicated that the ornithological surveys were designed and undertaken in full accordance with 'Recommended bird survey methods to inform impact assessment of onshore wind farms' (SNH, 2017). The various survey types undertaken are summarised in the below table.

Survey Type	Timing & Frequency
Vantage Point (VP) Surveys.	The surveyor collected data on bird observations and flight activity from the scanning arc of 180° to a 2km radius at the fixed vantage point location for two 3-hour watches separated by a minimum 30-minute break (i.e. 6 hours total) per month. Surveys were conducted from April 2021 to March 2023 inclusive and were scheduled to provide a minimum of 36 hours per winter or breeding season and spread over the full daylight period, including dawn and dusk watches, to coincide with the highest periods of bird activity (See Table 7-2 of EIAR for VP survey effort)
Breeding Walkover Surveys.	Breeding walkover surveys were carried out during daylight hours during the core breeding season months April to July (2021 and 2022), with the proposed wind farm site being visited one day per month on each occasion.
Breeding Raptor Surveys.	Each breeding raptor location was surveyed once per month during the core breeding season between April and July (2021 and 2022). Each round of surveys was undertaken over three days to allow sufficient time to survey the key areas of suitable habitat within the survey area.
Breeding Woodcock Surveys	All observations of woodcock (as well as the areas covered) were mapped. The survey aimed to record the presence of roding (displaying) male woodcock and thereby establish the distribution and abundance of the species in the surveyed area. This survey method also allowed the observer to survey for owls, i.e. barn owls and long-eared owls.
Breeding Kingfisher Surveys	Surveys were carried out once per month during the core breeding season March, April and May. Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions.
Winter Walkover Surveys.	Appendix 7-2 (Survey Effort) illustrates that winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e. four visits in winter 2021/2022, four visits in winter 2022/2023).
Waterbird Distribution and Abundance Surveys.	Significant wetlands and waterbodies within a minimum of 5km of the proposed wind farm site were surveyed for waterbirds during the 2021/2022 and 2022/2023 winter and passage seasons (August to May inclusive) to provide information on their distribution and abundance in relation to the wind farm site.
Multidisciplinary Walkover Survey	The proposed GCR was surveyed on multiple dates (as per Section 6.4.3 of Chapter), through a multidisciplinary, ecological walkover survey. The route was systematically walked, while the surveyor recorded a range of protected species, including birds.

Baseline

9.10.2.4. In order to determine the baseline conditions, the Applicant identified Designated Sites within the likely zone of influence of the development. Furthermore, the following was considered:

- Breeding and wintering bird Atlas Records,
- Bird Sensitivity Mapping Tool,
- Irish Wetland Bird Survey (I-WeBS) Records, and,
- NPWS Rare and Protected Species Dataset.

9.10.2.5. In terms of the field survey results, the target species listed below were recorded within the zone of influence of the site during the ornithological surveys. It is noted that the list is ordered in accordance with conservation significance: Annex I species, Red listed species and species considered sensitive to this type of development (i.e., raptor species):

- Kingfisher (Annex I species)
- Golden Plover (Annex I species; BoCCI Red listed)
- Little Egret (Annex I species)
- Peregrine Falcon (Annex I species)
- Whooper Swan (Annex I species)
- Kestrel (BoCCI Red Listed)
- Snipe (BoCCI Red Listed)
- Buzzard (Raptor)
- Sparrowhawk (Raptor)
- BoCCI Red listed passerine species (Grey Wagtail, Meadow Pipit, Redwing, Yellow hammer and Swift)

9.10.2.6. As per Table 7-10 of the EIAR, no species during waterbird distribution surveys and/or additional supplementary surveys were recorded within 6km of the wind farm site and it is indicated therefore that there is no potential for impact from works at the wind farm site. The closest record for Curlew (Red Listed) was c. 6.9km from the wind farm site during the waterbird distribution surveys, comprising a flock of six birds travelling in vicinity of King’s River in February 2023.

9.10.2.7. Section 7.3.6 of the EIAR describes the observations of each target species under the individual survey headings. In terms of receptor evaluation, a determination of the population importance of birds within the likely zone of influence is provided in Section 7.4 of the EIAR, the results of which are summarised in the below table. The table also identifies whether the species has been identified as a Key Ornithological Receptor (KOR) and the rationale provided for same.

Table: Determination of Population Importance & Identification of KORs

Species	Wintering	Breeding	KOR
	All Seasons		
Kingfisher	Kingfisher were occasionally recorded along the Tullaroan Stream within the proposed wind farm site. An assessment of direct habitat loss is required. Birds were recorded within the proposed wind farm site. Taking a precautionary approach, the potential for displacement exists. This species was not recorded flying over the proposed wind farm site within the potential collision risk zone. A collision risk assessment is not required County Importance		KOR – Yes See Table 7-11 of EIAR
Golden Plover	There were only two records of golden plover within 500m of the proposed wind farm site during the two years of surveys, comprising birds travelling. The potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the proposed wind farm site is of any ecological importance to this species. No pathways for significant effects were identified. No population of ecological significance recorded	NA	KOR – No See Table 7-10 of EIAR
Little Egret	Little Egret were occasionally recorded along the Tullaroan Stream within the proposed wind farm site. An assessment of direct habitat loss is required. Birds were recorded within the proposed wind farm site. Taking a precautionary approach, the potential for displacement exists. County Importance		KOR – Yes See Table 7-11 of EIAR
Peregrine	There were only two records of peregrine within 500m of the proposed wind farm site during the two years of surveys, comprising individual birds travelling. The potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the proposed wind farm site is of any ecological importance to this species. No pathways for significant effects were identified. No population of ecological significance recorded		KOR – No See Table 7-10 of EIAR
Whooper Swan	There was only a single record of whooper within 500m of the proposed wind farm site during the two years of surveys, comprising two birds travelling. The potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the proposed wind farm site is of any ecological importance to this species. Please refer to Section 7.4.1 for further detailed discussion.		KOR – No See Table 7-11 of EIAR

	No pathways for significant effects were identified.		
	No population of ecological significance recorded		
Kestrel	There were no kestrel territories identified within the proposed wind farm site. However, up to three territories were observed within 5km of the site and kestrel were regularly recorded hunting within the site. The potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. This species was regularly recorded within the proposed wind farm site. An assessment of displacement effect is required. This species was recorded flying over the proposed wind farm site within the potential collision risk zone. A collision risk assessment is required. County Importance		KOR – Yes See Table 7-11 of EIAR
Snipe	Snipe was regularly recorded within the proposed wind farm site during the winter season. An assessment of direct habitat loss is required. This species was regularly recorded within the proposed wind farm site during the winter season. An assessment of displacement effect is required. This species was recorded flying over the proposed wind farm site within the potential collision risk zone during the winter season. A collision risk assessment is required. County Importance	There were no observations of snipe during the breeding season, with records from early April and late August considered to be part of wintering population and will be assessed as such. The potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the proposed wind farm site is of any ecological importance to this species during the breeding season. No pathways for significant effects were identified. No population of ecological significance recorded	KOR – Yes See Table 7-11 of EIAR
Buzzard	There was one confirmed breeding territory identified within the proposed wind farm site in both 2021 and 2022, with an additional probable territory identified within the proposed wind farm site in 2022. Up to four additional territories were identified in the surrounding 5km of the proposed wind farm site. Buzzard were regularly recorded hunting within the proposed wind farm site. The potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. This species was recorded breeding and regularly hunting within the proposed wind farm site. An assessment of displacement effect is required. This species was regularly recorded in flight within the proposed wind farm site within the potential collision risk zone. A collision risk assessment is required. Local Importance (Higher Value)		KOR – Yes See Table 7-11 of EIAR
Sparrowhawk	There was one probable breeding territory identified within the proposed wind farm site and up to two additional territories identified in the surrounding area. Sparrowhawk were regularly		KOR – Yes See Table 7-11 of EIAR

	recorded hunting within the proposed wind farm site. The potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. This species was regularly recorded hunting within the proposed wind farm site. An assessment of displacement effect is required. This species was recorded in flight within the proposed wind farm site within the potential collision risk zone. A collision risk assessment is required. Local Importance (Higher Value)	
Passerines	As per NatureScot guidance, it is stated that passerine bird species are not significantly impacted by wind farms due to their ecology and large populations. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the development will significantly impact these species. Local Importance (Higher Value)	KOR – No See Table 7-11 of EIAR

Potential Effects

9.10.2.8. The Potential significant effects of the development on KORs during the construction, operation and decommissioning phases of the proposed development as identified in the EIAR, are summarised in the below table.

Table: Summary of Potential Effects

Do Nothing	The site would continue to be managed under the various current management practices. It is assumed that the character of the habitats and related bird community, including the KORs identified, will remain much as is described in the baseline ornithological conditions. The wind farm site is characterised by improved agricultural grassland utilised for livestock grazing and smaller areas of commercial forestry plantation. Improved agricultural grassland and commercial forestry are typically considered to be of low ecological value. Both habitat types are among the most abundant in Ireland, particularly so, in the case of improved agricultural grassland. It is stated that neither habitat are rare locally or uniquely occur within the site. If the proposed development were not to proceed, the existing uses of small-scale agriculture would continue. The opportunity to harness the wind energy resource of County Kilkenny would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment would also be lost. Furthermore, the opportunity to provide an area of hedgerow enhancement and creation and riparian planting along a section of the Tullaroan Stream, as associated benefits for birds, would be lost.		
Species	Construction Phase	Operational Phase	Significant Effect Y/N
Kingfisher	Direct Habitat Loss - There will be minimal loss of	Direct Habitat Loss - No Effect	No

	suitable nesting or foraging habitat within the wind farm site. The only works in the direct vicinity of the Tullaroan Stream comprise a single clear-span watercourse crossing to facilitate the internal road (between T6 and T7). No instream works are necessary for this crossing. The foundation base will be excavated outside the stream along the stream bank. There is potential for some alterations to the bank profile at this location. The alteration to a minor section of bank at the specific foundation locations is insignificant given the extent of suitable nesting banks present along the length of the Tullaroan Stream. No significant effects are therefore predicted. Disturbance - A disturbance buffer zone of between 50-100m is recommended for kingfisher (Goodship & Furness, 2022). It is stated that the only proposed works within a 100m buffer zone of the Tullaroan Stream comprise the following: - Upgrade works to c. 250m section of existing internal road in west of site; - C. 230m section of new road between T6 and T7 (including requirement for some tree felling); and - Clear-span watercourse crossing as part of this new road section. Adopting a precautionary approach, and in the absence of mitigation, these works have the potential to cause short-term disturbance to breeding kingfisher which may be present within 100m of the works areas.	Displacement & Barrier Effect - There is no published research on displacement/avoidance buffers for kingfisher around operational wind infrastructure. The closest proposed turbine to the Tullaroan Stream is over 250m distant (T6). The proposed substation is situated over 100m distant. The only permanent infrastructure within 100m of the Tullaroan Stream is a new internal road and associated clear-span watercourse crossing. This internal road will be used infrequently. There are existing public road crossings of the Tullaroan Stream in the vicinity of the wind farm site – i.e. to the west of the wind farm site along the L5023 and in Kilmanagh. Noise and visual stimuli generated by infrequent vehicle movements on the internal road will be minimal in comparison to the existing public road crossings. Significant impacts are not predicted. Collision - This species was not recorded flying at potential collision height during the vantage point survey work undertaken at the wind farm site. Collision related mortality is not likely to significantly impact this species. Furthermore, kingfisher predominantly travelling along watercourse corridors rather than across open terrestrial habitats when moving across the landscape. The closest proposed turbine to the Tullaroan Stream is over 250m distant (T6), and no turbine blades will overhang the stream.	
Little Egret	Direct Habitat Loss – The utilised areas recorded for Little Egret are outside the	Direct Habitat Loss - Direct habitat loss effects are not anticipated.	No

	footprint of the Project and there will be no direct/physical habitat loss in these areas. The only proposed infrastructure within 100m of the Tullaroan Stream is a new internal road and associated clear-span watercourse crossing. This is predominantly in commercial forestry which is of little to no ecological value to little egret. A minor amount of agricultural grassland within 100m of the stream will be removed to facilitate this road. This habitat is abundant in the wider area and are not unique to the wind farm site. In addition, the land lost to the permanent development footprint is small, comprising a total of approximately 8.75ha (or 0.88%) of the overall Site. No significant effects are therefore predicted. Disturbance - Little egret was infrequently recorded utilising habitats within the wind farm site and in small numbers over the two years of surveying (i.e. total of five observations comprising 1-2 birds). There were an additional two records of birds utilising habitats within 500m of the wind farm site. These observations were similarly within agricultural grassland habitat. This habitat type is abundant in the wider area and are not unique to the wind farm site. Therefore, were disturbance to occur it would not result in the loss of a scarce resource for the local little egret population. Therefore, significant impacts are not predicted.	Displacement & Barrier Effect – It is noted that There is no published research on displacement/avoidance buffers for little egret around operational wind infrastructure. However, little egret was infrequently recorded within 500m of the wind farm site and in small numbers, over the two years of surveying. The habitats utilised comprised agricultural grassland. This habitat is abundant in the wider area and is not unique to the wind farm site. This limits the potential for ecologically significant impacts to result. Significant impacts are therefore not predicted Collision - The collision risk has been calculated at a rate of 0.007 collisions per year. No bird collisions have been predicted over the 35 year lifetime of the proposed wind farm. Significant impacts are not predicted.	
Kestrel	Direct Habitat Loss - Kestrel were regularly recorded foraging within the site. However, direct (physical) loss of foraging habitat relative to its availability	Direct Habitat Loss - Direct habitat loss effects are not anticipated. Displacement & Barrier Effect – Significant effects are not	No

	onsite, will be minimal. The land lost to the development footprint is small, comprising a total of approximately 8.75ha (or 0.88%) of the overall site. It is indicated that the wind farm site is not a unique or scarce resource for kestrel and the potential for construction works to result in ecologically significant habitat loss for kestrel is therefore limited. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the wind farm site and the wider surroundings post-construction. Significant impacts are therefore not predicted Disturbance - A disturbance buffer zone of between 100-200m from construction works is recommended for kestrel during the breeding season, recommended for kestrel during the breeding season, and <50m during non-breeding season (Goodship & Furness, 2022). Kestrel were recorded foraging within the wind farm site. Disturbance associated with construction works has the potential to result in a measurable reduction in the local density of foraging kestrel (onsite). However, significant impacts are not predicted, at the county, national or international level, based on the following rationale. The wind farm site does not contain habitats that are unique or rare in the local area. The results of breeding raptor surveys outside of the wind farm site recorded similar levels of kestrel activity across areas of similar habitat, i.e. agricultural grassland, woodland and commercial forestry, which are the	anticipated, given that extensive areas of suitable foraging habitat exist and will remain in the wider area. Onsite habitats are not unique to the site. Significant displacement effects are not predicted. Collision - The collision risk has been calculated at a rate of 0.391 collisions per year. Annual mortality of adult kestrel has been calculated 31% per annum (Village, 1990). If 0.391 collisions were to occur per year, it would mean that the losses at the proposed wind farm would increase the annual mortality of the county population (i.e. 270 birds) by 0.47%. Significant impacts are not predicted	

	abundant habitat types in the surrounding area. Therefore, were disturbance to occur it would not result in the loss of a scarce resource for the local kestrel population. No significant impacts are predicted at the county, national or international level		
Snipe	Direct Habitat Loss - Snipe were recorded within the site on 24 occasions over the two years of surveying. Of these, there were 20 observations of snipe utilising habitats within the wind farm site (all comprising birds flushed from ground). The majority of these observations were of single birds, with a max observation of four birds. They utilised habitats comprised agricultural grassland and wet grassland. These habitats are abundant in the wider area and are not unique to the site. In addition, the land lost to the permanent development footprint is small, comprising a total of approximately 8.75ha (or 0.88%) of the overall Site. No significant effects are therefore predicted. Disturbance - Disturbance associated with construction works has the potential to result in a measurable reduction in the local density of snipe (i.e. onsite). However, these onsite habitats are abundant in the wider area and are not unique to the wind farm site. Therefore, were disturbance to occur it would not result in the loss of a scarce resource for the local snipe population. Significant impacts are not predicted, at the county, national or international level	Direct Habitat Loss - Direct habitat loss effects are not anticipated. Displacement & Barrier Effect – Breeding activity was not recorded for snipe within the wind farm site or within 500m of the site. Wintering non-breeding birds are assumed to be at less risk of disturbance effects, as they are not tied to a fixed location (i.e. nest site) and are therefore less restricted in their selection of habitats. The habitats within the site and a 500m radius comprise agricultural grassland commercial forestry. These are the abundant habitat types in the surrounding landscape and are not unique to the site. Significant displacement impacts are therefore not predicted. Collision - The collision risk has been calculated at a rate of 0.019 collisions per year. No bird collisions have been predicted over the 35 year lifetime of the proposed wind farm. Significant impacts are therefore not predicted.	No
Buzzard	Direct Habitat Loss - The only proposed project elements overlapping the nest locations is a section of new road through forestry in vicinity of buzzard territory BZ-b. This species was	Direct Habitat Loss - Direct habitat loss effects are not anticipated. Displacement & Barrier Effect – There was one confirmed breeding territory (2021) and one	No

	frequently recorded within the wind farm site during the breeding and winter seasons. It is indicated that the construction of the proposed wind farm will not result in the loss of a significant amount of foraging habitat given the development footprint is small, comprising a total of approximately 8.75ha (or 0.88%) of the overall site. In addition, the majority of suitable nesting habitat (e.g. mature forestry, woodland and treelines) are outside the proposed project development footprint and there will be no significant reduction in these habitats. Significant impacts are therefore not predicted. Disturbance – The recorded breeding territories do not directly overlap with any proposed turbine location. The only proposed project elements within the estimated areas within which the nests are located, is a section of new road through forestry in vicinity of buzzard territory BZ-b. In the absence of mitigation, there is some potential for disturbance should works take place during the breeding season and should this breeding pair be present in the vicinity of the works. This species was frequently recorded within the wind farm site during the breeding and winter seasons. The disturbance associated with the construction works has the potential to result in a measurable reduction in the breeding density of buzzard on-site and a reduction in the amount of available foraging habitat around the construction works areas. However, these lands (e.g., commercial forestry and agricultural grassland) are not considered unique to the wind farm site or rare in the wider surroundings. The results of breeding raptor	confirmed and one probable breeding territory (2022) identified within 500m of the turbines. However, it is stated that extensive areas of suitable foraging and breeding habitat exist and will remain in the wider area (i.e. outside 500m). The results of breeding raptor surveys in the wider area show a similar density of buzzard breeding territories. It is stated that this demonstrates that the wind farm site does not contain habitats that could be classed as a scarce or unique resource. There could potentially be a measurable reduction in the frequency of commuting and foraging buzzard within 500m of the turbine layout. However, it is stated that onsite habitats are not considered unique to the wind farm site and suitable habitat is abundant for this species greater than 500m from the turbine layout. Significant impacts are therefore not predicted. Collision - The collision risk has been calculated at a rate of 0.945 collisions per year. The favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result. The loss of 1.08 birds per year from the local population of a Green-listed (BoCCI) species is considered to be of low significance. Significant impacts are therefore not predicted.	

	surveys show a similar density of buzzard breeding territories in the locality outside of the wind farm site. Significant impacts are therefore not predicted.		
Sparrowhawk	Direct Habitat Loss - It is stated that the construction of the wind farm will not result in the loss of a significant amount of foraging habitat (i.e. a total of approximately 8.75ha (or 0.88%)) of the overall Site. There was one probable breeding territory identified within the wind farm in 2021. This probable territory does not overlap with any turbine locations. There is potential for the loss of nesting habitat within the site. However, these lands (e.g. commercial forestry and agricultural grassland) are not considered unique to the site or rare in the wider surroundings. Significant impacts are therefore not predicted. Disturbance – Construction activity adjacent to the probable nest site within the site could potentially cause disturbance of breeding and foraging sparrowhawk. The disturbance associated with construction works has the potential to result in a measurable reduction in the breeding density of sparrowhawk and a reduction in the amount of available foraging habitat within the site. However, it is stated that these lands (e.g., commercial forestry and agricultural grassland) are not considered unique to the site or rare in the wider surroundings. Breeding sparrowhawk territories were recorded in similar habitats distant from the site during breeding raptor surveys. Significant impacts are therefore not predicted	Direct Habitat Loss - Direct habitat loss effects are not anticipated. Displacement & Barrier Effect – There was one probable breeding territory identified within the site in 2021. The disturbance associated with operational turbines has the potential to result in a measurable reduction in the breeding density of sparrowhawk and a reduction in the amount of available foraging habitat within the site. Notwithstanding this, it is stated that extensive areas of suitable foraging habitat exist and will remain in the wider area (i.e. outside 500m from the turbine layout). Moreover, onsite habitats are not considered unique to the site with significant areas of similar habitats available in the surrounding area. Significant impacts are therefore not predicted. Collision - The collision risk has been calculated at a rate of 0.009 collisions per year. The favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result. The loss of 0.01 birds per year from the local population of a Green-listed (BoCCI) species is considered of low significance. Significant impacts are therefore not predicted.	No
Designated Sites	Where the potential for any adverse effect on any European Site has been identified, it is stated that the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and		

	mitigation measures as set out within the NIS and its appendices. The measures ensure that the construction and operation of the proposed development does not adversely affect the integrity of any European site.
Proposed Grid Connection & Turbine Delivery Route	The proposed GCR is c. 23km in length and located primarily within the public road corridor, with a short section (c. 260m) located within a road within the wind farm site and another short section (c. 660m) passing through a number of agricultural fields and a private access track, near Ballyragget substation. It is stated that there are no significant turbine delivery route (TDR) accommodation works required to facilitate the delivery of turbine components to the site. The majority of habitats along both the proposed GCR and TDR are of no to low ecological value (i.e. existing roads/tracks, agricultural land) and do not have the potential to support species of conservation interest in the area. On a precautionary basis, it is assumed that some temporary disturbance may occur during construction works. However, given the extent of suitable habitat in the wider area, significant displacement effects are not predicted. The proposed GCR works will be largely confined to the existing road network and involve minor works over a short period. The proposed GCR crosses the River Nore SPA c. 1km north-west of Ballyragget. The crossing will be via HDD and has been designed to pass cabling beneath the River Nore, thus avoiding works within the SPA boundary and direct impacts to the SPA. The GCR works are broadly analogous in scale to existing activities in the general area (e.g. farm machinery, road works, vehicle movements). The proposed works are not significant in the context of the baseline conditions. The TDR does not have the potential to result in any significant habitat loss or displacement of any KOR species. No significant effects are therefore predicted.
Decommissioning Phase	Direct Habitat Loss - Direct or indirect effects are not anticipated. Disturbance - As above for construction phase for each species listed as a KOR.
Cumulative Effect	In addition to the plans that were considered in the cumulative impact assessment, a 25km radius of the site was considered a reasonable approximation of the size of a county level and a 5km radius at local level for projects. Owing to the scale and nature of these Forestry, Agricultural Practices other developments, significant cumulative impacts are not anticipated. In terms of wind energy developments, existing, permitted and proposed wind farm projects within 25km of the proposed turbine locations are provided in Table 7-12 of the EIAR, including details of their planning status. The potential for the proposed wind farm to result in significant cumulative or in-combination effects when assessed alongside each of the identified wind energy developments was considered in the EIAR. Kingfisher The proposed wind farm is sited predominantly in agricultural grassland with some areas of commercial forestry, habitat types that are of limited ecological value to kingfisher apart from the stream that crosses the Proposed Wind Farm site. It is noted that some of the wind farms within 25km of the site contain watercourses which provide suitable foraging, commuting and nesting habitat for kingfisher. However, relevant watercourses have been retained/will be retained as part of these wind farm projects and as such, there is limited potential for cumulative habitat loss. The watercourses present within the reference wind farms represents a minor proportion of all watercourses within 25km of the subject site. Significant cumulative impacts are not anticipated. It is noted that collision risk was assessed as being not significant for all species in the submitted EIAR/EIS documents for all the relevant wind farms identified. Kingfisher were not recorded at potential collision height at the subject site and

	significant cumulative impacts are not anticipated. Taking into consideration the above reported effects and the predicted effects with the proposed wind farm, no residual additive, antagonistic or synergistic effects have been identified concerning habitat loss, displacement or collision mortality. Little Egret It is acknowledged that agricultural grassland can provide suitable foraging habitat for little egret. Some of the identified wind farms contain watercourses which also provide suitable foraging habitat for little egret. However, it is stated these habitats (i.e. predominantly agricultural grassland and commercial forestry, with some sites comprising cutover bog and related habitats) are not a rare resource locally or unique to the proposed wind farm site or above wind farms. Relevant watercourses have been retained/will be retained as part of these wind farm projects and as such there is limited potential for cumulative habitat loss. In addition, they represent a minor proportion of all watercourses within 25km of the site with extensive areas of suitable foraging habitat remaining. Significant cumulative impacts are not anticipated. Collision risk models were not undertaken as part of submitted EIS/EIARs for the existing / permitted wind farm projects within 25km of the subject site. Furthermore, collision risk for little egret from the proposed wind farm is negligible (0.007 birds per year). Notwithstanding this, the result of operational phase bird monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required. No residual additive, antagonistic or synergistic effects have been identified concerning habitat loss, displacement or collision mortality. Kestrel The habitats identified at the various wind farm sites are suitable for foraging and breeding kestrel. However, it is stated that these habitats (i.e. predominantly agricultural grassland and commercial forestry, with some sites comprising cutover bog and related habitats) are not a rare resource locally or unique to the subject site or above wind farms. Extensive areas of suitable foraging and nesting habitat will remain post construction and suitable habitat is abundant in the surrounding area. Significant cumulative impacts are not anticipated. Collision risk models were not undertaken as part of submitted EIS/EIARs for the existing / permitted wind farm projects within 25km of the subject site. Furthermore, collision risk for kestrel from the proposed wind farm is negligible (0.391 birds per year). Notwithstanding this, the result of operational phase bird monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required. No residual additive, antagonistic or synergistic effects have been identified concerning habitat loss, displacement or collision mortality. Snipe Commercial forestry is of limited value to snipe. The agricultural grassland habitat is suitable for foraging and roosting snipe and cutover bog and associated wetland habitats are suitable for breeding snipe. However, these habitats (i.e. predominantly agricultural grassland and commercial forestry, with some sites comprising cutover bog and related habitats) are not a rare resource locally or unique to the subject site or above wind farms. Extensive areas of suitable habitat will remain post construction and similar suitable habitat is abundant in the surrounding area. Significant cumulative impacts are not anticipated. Furthermore, collision risk for snipe from the proposed wind farm is negligible (0.019 birds per year). Notwithstanding this, the result of operational phase bird monitoring will be

	reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required. No residual additive, antagonistic or synergistic effects have been identified concerning habitat loss, displacement or collision mortality. Buzzard The proposed wind farm is sited predominantly in agricultural grassland with some areas of commercial forestry, habitat types that are predominantly utilized for hunting and/or nesting. The disturbance associated with operational turbines will not significantly impact the breeding population of buzzard at the local scale. Similar displacement impacts are predicted on other local wind farms (within 5km). However, these habitat types are not a rare habitat locally. Therefore, significant cumulative impacts are not predicted. Collision risk models were not undertaken as part of submitted EIS/EIARs for the existing / permitted wind farm projects within 25km of the Proposed Wind Farm site. Furthermore, collision risk for buzzard from the Proposed Wind Farm is low (0.945 birds per year). Notwithstanding this, the result of operational phase bird monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required. No residual additive, antagonistic or synergistic effects have been identified concerning habitat loss, displacement or collision mortality Buzzard The disturbance associated with operational turbines will not significantly impact the breeding population of buzzard at the local scale. Similar displacement impacts are predicted on other local wind farms (within 5km). However, these habitat types are not a rare habitat locally. Therefore, significant cumulative impacts are not predicted. Collision risk models were not undertaken as part of submitted EIS/EIARs for the existing / permitted wind farm projects within 25km of the Proposed Wind Farm site. Furthermore, collision risk for buzzard from the Proposed Wind Farm is low (0.945 birds per year). Furthermore, collision risk for sparrowhawk from the Proposed Wind Farm is low (0.009 birds per year). Notwithstanding this, the result of operational phase bird monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required. No residual additive, antagonistic or synergistic effects have been identified concerning habitat loss, displacement or collision mortality Conclusion Significant cumulative impacts are not predicted to occur at the local (or county, national or international) scale for any KOR. Provided that the Proposed Project is constructed, operated and decommissioned in accordance with the design and best practice mitigation measures that are described within this application, significant individual or cumulative effects on the identified KORs are not anticipated.

Mitigation

9.10.2.9. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation (including Monitoring)

Mitigation by Design	The overall development footprint, including hard standing areas, have

	been designed to the minimum size necessary to accommodate the proposed project. The proposed GCR has been selected to utilise built infrastructure for the majority of its length (i.e. cables to be laid within public roads). Cabling will be laid underground to avoid effects on roadside hedgerows and disturbance to nesting birds.
Construction Phase	A Construction and Environmental Management Plan (CEMP) has been prepared (Appendix 4-2). The measures are proposed as industry best practices rather than to mitigate any identified significant effect and will be updated as required to address any conditions of a permission or findings of any pre-construction survey results. - Construction works will begin outside the bird nesting season as defined by the Wildlife Act 1976 as amended (1st of March to the 31st of August). Any requirement for construction works to commence during or run into the breeding season following commencement will be informed by pre-construction bird surveys. - All removal of woody vegetation will be undertaken in accordance with Section 40 of the Wildlife Act 1976 as amended. - A BMEP has been prepared for the proposed development (Appendix 6-4). - During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. - All plant and equipment for use will comply with the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. - Silt fences will be installed as an additional water protection measure around existing watercourses. - An ECoW will be appointed. Duties will include: - o Organise the undertaking of a pre-construction walkover bird survey to ensure that significant effects on birds will be avoided. - o Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Proposed Wind Farm site. - o Oversee management of ornithological issues during the construction period and advise on ornithological issues as they arise. - o Provide guidance to contractors to ensure legal compliance with respect to protected species onsite. - o Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress as necessary. - If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied <i>Kingfisher</i>

	There is the potential for short term moderate negative effect (EPA, 2022) on breeding kingfisher as a result of disturbance during the works within 100m of the Tullaroan Stream during the construction phase. Specific mitigation measures are therefore required, the implementation of these measures is described below. - Any works within 100m of the Tullaroan Stream during the period March – June will be preceded by a pre-commencement survey to investigate whether any potential active kingfisher nests are present within 100m of the proposed works; - Should an active kingfisher breeding burrow be recorded, then these works will be restricted to outside the main breeding season for kingfisher, i.e. March – June.
Operational Phase	No operational phase impacts requiring mitigation were identified.
Decommissioning Phase	During the decommissioning phase, disturbance mitigations measures will be as per the construction phase.
Monitoring	<i>Pre-Construction</i> Pre-construction surveys will be undertaken prior to the initiation of works at the wind farm. The survey will include a thorough walkover survey to a 500m radius of the project footprint and all works areas, where access allows. If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If it is found to be active during the construction phase, no works shall be undertaken within a disturbance buffer in line with industry best practice (e.g. Forestry Commission Scotland, 2006; Ruddock and Whitfield, 2007; Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied. <i>Post-Construction</i> Post-construction Bird Monitoring Programme has been prepared for the operational phase of the Proposed Project (Appendix 7-6). The programme of works will monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project. Surveys will be scheduled to coincide with Years 1, 2, 3, 5, 10 and 15 of the lifetime of the proposed wind farm. Monitoring measures are broadly based on guidelines issued by NatureScot (2009, 2017). The following individual components are proposed: - Vantage point surveys to monitor flight activity in the vicinity of the turbines; - Breeding walkover surveys to monitor breeding bird activity at the site; - Collision monitoring, including carcass searches with trained dogs to monitor bird fatalities due to collision. These will include searcher efficiency and scavenger removal trials as a best practice measure. <i>Decommissioning</i> Decommissioning monitoring surveys will be undertaken prior to works associated with decommissioning at the wind farm. The survey will include a thorough walkover survey to a 500m radius of the project footprint and all

	works areas, where access allows. If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the decommissioning phase. If it is found to be active during the decommissioning phase, no works shall be undertaken within a disturbance buffer (Forestry Commission Scotland, 2006; Ruddock and Whitfield, 2007; Goodship and Furness, 2022) in line with industry best practice. No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied

Residual Effects

9.10.2.10. Following the implementation of the mitigation measures above, no effect significance greater than Low, as per Percival (2003) criteria, was identified for any KOR. No effect significance greater than Slight, as per EPA (2022) criteria, was identified for any KOR. Taking into consideration the effect significance levels identified and the proposed best practice and mitigation, significant residual effects on the KORs with regard to direct habitat loss, disturbance/displacement or collision mortality are not anticipated.

Assessment

9.10.2.11. I have examined, analysed and evaluated Chapter 7 of the EIAR and all of the associated documentation and submissions on file in respect of ornithology. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation which included additional information with respect to ornithology. Issues raised throughout the application and appeal are addressed below.

Survey Methodology and Identification of Target Species

9.10.2.12. Within their assessment of the application, the Planning Authority was of the view that there was a lack of clarity regarding the Applicant's rationale for choosing the "target species" of birds or how those species were selected. It was noted that only those species chosen as "target species" in the chapter were examined for the collision risk assessment and it was contended that there was a lack of transparency on the methodology as to why certain species were chosen. Third Party observers also highlighted concerns regarding deficiencies in the methodology to identify target species and collision risk assessments. Notwithstanding these concerns, I note that the methodology for the identification of target species and KORs is set out in Section

7.2.3 of the EIAR and following a comprehensive desk study, initial site visits and consultation, a list of “target species” likely to occur in the ZOI of the proposed development was compiled by the Applicant’s ecologist. The target species list was drawn from Species listed on Annex I of the EU Birds Directive, Special Conservation Interests (SCI) of Special Protection Areas (SPA) within the zone of likely significant effects, Red listed Birds of Conservation Concern in Ireland (BoCCI) and Raptors and species that are particularly sensitive to wind farm developments. It is noted that the bird surveys conducted at the proposed wind farm site were then specifically designed to survey these target species, in accordance with NatureScot (2017). Following analysis of field survey data, a precautionary screening approach was followed to identify KORs. Table 7-11 of the EIAR outlines the rationale for including or excluding each target species recorded during field surveys as a KOR. The conservation status, population importance evaluation following NRA (2009) and a detailed explanation for inclusion/exclusion as a KOR is provided. In addition, a rationale is provided for the inclusion/exclusion of the species in the collision risk modelling. I also refer to the report of the Commission’s Senior Ecologist’s (Appendix 6) who has noted that the Applicant’s ornithology assessment has focused on those species with the greatest potential to be impacted by a development of this nature – i.e. a wind farm development and grid connection. They have also confirmed in their report that the specific surveys were undertaken as per best practice guidance and the results of these have informed the assessment on birds (in an EIA context). Whilst I acknowledge Third Party observer concerns that the local knowledge of the extent of species present on the site is not reflected in the survey data, I am satisfied that the survey data covers a range of periods, that best practice has been applied, and the submitted assessments can be relied upon in this regard.

9.10.2.13. A number of submissions have highlighted the presence of owls on the subject site and concerns and questions arose in their view as to how this species was not recorded in any of the Applicant’s surveys. Furthermore, they have opined the absence of dedicated night-time surveys for owls or other species that may frequent the site. As part of their First Party appeal, the Applicant confirms that dusk breeding woodcock surveys were undertaken within the site which also allowed for owls, i.e. barn owls and long-eared owls, to be surveyed. The methodology involved the

surveyor walking set transects during the period of one hour before sunset until one hour after sunset (or last light). In addition, VP surveys covering the site were carried out at dawn and dusk (i.e. starting one hour before sunrise or finishing one hour before sunset) during migratory/wintering periods throughout the two years of surveying. Suitable accessible buildings within the site were also investigated for evidence of barn owl presence, however no signs of barn owl were recorded. Noting the rationale provided by the Applicant, I am satisfied the potential for significant effects on owl is very limited, a view that is shared by the Commission's Senior Ecologist's.

Impacts to Passerines, Peregrin Falcon, Kingfisher, Kestrel & Other Avian Species

9.10.2.14. Third Party observers have raised concerns regarding the potential impact of the development of the site's passerine population. The Planning Authority have also indicated that the assessment of the site's importance for Red Listed passerine bird species did not include supporting figures / reference to national trends and the recorded populations in its assessment of "Local Importance (Lower Value)", nor did the assessment account for habitat loss. In response, the Applicant has reaffirmed that the passerine population of the site was classified as of no greater than Locally Important (Lower Value), which would not typically require detailed impact assessment consideration (As per NRA (2009) criteria). Furthermore, they refer to NatureScot guidance, where it is generally considered that passerine bird species are not significantly impacted by wind farms due to their ecology and large (relative) populations. I note that this view is shared by the Commission's Senior Ecologist and I would concur with the Applicant that there is no evidence to suggest that the proposed development will have a significant population-level effect on passerine species when considering the nature of the proposed development, the survey data and the relevant guidance.

9.10.2.15. It was noted in the Planning Authority's assessment that the status of Peregrine Falcon as an internationally protected species under the Birds Directive, combined with hunting behaviour observed during surveys within the proposed project area (i.e., not just passing over but utilising the local area as a resource), and the representative sample of surveys carried out within a year period merit re-examination of the assessment of the proposed site as "No Ecological Importance" for this species. In

response, the Applicant has reiterated in the First Party appeal that this species was recorded very infrequently, i.e. only twice within the site in February and August and outside the core breeding season months. It was also noted that this species was observed on average once every 75 hours of vantage point surveys and this very low rate of occurrence limits the potential for significant effects to result from the proposed development. I note that this view is shared by the Commission's Senior Ecologist who has confirmed that the potential for significant effects on peregrine falcons are not predicted.

9.10.2.16. At application phase, Third Party observers had commented that it was unsurprising that Kingfisher burrows were not observed along Tullaroan Stream given the destruction of the riverbanks that had occurred in 2023. However, the Applicant has confirmed that the dedicated breeding Kingfisher surveys were carried out in April and May in 2021 and 2022. The Applicant's survey effort has been set out in Appendix 7-2 of the EIAR which I deem to be acceptable. As I have set out in Appendix 2 (Appropriate Assessment) of this report, it is considered that direct disturbance effects from the wind farm site on the kingfisher SCI population associated with the River Nore SPA have been ruled out. However, it is acknowledged that the Kingfisher population recorded along the Tullaroan Stream (recorded on eight occasions) within the wind farm site are a separate population to the SPA population. The kingfisher population recorded along the Tullaroan stream was assigned County Importance in the assessment and it is confirmed that the species was not recorded flying over the wind farm site within the potential collision risk zone. It is noted that this species travels along watercourse corridors rather than across open terrestrial habitats when moving across the landscape. The Commission's Senior Ecologist has highlighted that the closest turbine to the Tullaroan stream (T6) is over 250m, and no turbine blades will overhang the stream. Therefore, they have concurred with the Applicant that a collision risk assessment for kingfisher is not required. This conclusion is reasonable in my view, and I am satisfied that it has been adequately demonstrated that significant effects on this avian species will not arise in the case of the subject proposal.

9.10.2.17. A number Third Party observers raised concerns regarding the potential impact of the development on Kestrel. It was confirmed within this Chapter of the EIAR that whilst

no kestrel territories were identified within the wind farm site, up to 3 no. territories were observed within 5km of the site and kestrel were regularly recorded hunting within and flying over the site. Kestrel were identified as a KOR and it was therefore determined that an assessment of direct habitat loss, displacement effect and a collision risk assessment was required in the case of this species. As I have outlined in the above tables and the rationale provided for same, significant effects on this species are not predicted to arise during either the construction or operational phases of the development. This is in part due the limited extent of habitat loss within the site and the substantial areas of undisturbed suitable breeding and foraging habitat that will remain both within the wind farm site and the wider surroundings post-construction. I note that this view is shared by the Commission's Senior Ecologist and I refer to her full report in Appendix 6. Within this report, she has noted that the bird monitoring programme, as detailed in Appendix 7.6 of the EIAR, includes collision monitoring for a number of years throughout the lifetime of the project – this will include recommendations that may inform additional mitigation or adaptation if required.

9.10.2.18. It is noted within Third Party submissions during the course of the application that there was a lack of assessment for Snipe, Buzzard and Sparrowhawk within the ornithology chapter of the EIAR. Notwithstanding this, I note that the aforementioned species were recorded on site and were subsequently identified as KORs in the Applicant's assessment. I would concur with the Applicant's analysis of that no significant effects with arise in the case of these avian species during the various phases of the proposed development. In terms of anecdotal observations of Hen Harrier on the proposed wind farm site by members of the public, I have discussed in Appendix 2 (Appropriate Assessment) of this report that beyond the River Nore SPA, the next closest SPA is the Slieve Bloom Mountains SPA which is located over c. 39km from the proposed wind farm site. While the QI of this SPA is breeding hen harrier, the separation distance is significantly beyond the foraging range of this species (i.e. max range of 10km – SNH (2016)). Whilst I accept that there may have incidental sightings of this species by members of the public, I note that there were no observations of hen harrier recorded over the two years of surveying. Having regard to the nature of the habitats on site and the results of the Applicant's surveys, which are deemed to represent best practice, I am satisfied that the Applicant's assessment is robust and significant effects

on this species would not arise during any phase of the proposed development.

Conclusion: Direct and Indirect Effects

9.10.2.19. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. It is considered that the Applicant has provided sufficient survey data to enable assessment of likely effects on the environment. I am satisfied that potential effects on ornithology as a result of the proposed development would be avoided, managed and mitigated by the measures which form part of the proposed development, the proposed mitigation measures and through compliance with suitable conditions. I am therefore, satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects on the ornithology.

9.11. Land, Soil, Water, Air & Climate

Land & Soil

9.11.1. Issues Raised

Third Parties

9.11.1.1. As detailed within earlier in this report, issues have been raised by Third Parties during the application and appeal with respect the Applicant's reliance on point methods (trial pits and 2 no. boreholes) which are outdated and has led in the past to failures on wind turbine construction sites in Ireland. It was noted that there are no site investigation boreholes to the depths below the proposed invert elevations for the turbine foundations. Furthermore, the reference language of 'Borrow Pits' used by the Applicant, when they are in fact referring to quarrying is contrary to EPA (2022) Guidelines on accessibility of EIAR to the public.

Local Authority/Prescribed Bodies

9.11.1.2. The Planning Authority highlighted concerns regarding the use of the site-won stone (borrow pit), its strength and chemical suitability and the adequacy of the information on the exact areas proposed to receive this quarried material. Concerns also noted regarding levels of contamination in materials removed from the roads (i.e. ducting

run).

9.11.2. Examination, analysis and evaluation

Context

9.11.2.1. Chapter 8 (Land, Soils and Geology) of the EIAR assesses and evaluates the potential impacts of the development on the land, soils and geological aspects of the site and surrounding area. Hydro-Environmental Services (HES) were engaged to prepare this chapter of the EIAR and it provides a baseline assessment of the environmental setting of the proposed development, in terms of Land, Soils and Geology and discusses the potential likely significant effects that the various phases of development will have on the receiving environment. Included as appendices to the chapter are:

- Appendix 8-1 - Trial Pit Logs,
- Appendix 8-2 - Monitoring Well Logs, and,
- Appendix 8-3 - PSD Analysis.

9.11.2.2. In terms of the methodology, it is noted that a desk study was completed in advance of undertaking the walkover survey and site investigations. This involved collecting all relevant geological data for the site and surrounding area. Site investigations included the following:

- HES completed initial walkover surveys at the wind farm site and inspection of the proposed infrastructure locations (including gouge augering and peat probing) on 28th September 2023;
- Excavation of 14 no. trial pits on 18th and 19th December 2023 under the supervision of HES.
- Excavation of an additional 8 no. trial pits on 7th February 2024 at potential borrow pit locations;
- Drilling of 2 no. boreholes by Peterson Drilling Services Ltd under the supervision of HES on 19th December 2023, in order to understand the groundwater regime within the site and the depth to bedrock;
- HES also completed a visual assessment of exposed soils, subsoils and bedrock and topographic changes along the GCR;
- Logging of subsoil exposures across the site where mineral soils were exposed; and,

- Mineral subsoils were logged according to BS: 5930.

Baseline

9.11.2.3. The wind farm site comprises of mainly agricultural pastures. An area of forest and semi natural areas can also be seen towards the southern portion of the site. T7 is located within this forested area. Furthermore, heterogeneous agricultural areas are mapped towards the very south-western area of the site. The proposed onsite 38kV substation and associated compound are mapped by Corine (2018) to be located in agricultural pastures and was verified during site walkover surveys completed by HES. The proposed GCR is predominantly located in the carriageway of the existing public road network with the exception of c. 260m along a site road to the west of the proposed onsite 38kV substation and a short off-road section which passes through agricultural grasslands in the vicinity of the Ballyragget substation.

Soils & Subsoils

9.11.2.4. In terms of the wind farm site, the published Teagasc soils map shows that the north of the site is predominantly overlain by poorly drained acidic mineral soils (AminPD). The areas that have bedrock at or near the surface are deemed to have well drained acidic mineral shallow soils (AminSW). Towards the south of the site, near the Tullaroan Stream, soils are mapped as well drained basic mineral soils (BminSW) and well drained acidic mineral soils (AminDW). Mineral alluvium is also mapped along the Tullaroan Stream. The GSI subsoils map shows that the site is largely mapped to be underlain by till derived from Namurian shales and sandstones (TNSSs). The till is located on the sides of the valley of the Tullaroan Stream. The trial pit geological logs are attached as Appendix 8-1 of the EIAR and based on the site-specific data obtained from the trial pit investigations, the ground conditions at the site can be summarised as follows:

- TOPSOIL was encountered at all trial pit investigations. The thickness of the topsoil was found to range from 0.2 to 0.3m,
- The topsoil was typically underlain by glacial till. The till is noted to be comprised of sandy, gravelly or silty CLAY, frequently with low to medium cobble content, typically firm or stiff,
- More granular subsoil deposits comprising of clayey, gravelly, fine to coarse SAND were recorded beneath the topsoil at 6 no. trial pit locations (TP1, TP6,

TP8, TP13, TP14, TP15. These shallow sands extended to a maximum depth 0.8mbgl (metres below ground level) and were underlain by more cohesive clay deposits,

- Deeper wet SANDs and GRAVELs were encountered at a depth of 1.2m at TP14 adjacent to the proposed crossing of the Tullaroan Stream. These granular water-bearing deposits extended to the base of the trial pit excavation (3mbgl),
- Loose, angular, weathered – SILTSTONE bedrock ("Slig") was encountered at 7 no. trial pit locations at depths of 0.4 to 3.3mbgl,
- The depth to weathered rock was shallowest (0.4-1mbgl) in the north of the site at the location of the proposed borrow pit, and,
- Competent bedrock was encountered at 2 no. trial pit locations (BP1-TP3 and BP2- TP3) at depths of 2.46mbgl and 3.5mbgl respectively.

The drilling investigation locations (i.e. 2 no. monitoring wells) revealed the occurrence of thick deposits of SANDs and GRAVELs along the banks of the Tullaroan Stream. At these locations the granular subsoils were between 13.4 and 18.7m thick.

9.11.2.5. For the proposed GCR, the proposed onsite 38kV substation and associated compound are mapped (www.gsi.ie) as being overlain by mainly acidic poorly drained mineral soils (AminPD). Meanwhile, c. 700m of the route to the west of the proposed onsite 38kV substation is overlain by mainly basic shallow well drained mineral soils (BminSW) and c. 1.15km of the route in the townlands of Tullaroan and Brittas is overlain by basic deep well drained mineral soils (BminDW). The northern section of the route is overlain by deep well drained mineral (mainly basic) soils (BminDW), mineral poorly drained (mainly basic) soils (BminPD) and well drained basic mineral soils (BminSW). Mineral alluvium is also mapped along several watercourses in the vicinity of the route. In terms of subsoils, the onsite 38kV substation and the majority of the southern portion of the route are underlain by till derived from Namurian sandstones and shales and bedrock outcrop or subcrop. Meanwhile, the route to the west of the proposed substation is mapped by the GSI to be underlain by gravels derived from limestones. Subsoils along the GCR are shown in Figure 8-1 of the EIAR and it is confirmed that soils and subsoils along the route were verified during visual assessment of exposed soils and subsoils completed during surveys.

Bedrock

- 9.11.2.6. For the wind farm, the site is mapped as being underlain by the Killeshin Siltstone Formation which is comprised of muddy siltstone and silty mudstone. Towards the south of the site, a thin stratigraphical unit called the Carlow Flagstone Member of the Killeshin Siltstone Formation is mapped across the site, from east – west. The presence of bedrock outcrop towards the north of the site, in the area of the proposed borrow pit. It is noted that the bedrock encountered during the site investigations corresponds with the bedrock mapped and described by the GSI.
- 9.11.2.7. In terms of the proposed GCR, the onsite 38kV substation and the southern section of the route are mapped to overlie the Killeshin Formation. As the route approaches Freshford, it traverses over the thin stratigraphical unit of the Carlow Flagstone Member within the Killeshin Formation, and further to the north it is mapped to be underlain by the Clogrenan Formation. Further north, the majority of the northern section of the route is underlain by the Ballyadams Formation, comprising crinoidal wackestone/packstone limestone. In the area of Ballyragget, the route is also mapped to overlie the Durrow Formation which consists of Shaly fossiliferous and oolitic limestone. The route is mapped to traverse over 2 no. faults. The GSI map a small northwest to southeast trending fault to be located c. 150m north of Brittas Cross Roads. A larger west/northwest to east/southeast orientated fault is mapped c. 1.7km north of Freshford town. A bedrock geology map for the proposed GCR is provided in Figure 8-4 of the EIAR.

Geological Resource Importance

- 9.11.2.8. For the wind farm site, GSI mapping shows that the crushed rock aggregate potential of the site ranges from 'Very Low' to 'Moderate'. Much of the site is noted as being of 'Very Low' to 'Low' potential. Areas of 'Moderate' potential are found in the north where the depth to rock is shallowest. It is stated that the bedrock at the site could be used on a "sub-economic" local scale for construction purposes. However, no borrow pits were encountered during walkover surveys. The bedrock has not previously been extracted due to the coverage of till. For the GCR, the GSI mapping shows that the crushed rock aggregate potential along the route ranges from 'Low' to 'Very High'. It is stated that the greatest potential is found in the north of the route along the R694.

The crushed rock aggregate potential is 'Low' at the location of the proposed onsite 38kV substation.

Geological Heritage Sites

- 9.11.2.9. There are no recorded geological heritage sites within the proposed wind farm site. The closest geological heritage site is Ballykeefe Quarry County Geological Site (CGS) (Site Code: KK008), located c. 1.85km to the south-east of the site. In terms of the GCR, it is indicated that there are no geological heritage sites mapped along the route. The Ballyragget Quarry CGS (Site Code: KK009) is located c. 2km east of the route and c. 2.2km southeast of Ballyragget. The Lisdowney Quarry CGS (Site Code: KK004) is also located c. 2.75km west of the route and c. 4km south-west of Ballyragget.

Soil Contamination & Geohazards

- 9.11.2.10. It is noted that there are no known areas of soil contamination on the site and during the site walkovers or investigations, no areas of contamination concern were identified. In terms of slope stability, the GSI Landslide Susceptibility Map classifies the probability of a landslide occurring at a given location. The probability of a landslide occurring at the proposed wind farm site is mapped as being 'Low'. It is noted that the site investigation data has indicated that peat soils/subsoils are absent across the majority of the site. The peaty organic topsoil encountered in the coniferous forestry in the vicinity of T7 is very thin (0.1 to 0.3m) and does not present a risk in terms of peat stability. For the GCR, it is noted that there are only very small areas of 'Moderate' to 'High' potential mapped along the route. However, it is stated that walkover surveys and inspections identified no stability issues along the route.

Receptor Sensitivity and Importance

- 9.11.2.11. It is noted that the soils and subsoils at the proposed wind farm site can be classed as being of low importance as the soils in this area are not designated. The bedrock geology underlying the site can be classed as being of medium importance where the bedrock could be used on a sub-economic scale. The land, soils and bedrock geological formations underlying the proposed wind farm site and the proposed GCR are included in the impact assessment due to their proximal location to the proposed

development and the potential direct effects that the proposed development may have on these receptors. It is noted that all geological heritage sites have been screened out of the impact assessment due to their distant location from the site and the absence of a potential for effects to occur.

Characteristics of the Proposed Development

9.11.2.12. The total estimated volume of spoil to be managed following excavations during the construction phase is c. 65,370m³. It is proposed to manage overburden generated through construction activities locally within the site, through the backfilling of the proposed borrow pit void and following that, within identified spoil management areas and in linear berms along access roads and turbine hardstands where appropriate. The total capacity of the identified spoil management areas, including the backfilling of the borrow pit, within the site is c. 70,000m³. The majority of material excavated along the proposed GCR trench will be reinstated back into the trench. However, some excess spoil material generated during the cable route construction will be transported by permitted waste contractors to a suitable permitted/licensed site for disposal/recovery. This is dependent on the road makeup at locations along the route.

Potential Effects

9.11.2.13. Potential significant effects of the development, as identified in the EIAR, are summarised in the below table.

Table: Summary of Potential Effects

<i>Do Nothing</i>	In the Do Nothing scenario, the existing land use practices comprising of agricultural activities and forestry would continue at the site. Forestry will be felled as forestry compartments reach maturity. Re-planting of these areas with coniferous plantation is likely to occur. Land drainage carried out in areas of the site will continue to function and may be extended in some areas. If the proposed development were not to proceed, the opportunity to capture part of Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment, development contributions, rates and investment in the local area would also be lost. It is stated that the existing agricultural activities (grassland management) and forestry operations (felling and replanting) can and will continue in conjunction with the proposed use of the site. Furthermore, the opportunity to create a riparian buffer zone comprising

	native species adjacent the Tullaroan Stream within the site, increase the ecological condition of over 3.5km of existing hedgerow and to plant c. 270m of new native hedgerow would be lost.
<i>Construction Phase</i>	<i>Land and Land use</i> The permanent footprint of the proposed development will result in the permanent loss of both agricultural land and forestry plantations. The construction works will also result in local topographic changes with the removal of overburden and bedrock. No effects on land or land use will occur along the GCR as works will predominantly occur within the carriageway of the existing public road network. The off-road section of the proposed route will also be reinstated, and works will be completed over a very short time period in these agricultural lands. <i>Soil, Subsoil and Bedrock Excavation</i> Excavation of mineral soil/subsoil and bedrock will be required. However, there will be no loss of spoil from the wind farm site, as it will be relocated and stored within the proposed onsite borrow pit, in the designated spoil management areas or in linear berms along access roads and turbine hardstands where appropriate. Excavated spoil material can also be reused as fill material while the excavated rock will be used to facilitate the construction of the proposed development. Excavation of subsoils will also be required along the proposed GCR. These deposits will be removed from the underground electrical cabling trench and will be transported to the spoil management areas within the wind farm site or to a local licenced facility. <i>Contamination of Soil by Leakages and Spillages</i> Accidental spillage during refuelling of construction plant with petroleum hydrocarbons is a pollution risk at the site. Large spills or leaks have the potential to result in significant effects (i.e. contamination of soils, subsoils and pollution of the underlying aquifer) on the geological and water environment, depending on where a spill may occur. Additionally, waste tar, removed from the road hardstanding along the proposed grid connection route has the potential to affect soil/subsoil geochemistry. <i>Erosion of Exposed Subsoils during Construction</i> Erosion of soil/subsoil by pathways (Vehicle movement, surface water and wind action) can have the effect of reducing the overall volume of soil/subsoil at the site, with the potential for some eroded subsoils to reach watercourses, leading to water quality issues such as high turbidity. Erosion of soils/subsoils may occur at any works area where excavation is ongoing i.e. turbine foundations, access roads and felling areas within the site. <i>Erosion of Exposed Soils/Subsoils During Tree Felling</i> Tree felling is a component of the proposed works at the site, with c. 4.3ha of felling proposed around T7. During felling operations, there is a high likelihood of erosion due to the distance of soils and subsoils associated with vehicle and plant movements. This also has associated potential effects on the water environment. <i>Geological Heritage Sites</i> No potential for effects. <i>Ground Instability and Failure</i> No significant peat deposits are present at the proposed wind farm site with only a thin layer (0.1 - 0.3m) of peaty organic topsoil encountered in the vicinity of T7. Subsoils are described as glacial tills comprising of gravelly clay and granular subsoils comprised of sands and gravels. The subsoils

	range in depth between 0.4 and 18.7m across the site, with the thickest subsoils in the valley of the Tullaroan Stream. An iterative design process involving multiple stages of ground investigations, followed by turbine and infrastructure design has been completed to ensure the areas with optimum ground conditions have been selected. Due to the nature of the proposed GCR there will be no effect on ground stability. The formation of the underground cabling trench will be within the underlying competent subsoil. <i>Piling Works</i> It is indicated that piling foundations may be required at T7 (as no trial pit data is available at that location due to existing tree cover). The requirement for piling at T7 will be determined during post-consent ground investigations. Based on the available site investigation data, it is indicated that piling works are not envisaged at the other proposed turbine locations. However, taking a precautionary approach an assessment of piling at all proposed turbines has been included. <i>TDR Works</i> The proposed transport route for the proposed development has been the subject of a route assessment to determine if any works are required along its length with full details provided in Chapter 15 of the EIAR. No potential for effects identified.
<i>Operational Phase</i>	Very few potential direct impacts are envisaged during the operational phase. These may include: - Some construction vehicles or plant may be necessary for maintenance of turbines which could result in minor accidental leaks or spills of fuel/oil; and, - The transformer in the substation and transformers in each turbine are oil cooled. There is potential for spills / leaks of oils from this equipment resulting in contamination or during the maintenance of this equipment of soils and groundwater. In relation to indirect impacts, a small amount of granular material may be required to maintain access tracks during operation which will place intermittent minor demand on local quarries.
<i>Decommissioning Phase</i>	The potential effects associated with decommissioning of the proposed development will be similar to those associated with construction but of reduced magnitude. Upon decommissioning, the wind turbines and the meteorological mast would be disassembled. All above ground turbine and mast components would be separated and removed off-site for recycling. Turbine and mast foundations would remain underground and would be covered with earth and allowed to revegetate. Site roadways will be used during the operational phase by farm machinery and will provide a useful means of extracting the commercial forestry crop which exists on at the site and therefore will be retained post decommissioning to facilitate these activities. The underground electrical cabling connecting the turbines to the on-site substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility. The proposed GCR infrastructure, onsite 38kV electricity substation and associated

	underground cabling connection to Ballyragget substation, will remain in place as it will be part of the Electricity Grid under the ownership and control of the ESBN. During decommissioning, it will be possible to reverse or at least reduce some of the potential impacts caused during construction by rehabilitating construction areas such as turbine foundations, hard standing areas. This will be done by covering with subsoil or vegetation to encourage vegetation growth and reduce run-off and sedimentation.
<i>Cumulative Effect</i>	Due to the localised nature of the proposed construction works, it is indicated that there is no potential for significant cumulative effects in-combination with other local developments on the land, soils and geology environment as all effects are direct within the site. Other projects outside the site do not have the potential to reduce or increase the magnitude of effects of the proposed development on Land, Soils and Geology. It is stated that the construction of the proposed GCR will only require relatively localised excavation works and therefore will not contribute to any significant cumulative effects. The construction of the route will only require relatively localised excavation works within the site boundary and therefore will not contribute to any significant cumulative effects. Following a review of other planning applications, it is acknowledged that there is an overlap of c. 300m along the N77 with the GCR for the Farranrory Wind Farm. However, the timing of works will be coordinated to ensure that there is no concurrent works, and therefore no cumulative effect. Reference is also made to a permitted application for the construction of battery energy storage systems in the vicinity of Ballyragget substation. It is noted that a hydrological and hydrogeological assessment report and drainage strategy was submitted along with the Environmental Report for that proposal. It is noted that this report detailed mitigation measures for the protection of the geological and hydrological/hydrogeological environment through all phases of that development.

Mitigation

9.11.2.14. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

Construction Phase	Effects on Land and Land use
	- No mitigation is proposed with regard agricultural loss of land. - The total amount of forestry to be felled (4.3ha) accounts for only c. 16% of the existing woodland habitat (conifer forestry and broadleaf) coverage at the wind farm site which is approximately 29ha. Furthermore, in line with the Forest Service's published policies for wind farm development, the land cleared of forestry will be replanted at an alternative site. <i>Soil, Subsoil and Bedrock Excavation</i> <u>Wind Farm</u> - Placement of turbines and associated infrastructure in areas with suitable ground conditions (based on detailed site investigation data); - The soils and subsoil which will be removed during the construction of turbine hardstands will be localised to the turbine locations. The soil/subsoil will be placed/spread locally alongside the excavations or stored within the borrow pit and/or spoil

	management areas; - Excavated soils/subsoils shall be excavated and stored separately to topsoil; - At the identified spoil management area, the vegetative topsoil layer will be removed to allow for spoil to be placed and upon reaching the recommended height, the vegetative topsoil layer will be reinstated; - The identified spoil management areas will be developed in a phased approach, with the topsoil removed and temporarily stockpiled within the defined area while the spoil is being placed. - The placement of spoil will be restricted to a maximum height of 1.0m, subject to confirmation by the Geotechnical Engineer; - Where practical, the surface of the placed spoil is shaped to allow efficient run-off of surface water. - Finished/shaped side slopes of the placed spoil will be not greater than 1 (v): 3 (h) in the dedicated spoil management zones and not greater than 1 (v): 1 (h) alongside access tracks; - Inspections of the spoil management areas will be made by a Geotechnical Engineer through regular monitoring of the works. - An interceptor drain will be installed upslope of the identified spoil management areas to divert any surface water away from these areas; - Silt fences and double silt-fences will be emplaced down-gradient of spoil management areas and will remain in place throughout the entire construction phase, or until reseeding has been established to a sufficient level; - The surface of the deposited spoil will be profiled to a gradient to be agreed with the Geotechnical Engineer and vegetated or allowed to vegetate naturally as indicated by the Project Ecologist; - All the above-mentioned general guidelines and requirements will be confirmed by the Geotechnical Engineer prior to construction; - The material will be backfilled into the spoil management areas and will be spread evenly across the area; - It will be compacted to reduce air voids and reduce the migration paths for infiltration by precipitation. - Excavated soils/subsoils shall be excavated and stored separately to topsoil; this will prevent mixing of materials and facilitate reuse afterwards; - All materials which require management will be stockpiled at low angles (< 5-10°) to ensure their stability and secured using silt fencing where necessary. This will help to mitigate erosion and unnecessary additions of suspended solids to the drainage system; - Spoil management will take place within a minimal distance of each turbine to avoid excessive transport of materials within the Site. <u>Grid Connection</u> - Soils and subsoils excavated along the route will be temporarily stored in covered stockpiles along the edge of the road carriageway; - Once the emplacement of the cable has been completed, the stored soils and subsoils will be reinstated, with the minimal amount of compaction required to level the top surface; - The tarmacadam surface along the road sections of the route will be replaced with the same design standard as the surrounding carriageway. <i>Contamination of Soil by Leakages and Spillages</i> - Minimal refuelling or maintenance of construction vehicles or plant

	will take place on site. Where possible, off-site refuelling will occur at a controlled fuelling station; - On-site re-fuelling will be undertaken using a refuelling truck with spill kits kept onboard; - Only designated trained operatives will be authorised to refuel plant on-site; - Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system; - All fuel storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area; - Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage; - The on-site substation will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; - The plant used during construction will be regularly inspected for leaks and fitness for purpose; - All waste tar material arising from works on hard top roads will be removed off-site and taken to licenced waste facility; and, - An emergency response plan for the construction phase to deal with accidental spillages is contained within the Construction and Environmental Management Plan. <i>Erosion of Exposed Subsoils during Construction</i> - Soil/subsoil removed from the turbine locations and associated access roads will be used for landscaping or placed/spread locally alongside the excavation. - Temporary drainage systems will be required to limit runoff impacts during the construction phase. - In forestry areas (near T7), brash mats will be used to support vehicles on soft ground, reducing soil erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. - Soils/subsoils removed from the proposed GCR will be removed and either used for proposed wind farm site borrow pit reinstatement/spoil management areas or taken to an appropriately licenced facility. <i>Erosion of Exposed Soils/Subsoils During Tree Felling</i> All proposed felling works will be completed in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte and DAFM guidance documents to ensure that felling results in minimal potential negative effects on the local soil and subsoil environment. In addition, various mitigation measures will be implemented during felling operations. <i>Ground Instability and Failure</i> - Appointment of experienced and competent contractors; - The site will be supervised by experienced and qualified engineering/geotechnical personnel; - Allocate sufficient time for the project; - Prevent undercutting of slopes and unsupported excavations;

	- Maintain a managed suitable drainage system; - Ensure construction method statements are followed or where agreed modified/developed; and, - Revise and amend the Geotechnical Risk Register as construction progresses. <i>Piling Works</i> Piles have a very small footprint and will result in the displacement of small volumes of spoil. The small spoil volumes can be easily managed at the site with excess spoil being removed for permanent storage in the on-site borrow pit or within the spoil management areas. Spoil volumes generated by any potential piling works will only amount to a very small percentage of the overall spoil volumes. No mitigation measures are proposed or required for soils and geology environment.
Operational & Decommissioning Phase	<i>Operational Phase</i> - The use of aggregate from authorised quarries for use in road and hardstand maintenance. - Oil used in transformers (at the onsite substation and within each turbine) and storage of oils in tanks at the substation could leak during the operational phase and impact on ground and subsoils and groundwater or surface water quality. The base of the substation transformer will be bunded and capable of holding 110% of the stored oil volume. - Turbine transformers are fully bunded within the enclosed turbines, so any leaks would be contained within the turbine and there is no potential pathway to receptors associated with the Land, Soils and Geological environment. <i>Decommissioning Phase</i> Mitigation measures applied during decommissioning activities will be similar to those applied during construction phase

Residual Effects

9.11.2.15. There are no likely significant impacts on the Land, Soils and Geology associated with the proposed development of the site. It is not anticipated that any significant impacts will arise following the implementation of the mitigation measures discussed above. The residual effects are summarised in the below table.

Table: Residual Effects

Feature	Residual Effect
<i>Land and Land use</i>	Negative, Direct, Slight to Moderate, Likely, Long Term
<i>Soil, Subsoil and Bedrock Excavation</i>	Negative, Slight to Moderate, Direct, Likely, Permanent Effect
<i>Contamination of Soil by Leakages and Spillages</i>	Negative, Imperceptible, Direct, Short-Term, Low Unlikely
<i>Erosion of Exposed Subsoils</i>	Negative, Slight, Direct, Short-Term, Likely
<i>Erosion of Exposed Soils/Subsoils During Tree Felling</i>	Negative, Imperceptible, Direct, Permanent, Unlikely Effect
<i>Ground Instability and Failure</i>	None
<i>Piling Works</i>	Negative, Direct, Imperceptible, Permanent, Unlikely Effect

Assessment

9.11.2.16. I have examined, analysed and evaluated Chapter 8 of the EIAR and all of the associated documentation and submissions on file in respect of land, soils and geology. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation and advertisement. Issues raised by parties are addressed as follows.

Site Investigations

9.11.2.17. Noting the concerns raised by Third Parties regarding the scope and extent of the site investigations, the Applicant was requested by way of FI to set out a robust rationale for their adequacy, noting the depths of the various trial pits relative to the depth of the foundations for the proposed turbine bases. The Commission also raised concerns regarding the complete absence of site investigations at the location of T7, and further site investigations proximate to T7 was recommended to address this issue. It is noted within the Applicant's FIR (Appendix 8) that the depth of gravity-based turbine foundations is typically 4 to 4.5mbgl (metres below ground level) and is dependent on the local geological conditions. The depth of the trial pits completed at the proposed turbine locations ranged from 2.4m to 3.2m. With the exception of T1 (recorded depth to rock of 1.6mbgl), the depth to rock remains unknown at all other turbine locations. As noted above, no trial pit excavations were completed in the immediate vicinity of T7 due to dense forestry prohibiting access. Notwithstanding this, it is the Applicant's contention that the completed site investigations, including the trial pits, and the depth of those trial pit excavations, are appropriate for the EIAR phase of the project for the following reasons:

- The use of point location geotechnical investigations (i.e. boreholes and trial pits) is a reliable and trusted method of site investigations in order to characterise the baseline geological environment,
- These geotechnical investigations provide precise geological information at a given location, and the wider geology can be understood if there is a suitable quantity of point investigations completed at a given site;
- The quantum of site data gathered to characterise the baseline soils and geological environment, comprising of 24 no. point investigations (22 no. trial

pits and 2 no. monitoring wells/boreholes) combined with site walkover surveys, logging of exposed soils/subsoils at the site and laboratory analysis of recovered soil samples, is considered to be suitable for the scale of the proposed development (7 no. turbine wind farm) and the geological/hydrogeological setting of the site,

- 7 of the 22 no. trial pits completed across the proposed wind farm site encountered weather siltstone bedrock at depths ranging from 0.4 to 3.3mbgl on the sides of the valley. The boreholes drilled on the valley floor encountered thicker glaciofluvial deposits (up to 18.7m thick) in the vicinity of the Tullaroan Stream (Tullaroan/Kilmanagh River),
- The geology of the proposed wind farm site is therefore predictable with shallow overburden on the sides of the valley and deeper deposits on the floor of the valley,
- The soils, subsoils and bedrock encountered during the site investigations largely corresponded with the GSI mapped geology (www.gsi.ie),
- No karst bedrock is mapped at the site, and no karst features were recorded during walkover surveys or during the site investigations at the wind farm site which would warrant more extensive geophysical surveys and site investigations,
- Regardless of the depth of the trial pits, the impact assessment presented in Chapter 8 (Land, Soils and Geology) and Chapter 9 (Water) of the EIAR takes a precautionary approach whereby both gravity and piled foundations are assessed at all proposed turbine locations.
- The residual effect from piled foundations on the land, soils and geological environment will be a negative, imperceptible, direct, permanent, unlikely effect due to the very small footprint of the piles and the small volumes of material which will be displaced; and,
- In terms of potential effects on the receiving water environment, the assessment presented in Section 9.5.2.14 of the EIAR concluded that due to the prevailing hydrogeological regime and with the implementation of the prescribed tried and tested, best practice mitigation measures, that the residual effects of piled foundations will be a negative, imperceptible, short-term, unlikely effect on the receiving water environment.

9.11.2.18. In terms of the absence of data at T7, it is confirmed within the Applicant's FIR that additional site investigations, in the form of a monitoring well (25MW01), was completed within 90m of the location of this proposed turbine. During the drilling, it is indicated that a slow water strike was encountered in the clay deposits at a depth of 5.5mbgl, with a more significant strike at 11.5mbgl in the underlying sand and gravel deposits. Furthermore, a water level of 2.42mbRef was recorded in 25MW1 on 18th August 2025, and 2.24mbRef on 02nd October 2025. The Applicant also carried out a permeability test in the well, with the resulting permeability determined to be 1.79 x 10⁻⁴ m/s. Whilst the EIAR has assessed both gravity and piled foundations, it is the Applicant's view that this additional data indicates that a piled foundation solution will most likely be implemented at T07, subject to confirmatory site investigation and detailed design. This approach is reasonable in my view given the elevated water table at this general location and the likely requirement for dewatering should a gravity-based foundation be utilised within this portion of the site. Having regard to the further site investigations and analysis undertaken by the Applicant, with particular regard to the additional investigations carried out in the vicinity of T7, it is considered that the supplementary investigations, together with the accompanying analysis and technical justification submitted by the Applicant, have provided a more comprehensive understanding of the underlying geology and overlaying subsoil within the site to inform the turbine layout and the assessment of likely significant effects. Whilst the submission from KBT Responsible Energy has raised continued concerns with respect to the adequacy of the Applicant's response, I am satisfied that further geotechnical investigations, where required, are adequately covered by the work methods outlined in the EIAR, including the CEMP. I have also had regard to the commentary provided by the Commission's Senior Environmental Scientist (See Appendix 7 of this Report) who has reviewed the application documents, the Applicant's FIR and the various Third Party submissions and is satisfied with the adequacy of the site investigations. Overall, it is considered that the proposed mitigation measures contained within this Chapter will ensure that the risk of contamination to soils will be reduced and controlled, ensuring no significant adverse effects will arise. Given that the precise location of T7 was inaccessible due to forestry cover, I consider it appropriate that a condition be attached which requires the Applicant to submit and confirm the final, as-

built details of all turbine locations following the confirmatory site investigations. Such details should include the type of foundation used, the dimensions and any depth of the foundation and any associated excavation details. The information shall be submitted to the Planning Authority, with a record of same being placed on the public file.

9.11.2.19. In terms of the proposed borrow pit and its potential to impact surface water and groundwater flows in the area, the Applicant was also requested to undertake further detailed site investigations to fully establish a conceptual site model for flow regimes in this area of the site. As part of the Applicant's FIR, it is confirmed that a monitoring well was drilled at the proposed borrow pit location on 7th August 2025. The geological log of that well (25MW2) is provided in Appendix 8 of the FIR and it is confirmed that no significant water strikes were encountered during the drilling. I note that further analysis on the potential impact of the proposed borrow pit on the site's flow regimes is provided in my assessment of Chapter 9 (Hydrology and Hydrogeology) of the EIAR below. Based on the site's topographic setting, the local hydrogeological regime and the additional data provided by the Applicant as part of the FIR, I am satisfied that it has been adequately demonstrated that the proposed borrow pit will not significantly alter the existing hydrogeological regime of the site and strict adherence to the suite of mitigation measures will ensure that ground and surface water quality is protected.

Borrow Pit & Use of Site Won Material

9.11.2.20. Within her observation on file, Dr. Bartley (on behalf of KBT Responsible Energy) has opined the Applicant's disingenuous description of the proposed borrow pit. In their view, a borrow pit is essentially a quarry and the description provided is contrary to EPA (2022) Guidelines on accessibility of the EIAR to the public. Furthermore, concerns have been raised that an impact assessment for the borrow pit cannot be completed when the actual volume of material to be removed will be confirmed following detailed pre-construction site investigation works. While I acknowledge that borrow pits and quarries share certain similarities, the term 'borrow pit' is widely used across the wind energy development sector. Unlike quarries, which are typically permanent commercial operations that are intended for ongoing extraction, borrow pits are temporary excavations that are generally restored once a development is completed, as is the case with the subject proposal. In addition, it is widely

acknowledged that the use of site-won material can offer significant environmental advantages, including a reduced need to transport material from external sources. Therefore, I fully accept the Applicant's use of the term borrow pit and I am satisfied that the public would have a clear understanding of its use and function in the context of the subject proposal. Furthermore, the Applicant has provided the maximum volume of material that is to be excavated from the borrow pit. Section 4.8.1.7 of the EIAR outlines the construction methods for the proposed borrow pit construction and I am satisfied that sufficient information has been provided to undertake an impact assessment of this element of the development. As noted, further analysis of the potential impact of the proposed borrow pit is provided in my assessment of Chapter 9 (Hydrology and Hydrogeology) of the EIAR below.

9.11.2.21. Within their report on file, the Planning Authority's Environment Section had noted that adequate details should be provided with respect to the Applicant's proposals for backfilling of the proposed of the borrow pit and it was their view that the origin of all materials utilised should be identified. Within their appeal, the Applicant has confirmed that the proposed borrow pit will be backfilled with excess material generated on site, comprising of natural overburden, as detailed in Chapter 4 of the EIAR. As the proposed borrow pit will not be backfilled with any contaminated material, there will be no potential for the inert backfill material to impact local groundwater quality. This conclusion is acceptable in my view.

Conclusion: Direct and Indirect Effects

9.11.2.22. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. It is considered that the Applicant has provided sufficient survey data to enable assessment of likely effects on the land and soils. Overall, I am satisfied that the potential for significant adverse impacts on land and soils can be avoided, managed and/ or mitigated for the proposed development by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions.

Water

9.11.3. Issues Raised

Third Parties

9.11.3.1. As detailed earlier in this report, issues have been raised by Third Parties during the application and appeal regarding the potential impact of the proposed development on group water schemes through groundwater contamination, incorrect identification of watercourses, the potential for surface water contamination, adequacy of the geotechnical investigations to inform the environmental assessments, adequacy of the mitigation methods, the lack of detail in the application, location of the borrow pits and spoil areas in zones classified as extremely vulnerable to contamination, lack of monitoring post construction, impacts associated with dewatering, unauthorised alterations undertaken to the Kilmanagh/Tullaroan riverbank, adequacy of the WFD assessment, flood related concerns including the lack of hydrological assessments and hydraulic analysis and an incorrect assessment from a cumulative impact perspective. Within their observation to the First Party appeal, KBT Responsible Energy have enclosed an expert opinion prepared by Hydro-G (Dr. Pamela Bartley).

Local Authority/Prescribed Bodies

9.11.3.2. The Planning Authority highlighted concerns with respect to the adequacy of the mitigation measures proposed and the cumulative impacts of the proposed development. In their report on file, the Department of Housing, Local Government and Heritage raised concerns regarding the use of silt fences, where they refer to commentary within the EIAR stating that the silt fences will only be used 'if required' along the proposed GCR. Uisce Éireann have raised concerns regarding the potential for the proposed development to impact drinking water sources, with particular reference to the Callan PWS and the surface water abstraction for Kilkenny City (Troyswood). IFI in their report recommend a suite of suitable conditions in the event of a grant of permission. Furthermore, the Health Service Executive (HSE) recommend that the mitigation measures detailed in the EIAR be conditioned in order to mitigate the potential effects on the hydrological and hydrogeological environments.

9.11.4. Examination, analysis and evaluation

Context

9.11.4.1. Chapter 9 (Hydrology and Hydrogeology) of the EIAR assesses the impact of the proposed development on the hydrological (surface water) and hydrogeological (groundwater) aspects of the receiving environment. The chapter provides a baseline

assessment of the environmental setting of the site in terms of hydrology and hydrogeology and discusses the potential likely significant effects that the construction, operation and decommissioning of the proposed development will have.

Appendices to the chapter include:

- Appendix 9-1 - Flood Risk Assessment,
- Appendix 9-2 - Laboratory Reports, and,
- Appendix 9-3 - Water Framework Directive.

9.11.4.2. In terms of the methodology, a desk study of the site and Water Study Area (WSA) was completed in the Summer of 2023 to collect all relevant hydrological, hydrogeological and meteorological data and was completed to supplement site walkover surveys, drainage mapping and site investigations. It is noted that the desk study information has been checked and updated, where necessary, in June and July 2024. For the baseline monitoring and site investigations, it is noted that a comprehensive geological, hydrological and hydrogeological dataset has been collected as part of the EIAR. Initial walkover surveys of the site, including hydrological mapping, was undertaken on the 28th September 2023. Subsequent walkover surveys, hydrological monitoring, surface water flow monitoring, field hydrochemistry, grab sampling, groundwater level monitoring and groundwater sampling were undertaken on a number of further dates. It is noted that the hydrological monitoring and surface water sampling was completed during both dry and wet periods in order to sample and record flow volumes during both high and low flows. The site investigations to inform the chapter included:

- Initial site walkover surveys and drainage mapping at the site on 28th September 2023, whereby water flow directions and drainage patterns were recorded. These surveys included field hydrochemistry monitoring and stream flow monitoring of watercourses draining the site;
- Subsequent walkover surveys and hydrological mapping were completed on 18th and 19th December 2023, 7th February, 13th June and 10th July 2024;
- Intrusive site investigations comprising of 22 no. trial pit excavations (18th and 19th December 2023 and 7th February 2024) and the drilling of 2 no. groundwater monitoring wells (19th December 2023) were completed. The site data provides detail and clarity on the nature and extent of the subsoils and bedrock at the site;

- Groundwater level monitoring was completed in the monitoring wells between December 2023 and July 2024;
- Groundwater sampling was completed at the 2 no. groundwater monitoring wells on 10th July 2024; and,
- A total of 8 no. surface water grab samples were undertaken across 2 no. monitoring rounds (13th June and 10th July 2024) to determine the baseline water quality of the primary surface waters originating from the site. The June sampling was preceded by very heavy rainfall whilst the July sampling was preceded by a period of relatively dry weather.

Baseline

9.11.4.3. Land use within the wind farm site currently comprises a mix of pastoral agriculture and small-scale, private forestry. The surrounding area predominantly comprises pastoral agriculture and residential uses within Kilmanagh and Tullaroan. The proposed wind farm is located to the east of the Slieveardagh Hills. The local topography is hilly, with land generally sloping towards the Tullaroan Stream which bissects the wind farm site. Ground elevations are greatest in the east at c. 190mOD (metres above Ordnance Datum) and fall towards the Tullaroan Stream which stands at c. 110mOD in the south. The proposed onsite 38kV substation is located in agricultural lands and will be accessed via the proposed wind farm access roads. The proposed GCR originates at the proposed onsite 38kV substation and connects to the existing 110kV Ballyragget substation. Much of the southern section of the GCR is located at elevations in excess of 100mOD associated with the Slieveardagh Hills. Topography rises rapidly to the north of the Brittas crossroads and the greatest elevations are recorded in the townland of Picketstown where ground elevations stand at ~240mOD. Further to the north in the vicinity of Freshford and Ballyragget, ground elevations are relatively flat and range from 70 to 80mOD.

9.11.4.4. It is indicated that the proposed wind farm site is generally mapped (GSI) as having low recharge rates with recharge coefficients of 7.5% due to the presence of low permeability glacial tills. Areas of higher groundwater recharge (85%) are mapped in the elevated ground in the north-east of the site where rock is close to site. Based on site specific data, groundwater recharge rates are considered to be low (10%) across

the majority of the site due to the coverage of low permeability glacial tills, the poor bedrock aquifer, the sloping nature of the site and the presence of several surface water drainage features. This means that the hydrology of much of the site is characterised by high surface water runoff rates and relatively low groundwater recharge rates. However, in the valley of the Tullaroan Stream, high rates of groundwater recharge are likely due to the presence of permeable sands and gravels. In the case of the GCR, groundwater recharge estimates from the GSI along the route range from 7% in the south to ~85% in the north.

Hydrology

- 9.11.4.5. In terms of regional and local hydrology, it is noted that the wind farm site is located in the River Nore surface water catchment within Hydrometric Area 15 of the South Eastern River Basin District. More locally, the site is located within 2 no. WFD river sub-catchments. The vast majority of the site is located in the Munster River sub-catchment (Munster_SC_010) whilst a small area in the north-east is mapped in the Nore_SC_090 sub-catchment. Within the Munster River sub-catchment, the wind farm site is mapped in 2 no. WFD river sub-basins. The north is located in the Tullaroan Stream_020 river sub-basin whilst the majority of the site is mapped in the Tullaroan Stream_030 river sub-basin. The Tullaroan Stream flows to the south, bisecting the site, and continues southwards before discharging into the Munster River, c. 5.7km to the south. Further downstream, the Munster River discharges into the King's River to the north-west of Callan (7.7km from the site). The King's River discharges into the River Nore c. 17km to the south-east. More locally, the site is drained by several tributaries of the Tullaroan Stream, many of which originate within the site and flow downslope into the Tullaroan Stream.
- 9.11.4.6. The onsite 38kV substation is mapped within the Tullaroan_030 WFD river sub-basin. The Tullaroan Stream is mapped c. 120m to the south-west. However, it is stated that a small watercourse was recorded during site walkover surveys along the western boundary of the field within which the substation is proposed. This watercourse recharges into the sand and gravel subsoils in the valley of the Tullaroan Stream and does not directly discharge into the Tullaroan Stream. The proposed GCR is located entirely within the River Nore surface water catchment and passes through a total of 4 no. WFD river sub-catchments and 8 no. WFD river sub-basins, all of which are

detailed in Table 9-7 of the EIAR. There are a total of 10 no. crossings over EPA mapped watercourses along the proposed GCR, comprising of 7 no. existing bridge crossings, 2. no existing culvert crossings and 1 no. new proposed crossing, all of which are identified in Section 9.3.3.2 of the EIAR. Furthermore, an additional 3 no. crossings along the proposed GCR which are over watercourses which are not included in the EPA blueline database. These are at existing bridge and culvert crossings.

9.11.4.7. A drainage map for the proposed wind farm site is provided within Figure 9-6 of the EIAR which superimposes the proposed wind turbines and the associated site infrastructure. The drainage map identifies the main drainage pathways at the site and the connectivity (i.e., pathways and outlet points) of these drains with the downstream EPA mapped streams/rivers. The site is drained by several 1st and 2nd order streams which are natural watercourses that originate within the site boundaries and flow downslope before discharging into the Tullaroan Stream. It is noted that runoff rates are high on the valley sides due to the presence of glacial till. On the lower ground there is some recharge to ground as the watercourses pass over permeable glaciofluvial sands and gravels which are present in a thin strip along the banks of the Tullaroan Stream. In places, the natural drainage is further facilitated by a network of manmade drains. To the east of the Tullaroan Stream, agricultural drains are located along hedgerows and field boundaries and connect to natural watercourses. In the forested area to the west of the Tullaroan Stream, drainage is enhanced by forestry drains. The forestry drains are the primary drainage routes towards the natural streams, but it is noted that the flows in the higher elevated drains are generally very low or absent most of the time.

9.11.4.8. A Flood Risk Assessment (FRA) for wind farm site is provided in Appendix 9-1 of the EIAR. It is noted that the closest OPW mapped recurring flood event is located immediately to the south of the wind farm site at Kilmanagh. Recurring flooding is reported along the R695, associated with flooding along the Tullaroan Stream. Several recurring flood events are also mapped further downstream along the Tullaroan Stream, the Munster River and the King's River. No CFRAM mapping has been completed for the area of the wind farm site nor has mapping of the Tullaroan Stream

or its tributaries been completed. National Indicative Flood Mapping (NIFM) has been completed along the length of the Tullaroan Stream in the vicinity of the wind farm site. It is noted that the modelled medium and low probability fluvial flood zones do not extend any significant distance from the river channel. It is noted that the proposed infrastructure within the mapped flood zones has a limited footprint of c. 0.226ha (0.112ha of existing roads to be upgraded and 0.114ha of new proposed roads). The FRA notes that the area is negligible in comparison to the total areas of the low probability NIFM flood zone within the EIAR site boundary which is c. 48ha. Therefore, it is contended that the impact from displaced floodwaters will be negligible. Other conclusions of the FRA include:

- The modelled NIFM flood zones associated with the Mid-Range and High-End future climate change scenarios do not differ significantly from those for the Present Day Scenario, i.e. there will be no increase in flood risk associated with climate change at the site.
- The site is not mapped within any historic or modelled groundwater flood zones.
- The risk of pluvial flooding is low due to the sloping nature of much of the site. This risk is limited to local flat areas where some ponding/pluvial flooding may occur where low permeability soils are present.

9.11.4.9. The potential for flooding along the proposed GCR has also been assessed. In summary, it is noted that the vast majority of the route is at low risk of flooding. However, there are areas which may be prone to flooding, principally at existing watercourse crossings. Due to the depth of the proposed GCR, it is stated that this will have no impact during the operational phase of the proposed development. During the construction phase, works along the GCR may have to be postponed following heavy rainfall events which could cause flooding in these areas. It is stated that the proposed onsite 38kV substation is mapped in Flood Zone C and is at low risk of flooding.

9.11.4.10. In terms of surface water quality, field hydrochemistry measurements of unstable parameters, electrical conductivity ($\mu\text{S}/\text{cm}$), pH (pH units) and temperature ($^{\circ}\text{C}$) along with turbidity (NTU) were taken at 4 no. surface water sampling locations over 2 no. monitoring rounds completed on 13th June and 10th July 2024, the results of which are identified in Table 9-11 of the EIAR. It is noted that the June sampling was preceded

by a day of very heavy rainfall whilst the July sampling was preceded by a period of relatively dry weather. It is indicated that the elevated concentrations of several parameters on 13th June 2024 were influenced by the preceding heavy rainfall which resulted in high runoff rates. The monitoring locations are shown in Figure 9-7 of the EIAR.

Hydrogeology

9.11.4.11. The bedrock underlying the wind farm site is classified by the GSI as being a Poor Aquifer – Bedrock which is Generally Unproductive except for Local Zones. In terms of Groundwater Bodies (GWBs), the site is underlain by the Ballingarry GWB which is characterised by poorly productive bedrock. It is stated that discharge from this GWB will occur locally to nearby surface water features as there is no regional flow system. The GSI also map the presence of a Regionally Important Gravel Aquifer in the valley of the Tullaroan Stream which forms part of the Kilmanagh Gravels GWB. In terms of proposed wind farm infrastructure, a total of 1 no. turbine (T07), 2 no. construction compounds, new proposed roads and spoil management areas are underlain by this overburden aquifer. The GSI state that transmissivity is between 200 to 250m² /day and the main recharge mechanism to this GWB is rainfall which falls on the unconfined portions of the aquifer, with the Tullaroan stream providing recharge in times of low water tables. Flows through the Body move southwards from the unconfined portion, with some discharging back into the Tullaroan Stream and some passing into the confined portion. Discharge mainly occurs to the series of small springs that lie close to the junction of the Munster and King's River. A map of the underlying bedrock and overburden aquifers is provided in Figure 9-10 of the EIAR.

9.11.4.12. A detailed description of the geology of the proposed wind farm site has been provided in Chapter 8 of the EIAR, and the site-specific data is summarised as follows:

- There are no significant peat deposits present at the site,
- Only a thin layer of organic peaty topsoil (0.1-0.3m) was encountered at T7,
- The subsoils are dominated by glacial till, described as sandy, gravelly, silty clay,
- These glacial till deposits cover the sides of the valley,
- Thick deposits of glaciofluvial sands and gravels were encountered in the valley

of the Tullaroan Stream and towards the south of the site,

- These granular deposits are limited to a thin strip along the banks of the Tullaroan Stream;
- Depth to bedrock is shallow on the sides of the valley with weathered siltstone bedrock encountered at depths of 0.4 to 3.3mbgl;
- The depth to bedrock is deeper (13.4 to 18.7m) in the vicinity of the Tullaroan Stream due to the thick deposits of sand and gravel; and,
- The bedrock encountered during the site investigations correlates with the GSI mapped Killeslin Siltstone Formation

9.11.4.13. In terms of the 'Hydrogeological Data', a total of 22 no. trial pits were excavated at the wind farm site. Sand and gravel deposits were only encountered in 6 of the 22 no. trial pits. In 5 of these trial pits the sands are relatively thin (0.3 to 0.6m) and overlie the lower permeability tills. Only 1 no. trial pit encountered thick granular deposits (TP14 is located immediately adjacent to the Tullaroan Stream). Groundwater inflows were recorded in 8 of the 22 no. trial pit excavations (36%) and at depths ranging from 1.3 to 3mbgl (metres below ground level). 7 of these water strikes were encountered in the glacial tills and were typically described as 'slow' and 'slight' inflows of groundwater. Meanwhile, significant ingress of groundwater was only recorded in glaciofluvial sands and gravel subsoil in 1 no. trial pit excavation (TP14). In addition, 2 no. monitoring wells (MW01 and MW02) were drilled which facilitated the monitoring of groundwater levels in the overburden aquifer. It is noted that the monitoring period was completed during a very wet period of time and the recorded groundwater levels are likely to represent maximum winter groundwater levels (Figure 9-9 of EIAR). It is further noted that there is a high degree of connectivity between surface and groundwaters in the area of the wind farm site. High rates of surface water runoff occur on the sides of the valley due to the presence of glacial till and the underlying Poor Bedrock Aquifer.

9.11.4.14. For the proposed GCR, the southern section is underlain by Poor bedrock aquifers. In the vicinity of the wind farm site, c. 800m of the route and the onsite 38kV substation are underlain by the Regionally Important Gravel Aquifer in the valley of the Tullaroan Stream. The northern section of the route, between Freshford and Ballyragget, is underlain by a Regionally Important Aquifer – karstified (diffuse). In the valley of the

River Nore, the route (~4.63km) is also underlain by a Regionally Important Gravel Aquifer. These include the Kilmanagh Gravels and Ballingarry GWBs in the south and the Durrow Karstic GWB and the Kilkenny-Ballynakill Gravels GWB in the north.

9.11.4.15. Section 9.3.9 of the EIAR confirms that the vulnerability rating at the wind farm site is mapped by the GSI (www.gsi.ie) and ranges from Low to Extreme. The area of Extreme vulnerability is mapped in the more elevated areas in the north-east of the site, within which 2 no. turbines (T01 and T02), a construction compound and the proposed borrow pit are to be located. Some areas in the valley of the Tullaroan Stream are mapped as having High vulnerability including 1 no. turbine (T07), spoil management areas and a construction compound. From carrying out the site investigations, it is noted that surface water bodies such as drains and streams/ivers are more vulnerable (to contamination from human activities) than groundwater across much of the wind farm site. Meanwhile, in the vicinity of the Tullaroan Stream, the groundwater in the overburden aquifer is more vulnerable to contamination. Groundwater vulnerability along the proposed GCR ranges from Low to Extreme, with c. 2.59km of the route being mapped in areas of Extreme groundwater vulnerability, with an additional c. 11km mapped in areas of High vulnerability. It is noted that groundwater will be most vulnerable to potential effects in areas of High and Extreme vulnerability which are located in the Regionally Important Karst Aquifer or Gravel Aquifers.

9.11.4.16. It is confirmed that there are no karst features in the area of the wind farm site. However, a section of the proposed GCR is underlain by a Regionally Important Karst Aquifer as mentioned above. Several karst features are mapped in the vicinity of the route and are identified in Figure 9-11 of the EIAR and described as follows:

- A spring is mapped at the source of the Tullaroan Stream, c. 1.8km to the north-west;
- A spring is mapped c. 300m west of the route along the Arigna River;
- A spring is mapped in the immediate vicinity of the GCR in the townland of Curraghduff;
- A spring is mapped in the valley of the Nuenna River c. 600m east of the GCR; and,

- Several enclosed depressions, springs and swallow holes are located c. 1.4km south-west (should read south-east) of Ballyragget.

Water Framework Directive

9.11.4.17. Local Groundwater Body (GWB) status information is summarised in Table 9-16 of the EIAR. The Kilmanagh Gravels, Kilkenny-Ballynakill Gravels and Ballingarry GWBs all achieved 'Good' status in all 3 no. WFD cycles. Meanwhile, the Durrow GWB which underlies the proposed GCR achieved 'Poor' status in the last 2 no. WFD cycles. In the latest cycle, this GWB achieved poor chemical status and is deemed to be "at risk" of failing to meet its WFD objectives. This GWB is listed as being under significant pressure from agriculture. A summary of the WFD status and risk result for Surface Water Bodies (SWBs) in the vicinity and downstream of the proposed development are shown in Table 9-17 of the EIAR. The Tullaroan Stream (_020 and _030 SWBs), Munster_030 SWB and King's (Kilkenny)_030 SWB downstream of the wind farm site all achieved 'Good' status in the latest WFD cycle. Meanwhile, the status of the SWBs along the proposed GCR range from 'Poor' to 'Good'. The Nuenna_020 SWB is of 'Poor' status whilst the Argina (Kilkenny)_010, Tullaroan Stream_010 and Nore_120 SWBs achieved 'Moderate' status. The other SWBs (Nore_130, _140 and _150) along the route were deemed to be of 'Good' status. A total of 3 no. SWBs in the vicinity of the proposed development were deemed to be 'at risk' of failing to meet their respective WFD objectives. These at risk SWBs are located along the GCR and include the Argina (Kilkenny)_010, Nuenna_020 and Nore_120 SWBs. The risk status of the other SWBs are either under review or 'not at risk'.

Designated Sites & Habitats

9.11.4.18. The wind farm is not located within any designated conservation site. However, there are downstream hydrological connections with:

- The River Barrow and River Nore SAC (Site Code: 002162), c. 5.9km downstream of the wind farm site and includes the lower reaches of the Tullaroan Stream.
- The River Nore SPA (Site Code: 004233), c. 14.1km downstream of the wind farm site and is hydrologically connected via the Tullaroan Stream, Munster River and King's River.

Other designated sites in close proximity to the wind farm site include:

- Ballykeefe Wood pNHA (Site Code: 000400), 1.8km south-east of the wind farm site (no hydrological connectivity).

9.11.4.19. It is also noted that the Nore surface water catchment is noted as being a Margaritifera Sensitive Area. In addition, the closest identified protected Salmonid waters are along the River Nore, c. 28km downstream of the wind farm site.

9.11.4.20. The proposed GCR also crosses the River Barrow and River Nore SAC, the River Nore SPA and the River Nore / Abbeyleix Woods Complex pNHA near Ballyragget. It is noted that all other watercourses draining the GCR also eventually discharge into these designated sites. Other designated sites in close proximity to the route include Inchbeg pNHA (Site Code: 000836).

Water Resources

9.11.4.21. The proposed wind farm site is mapped within the Outer Source Protection Area of the Callan Public Water Supply (PWS). A total of 5 no. turbines, spoil management areas, onsite substation, construction compounds, new roads and existing roads for upgrade within the site are mapped within this source protection area. In addition, c. 3.9km of the proposed GCR is mapped in this area. The source protection area associated with the Ballycallan Shale Group Water Scheme (GWS) and the Ballycallan Sand and Gravels GWS are mapped in the very south of the wind farm site and c. 150m of new proposed road is mapped within this area. The source protection area associated with the Ballycallan Limestone is mapped c. 900m south-east of the wind farm site. It is also noted that the proposed GCR (c. 1.1km) is mapped to overlie the source protection area associated with the Tullaroan GWS.

9.11.4.22. For surface water resources, the closest Drinking Water Protected Area (DWPA) downstream of the wind farm site is the Nore_220 SWB. This SWB is located c. 28km downstream of the site and downstream of the confluence of the King's and Nore rivers. The Nore_120 SWB in the vicinity of the proposed grid connection route is also listed as a DWPA.

9.11.4.23. The various groundwater and surface water receptors on the site are described in the below table.

Table: Receptor Sensitivity

Receptor	Description
Groundwater	- The Poor Bedrock Aquifer underlying the proposed wind farm site. This aquifer can be considered as being of Low Importance respectively, - The Regionally Important Gravel Aquifer at the proposed wind farm site. This overburden aquifer can be considered to be of Very High Importance, - The Poor Bedrock Aquifers, the Regionally Important Gravel Aquifers and the Regionally Important Aquifer – karstified (diffuse) along the proposed GCR. The Poor Bedrock Aquifer is of Low Importance whilst the Regionally Important Aquifers are of Very High Importance, - The WFD status of the GWBs underlying the proposed wind farm site (i.e. Ballingarry and Kilmanagh Gravels GWBs) and the Proposed GCR (Ballingarry, Kilmanagh Gravels, Durrow Karstic and Kilkenny-Ballynakill Gravels GWBs), - The Callan PWS and the Ballycallan Sand and Gravel GWS, BallyCallan Shale GWS and BallyCallan Limestone GWS in the vicinity of the proposed wind farm site, - The Tullaroan GWS in the vicinity of the proposed GCR; and, - Local private groundwater abstractions in the lands surrounding the proposed wind farm site.
Surface Water	- The Tullaroan Stream and its associated tributaries, the Munster River and the King's River downstream as far as Callan. These watercourses can be considered as being of Very High Importance (refer to Table 9-2) based on their assigned Q-ratings (Q4), - All watercourses along the proposed GCR including the Tullaroan Stream, Arigna, Nuenna and Nore Rivers and the Lisdowney Stream, - The WFD status of all SWBs downstream of the proposed project; and, - The Nore_120 DWPA in the vicinity of the proposed GCR.
Designated Site	- The River Barrow and River Nore SAC, - The River Nore SPA, - River Nore / Abbeyleix Woods Complex pNHA; and, - Inchbeg pNHA.

Potential Effects

9.11.4.24. Potential significant effects of the development, as identified in the EIAR, are summarised in the below table.

Table: Summary of Potential Effects

<i>Do Nothing</i>	The wind farm site will continue to function as it does at present, with no changes made to the current land-use of commercial forestry and agricultural land. Land use along the proposed GCR would remain unchanged from its present condition. In terms of hydrology, the existing surface water drainage regime would continue to function and may be extended in places. The impact of this is considered neutral in the context of the EIAR.

	If the proposed development were not to proceed, the opportunity to capture an even greater part of County Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to further contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would also be lost. Furthermore, there would be a lost opportunity to create a riparian buffer zone comprising native species adjacent the Tullaroan stream within the wind farm site, increase the ecological condition of over 3.5km of existing hedgerow and to plant c. 270m of new native hedgerow. In the Do Nothing Scenario, there may be a slight decrease in average annual rainfall at the wind farm site as a result of climate change and any change in annual rainfall will result in changes in local recharge and runoff volumes.
Construction Phase	Tree Felling A total of 4.7ha of forestry will have to be permanently felled within and around the footprint of T07 and its associated infrastructure. Felling of trees along hedgerows will also be completed at the site to facilitate the construction of the wind farm. Potential effects can include: - Exposure of soil and subsoils due to vehicle tracking, and skidding or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff and enter surface watercourses; - Entrainment of suspended sediment in watercourses due to vehicle tracking through watercourses; - Damage to roads resulting in a source of suspended sediment which can become entrained in surface water runoff and enter surface watercourses; - Release of sediment attached to timber in stacking areas; and, - Nutrient release. Earthworks Resulting in Suspended Solids Entrainment in Surface Waters Activities include access road construction, turbine foundation/hardstanding construction, construction compound construction, met mast construction, substation construction, the opening of the proposed onsite borrow pit, storage of spoil in the designated spoil management areas and the underground cabling works will require varying degrees of earthworks resulting in excavation of soils and subsoils. In addition, the planting of the riparian buffer zone (c. 1.7Ha) on the banks of the Tullaroan stream will have the potential to release suspended solids to surface waters. Potential sources of sediment-laden water include: - Drainage and seepage water resulting from excavations; - Stockpiled excavated material providing a point source of exposed sediment; and, - Erosion of sediment from emplaced site drainage channels. These activities can result in the release of suspended solids to surface water and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Works Within the Hydrological Buffer Zones within the Proposed Wind Farm site The following work areas encroach upon the delineated buffer zones: - A total of 6 no. watercourse crossings over natural watercourses (2 no. crossings along existing roads proposed for upgrade and 4

	no. new proposed crossings), (does not include crossings of drainage features as discussed below) - Cut and fill associated with new proposed roads and existing roads to be upgraded, - The construction of the proposed onsite 38kV substation associated with the proposed GCR which is located within the 50m buffer zone associated with a stream which was observed during site walkover surveys that was not recorded on the EPA databases; - The western section of the temporary construction compound associated with the onsite substation and, - Tree felling (c. 0.016ha of forestry and c. 398m of hedgerow/tree lines). Due to the close proximity of these works to rivers and streams, these works could result in the release of suspended solids to surface waters and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Additionally, there are several crossings over manmade forestry and agricultural drains. Excavation Dewatering Some groundwater/surface water seepages will likely occur in turbine foundation excavations, substation compound excavations, sections of the internal cabling trenches and borrow pit excavation, and this will create additional volumes of water to be treated by the runoff management system. Groundwater inflows will likely be small. However, larger volumes of water may occur where excavations encounter granular subsoils. Inflows will require management and treatment to reduce suspended sediments. With respect to the proposed GCR, some minor groundwater/surface water seepages will also occur in shallow trench excavations, and this will create additional volumes of water to be treated by the drainage management system. Inflows will require management and treatment to reduce suspended solids. Groundwater Levels During Excavation Works Dewatering of the borrow pit (as required) and other deep excavations (i.e. turbine foundations) have the potential to impact on local groundwater levels and flows. However, it is stated that temporary reductions in groundwater levels by short duration and transient dewatering works will be very localised and of small magnitude due to the nature and permeability of the local subsoil and bedrock geology. Any effects will be temporary and will be contained within the lower areas of the proposed wind farm site i.e. within the valley of the Tullaroan Stream. No groundwater level impacts are predicted from the construction of the Proposed GCR, access roads, substation compound or met mast due to the shallow nature of the excavation (i.e. 0 – c.1.2m). Potential Release of Hydrocarbons During Construction and Storage - Accidental spillage during refuelling of construction plant with petroleum hydrocarbons is a significant pollution risk to groundwater, surface water and associated ecosystems, and to terrestrial ecology. - The accumulation of small spills of fuels and lubricants during routine plant use can also be a pollution risk. - Hydrocarbon has a high toxicity to humans, and all flora and fauna, including fish, and is persistent in the environment

	- The potential release of hydrocarbons can occur during the works within the proposed wind farm site and during works along the proposed GCR. - Whilst no oils are around the cables, a lubricant will be used during cable pulling. The lubricant to be used is Techlude PHD which is a pourable, non-flammable, non-toxic and substantially biodegradable water-based product that does not pose a threat to the environment. <i>Use of Cement-Based Products</i> - Concrete and other cement-based products are highly alkaline and corrosive and can have significant negative impacts on water quality. - Entry of cement-based products into the site drainage system, into surface water runoff, and hence to surface watercourses or directly into watercourses represents a risk to the aquatic environment. - Batching of wet concrete at the proposed wind farm and proposed GCR and washing out of transport and placement machinery are the activities most likely to generate a risk of cement-based pollution. - Placed concrete in foundations (turbine, met mast and substation foundations) and the use of leanmix concrete along the proposed GCR can also have minor local effects on groundwater quality over time. <i>Wastewater</i> - Release of effluent from on-site temporary wastewater treatment systems has the potential to impact on groundwater and surface water quality if site conditions are not suitable for an on-site percolation unit. <i>Morphological Changes to Surface Watercourses within the Proposed Wind Farm</i> There are a total of 6 no. watercourse crossing locations over natural watercourses (rivers and streams) which are described in Section 9.5.2.9 of the EIAR. In addition to the natural watercourses, it is stated that there are manmade agricultural and forestry drains within the site. However, these are not considered to be a significant constraint and can be rerouted around the wind farm infrastructure and/or integrated into the proposed drainage design. It is noted that several of these drains are deeply incised and will be culverted where road crossings are proposed. <i>Morphological Changes to Surface Watercourses along the Proposed GCR</i> As detailed in Section 9.3.3.2 of the EIAR, the proposal entails 13 no. crossings over watercourses, comprising 12 no. existing bridge/culvert crossings and 1 no. new proposed crossing. The potential proposed crossing methods include: - Crossing Using Standard Trefoil Formation Over – Option A, - Flatbed Formation Under– Option B, - Flatbed Formation over– Option C, and, - Horizontal Directional Drilling – Option D. <i>Local Private Groundwater Well Supplies</i> The biggest risk to groundwater wells will be from groundwater contamination due to the accidental release of hydrocarbons and cement-based products. With regard to private wells, there are a limited number of

	dwelling which are located in the immediate vicinity of the proposed wind farm site. There is an inhabitable dwelling located within the proposed wind farm site, c. 600m south-west of T02. Possible inhabitable dwellings are also located c. 700m to the west/southwest of T07 and c. 1.2km south of T07. Siltbuster Potential overdosing with chemical agents means there is a perceived risk of chemical carryover in post treatment water which could result in negative effects on downstream water quality. It is noted that the Siltbuster system will not be used under normal conditions during the construction phase. Directional Drilling along the Proposed GCR Surface water quality effects on local watercourses may occur during drilling and groundworks associated with potential directional drilling at the watercourse crossings along the proposed GCR to the existing Ballyragget 110kV substation. Piled Foundations The proposed piling works potentially pose a threat to groundwater quality in the underlying regional groundwater system and also could potentially create a pathway for upward migration of groundwater to the surface. It is noted that piling foundations may be required at T7 (as no trial pit data is available at that location due to existing tree cover) and any requirement for piling at T7 will be determined during post-consent ground investigations. The following potential scenarios arise in respect of potential piling works at T7: - Creation of preferential pathways, through lower permeability subsurface layers (if an aquitard such as silts and clays i.e. glacial till is present), to allow downward flow into the underlying bedrock aquifer; - Creation of preferential pathways, through a low permeability subsurface layer (an aquitard such as silts and clays i.e. glacial till – if present), to allow upward migration of groundwater to the surface, thus potentially altering local hydrochemistry and therefore vegetation at the surface; and, - Creation of a blockage to regional groundwater flow within the underlying aquifer due to placement of pile clusters. Karst Features There are some karst features mapped by the GSI along the proposed GCR. In total c. 11km of the proposed GCR is underlain by a Regionally Important Aquifer – karstified (diffuse). Any potential alteration in local groundwater quality or surface water quality has the potential to impact the Karstic Bedrock Aquifer. Downstream Surface Water Abstractions Any potential surface water quality effects which may arise as a result of the proposed GCR may have the potential to impact on the Ballyragget water supply. Public and Group Groundwater Supplies <u>Callan PWS</u> The Source Protection Area associated with this PWS overlaps with various components of the windfarm infrastructure. Any potential local water quality/quantity effects could potentially affect this PWS. <u>BallyCallan Shale and BallyCallan Sand and Gravels GWSs</u>

	The Source Protection Areas associated with these GWSs are located c. 850m south of the nearest proposed turbine location (T07). Road infrastructure is located within the GWSs. Any potential local water quality/quantity effects could potentially affect these GWS (however, it is stated that the scale of any potential effect is limited by the scale of the works proposed within the source protection areas). <u>Tullaroan GWS</u> The Source Protection Area associated with this GWS overlaps with c. 1.1km of the proposed GCR. Any potential local water quality/quantity effects along this section of the GCR could potentially affect this GWS (however the scale of any potential effect is limited by the scale of the works proposed within the source protection area). It is noted that this GWS is located upgradient of the proposed wind farm site. In terms of the <u>BallyCallan Limestone GWS</u>, there is no potential hydrological/hydrogeological connection between the proposed wind farm site and this GWS. Therefore, it is scoped out of further assessment. <i>Hydrologically Connected Designated Sites</i> The River Barrow and River Nore SAC, the River Nore SPA, River Nore/Abbeyleix Woods Complex pNHA and the Inchbeg pNHA are hydrologically connected with the Site (proposed wind farm and proposed grid connection). The surface water connections from the site could transfer poor quality surface water that may affect the conservation objectives of these designated sites. <i>Surface Water and Groundwater WFD Status</i> The EU Water Framework Directive (2000/60/EC) requires that all member states protect and improve water quality in all waters, with the aim of achieving good status by 2027 at the latest and any new development must ensure that this fundamental requirement of the Directive is not compromised. A detailed WFD Compliance Assessment Report has been completed and is included in Appendix 9-3 of the EIAR.
Operational Phase	<i>Progressive Replacement of Natural Surface with Lower Permeability Surfaces</i> Progressive replacement of the vegetated surface with impermeable surfaces could potentially result in an increase in the proportion of surface water runoff reaching the surface water drainage network. This could potentially increase runoff from the site and increase flood risk downstream of the proposed development. <i>Runoff Resulting in Entrained Sediment</i> Some minor maintenance works may be completed, such as maintenance of site entrances, internal roads and hardstand areas. These minor activities could, however, result in the release of suspended solids to surface water and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Potential effects could be significant if not mitigated against. <i>Release of Hydrocarbons</i> Accidental spillage during refuelling of operational plant with petroleum hydrocarbons is a significant pollution risk to groundwater, surface water and associated ecosystems, and to terrestrial ecology. During maintenance works there is a small risk associated with release of hydrocarbons from site vehicles, although it is not envisaged that any significant refuelling works will be undertaken on site during the operational phase. Furthermore, transformers within each of the 7 no. turbines will hold

	oil. Any leakage of oil could impact local surface and groundwater quality. Oil will also be stored within the substation. Water Supply at Substation The proposed groundwater well and associated extraction has the potential to effect local groundwater levels in the surrounding lands. Surface Water and Groundwater WFD Status The qualitative status of the receiving SWBs and GWB will not be altered by the proposed development. Public and Group Water Supplies No potential for effects on the BallyCallan Shale Group Water Scheme (GWS), the BallyCallan Sand and Gravels GWS, the Tullaroan GWS or the Callan PWS are anticipated.
<i>Decommissioning Phase</i>	The potential effects will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works. It will be possible to reverse or at least reduce some of the potential effects caused during construction, and to a lesser extent operation, by rehabilitating constructed areas such as turbine foundations and hard standing areas. This will be done by covering with topsoil to encourage vegetation growth and reduce run-off and sedimentation. The electrical cabling connecting site infrastructure to the onsite 38kV substation will be removed, while the ducting itself will remain in-situ. This is considered to have less of a potential environmental impact, in terms of soil exposure, and thus on the possibility of the generation of suspended sediment which could enter nearby watercourses. The turbines will be removed by disassembling them in a reverse order to their erection. This will be completed using cranes as used in their construction. They will then be transported off-site along their original delivery route. The disassembly and removal of the turbines will not have an impact on the hydrological/hydrogeological environment at the site. Other impacts such as possible soil compaction and contamination by fuel leaks will remain but will be of reduced magnitude than the construction phase because of the smaller scale of the works and reduced volumes on-site. A Decommissioning Plan has been prepared (Appendix 4-5 of the EIAR), the detail of which will be agreed with the local authority prior to any decommissioning.
<i>Cumulative Effect</i>	Section 9.5.7 of the EIAR presents an assessment of the potential cumulative effects associated with the proposed development and other developments (existing and/or proposed) on the hydrological and hydrogeological environment. The primary potential for cumulative effects will occur during the construction phase as this is when earthworks and excavations will be undertaken at the Site. A cumulative hydrological and hydrogeological study area is provided in Figure 9-17 of the EIAR and is delineated as follows: - The mapped extent of the Kilmanagh Gravels GWB, - A quantitative assessment based on flow volumes obtained from the EPA HydroTool Nodes downstream of the proposed wind farm site. This assessment concludes that the due to dilution no hydrological cumulative effects will occur beyond EPA Hydrotool

	Node 15_1733 on the King's River immediately upstream of Callan. At this location the King's River has a total upstream catchment area of 20,000ha. There will be no potential for cumulative effects beyond this cumulative study area due to increases in flow volumes (as the catchment area increases) and increasing distance from the wind farm site. - A further assessment has been completed within a 200m zone of the proposed GCR. It is noted that a 200m buffer zone is an appropriate scale when considering potential cumulative effects on the water environment due to the shallow nature of the underground cabling connection trench. The assessment considers cumulative effects of the proposed development with agriculture, forestry, other wind farms developments, other wind farm GCRs, EPA Licenced Wastewater Treatment Facilities and other development.

Mitigation

9.11.4.25. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

Construction Phase	<i>Tree Felling</i> <u>Mitigation by Avoidance</u> There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. The setback distance from sensitive hydrological features means that adequate room is maintained for the proposed mitigation measures to be properly installed and operate effectively. <u>Mitigation by Design</u> Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out in detail in Section 9.5.2.1. This includes - Silt Traps - Silt traps will be strategically placed down-gradient within forestry drains near streams. The main purpose of the silt traps and drain blocking is to slow water flow, increase residence time, and allow settling of silt in a controlled manner. - Pre-emptive Site Drainage Management - The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. - Timing of Proposed Project Felling Works - Felling will only be carried out during periods of no or low rainfall, and therefore minimum runoff rates. - Drain Inspection and Maintenance. - Surface Water Quality Monitoring - Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. <i>Earthworks Resulting in Suspended Solids Entrainment in Surface Waters</i> <u>Mitigation by Avoidance</u> The avoidance of sensitive hydrological features where possible, by application of suitable buffer zones (i.e. 50m to main watercourses). All of the key areas of the proposal are located significantly away from the

	delineated 50m watercourse buffer zones with the exception of the proposed 38kV substation, the upgrading of an existing watercourse crossing, new watercourse crossings and upgrades to existing site access tracks. Additional control measures, which are outlined further on in this section, will be undertaken at these locations. The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operate effectively. <u>Mitigation by Design (Wind Farm)</u> For the proposed wind farm, mitigation includes source controls, in-line controls and treatment systems which are set out in detail in Section 9.5.2.2 of the EIAR. The main elements of interaction with existing drains will be as follows: - Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the site drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion; - Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; - Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through settlement ponds and buffered outfalls onto vegetated surfaces; - Buffered outfalls which will be numerous over the site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site; and, - Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters. <u>Grid Connection</u> The majority of the route is >50m from any nearby watercourse, sections within 50m of the route are confined to existing watercourse crossings at bridges and culverts and a new proposed crossing over the River Nore. It is proposed to limit any works in any areas located within 50m of any watercourse/waterbody including the stockpiling of excavated soils and subsoils. There is a total of 13 no. watercourse crossings (10. no. crossings over EPA mapped watercourses and an additional 3 no. crossings over watercourses which are not included in the EPA database) along the route. All the crossings are existing bridges and culverts along the public road. No in-stream works are required at any of these crossings, however due to the proximity of the streams to the construction work at the crossing locations, there is a potential for surface water quality impacts during trench excavation work. A constraint/buffer zone will be maintained for all crossing locations where possible, whereby all watercourses will be fenced off. In addition, measures which are outlined below will be implemented to ensure that silt laden or contaminated surface water runoff from the excavation

	work does not discharge directly to the watercourse. Additional mitigation measures described in full in Section 9.5.2.2 include: - Pre-commencement Temporary Drainage Works - all existing land and forestry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps, clean water interceptor drains will be installed upgradient of the works areas, check dams/silt fence arrangements (silt traps) will be placed in all existing drains that have surface water flows and a double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone, - Silt Fences - silt fences will be emplaced within drains down-gradient of all construction areas. Double silt fences will be placed within drains down-gradient of all construction areas inside the hydrological buffer zones, - Silt Bags - used where small to medium volumes of water need to be pumped from excavations, - Settlement Ponds - are designed for 11hr or 24hr retention times used to settle out medium silt (0.006mm) and fine silt (0.004mm) respectively, - Level Spreaders and Vegetation Filters - the purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. - Water Treatment Train – a final line of defence will be provided by a water treatment train such as a “Siltbuster”, - Pre-emptive Site Drainage Management, - Management of Runoff from the Spoil Management Areas - the vegetative topsoil layer of the spoil management areas will be rolled back to facilitate placement of excavated spoil up to a maximum height of 1.0 metres, following which the vegetative-top soils layer will be reinstated. Where this is not possible, spoil management areas will be sealed with a digger bucket and seeded as soon possible to reduce sediment entrainment in runoff. An interceptor drain will be installed upslope of the identified spoil management areas to divert any surface water away from these areas where necessary, silt fences and double silt-fences will be emplaced down-gradient of the designated spoil management areas and will remain in place throughout the entire construction phase, or until reseeded has been established to a sufficient level, drainage from the borrow pit will be directed to settlement ponds as required or will overflow through controlled overflow pipes and discharge from the borrow pit will be intermittent and will depend on preceding rainfall amounts. - Timing of Site Construction Works - only be carried out during periods of low rainfall, and therefore minimum runoff rates. - Monitoring - an inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. - Allowance for Climate Change - the settlement ponds are designed for 1 in 10 years flows with built in redundancy (+20%) to account for climate change effects on rainfall. <i>Works Within the Hydrological Buffer Zones within the Proposed Wind Farm site</i> <u>Mitigation by Avoidance</u> The proposed wind farm layout has been designed to limit the amount of

	works within the delineated hydrological buffer zones associated with natural watercourses. Where possible, the proposed design utilises the existing road network within the site. <u>Mitigation by Design</u> - Double or triple silt fences will be placed downgradient of all work locations within the hydrological buffer zones; - All works will be completed during the dry summer months unless otherwise agreed with IFI and works will be postponed in the event of rainfall; and, - The hedgerow along the watercourse to the west of the substation will be retained. This watercourse recharges to the sand and gravel aquifer downstream of the substation and does not directly discharge into the Tullaroan Stream. <i>Excavation Dewatering</i> Management of groundwater seepages and subsequent treatment prior to discharge into the drainage network includes: - Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; - If required, pumping of excavation inflows will prevent build-up of water in the excavation; - The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; - The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; - There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; - Daily monitoring of excavations by the Environmental Clerk of Works will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken; and, - A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available on-site for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. <i>Groundwater Levels During Excavation Works</i> The proposed borrow pit location is underlain by a Poor Bedrock Aquifer which is unproductive in terms of groundwater flow. It is stated that the topographical (location on the side of a hill) and hydrogeological setting of the proposed borrow pit location means no significant groundwater dewatering will be required during the excavation of the borrow pit. Moreover, direct rainfall and surface water runoff will be the main inflows that will require water volume and water quality management. Dewatering is typically defined as a requirement to temporarily drawdown the local groundwater table by means of over pumping, e.g. as would be required for the operation of a bedrock quarry in a valley floor. It is contended that this example is very different in scale and operation from the proposed operation of a temporary shallow borrow pit on the side of a hill. The reasoning for this is set out in Section 9.5.2.5 of the EIAR. It is noted that some temporary dewatering may be required where excavations on the lower ground (i.e. in the valley of the Tullaroan Stream) encounter granular subsoils associated with the Kilmanagh Gravels GWB. However, any dewatering works will be temporary, and no significant or

	permanent excavations are proposed in this area of the site. There will be no significant effect on groundwater quantity within the sand and gravel aquifer as the water will be returned to the aquifer once it has been treated via the wind farm drainage system. Potential Release of Hydrocarbons During Construction and Storage - All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the site. - On-site re-fuelling will be undertaken using a double skinned bowser or a refuelling truck with spill kits kept onboard; - Only designated trained operatives will be authorised to refuel plant on-site; - Refuelling or maintenance of machinery will not occur within 100m of a watercourse; - Fuels stored on Site will be minimised; - Any diesel or fuel oils stored at the temporary construction compound will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity; - The plant used will be regularly inspected for leaks and fitness for purpose; and, - An emergency plan for the construction phase to deal with accidental spillages will be contained within the CEMP. Use of Cement-Based Products - No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place; - Where possible pre-cast elements for culverts and concrete works will be used; - Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds; - Weather forecasting will be used to plan dry days for pouring concrete; - The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event; and, - At turbine foundations, sand blinding, DPM, and lean-mix blinding are used to vertically contain the concrete. While the concrete is contained laterally by temporary/permanent shuttering. The concrete cures within 72hrs. Wastewater - A self-contained port-a-loo with an integrated waste holding tank will be used at each of the site construction compounds (and along the proposed GCR as required), maintained by the providing contractor, and removed from site on completion of the construction works; - Water supply for the site office and other sanitation will be brought to site and removed after use from the site to be discharged at a suitable off-site treatment location; and, - No water or wastewater will be sourced on the site, nor discharged to the site

	<i>Morphological Changes to Surface Watercourses within the Proposed Wind Farm</i> Only 4 no. new crossings are proposed. This design prevents the unnecessary disturbance of the existing site drainage network prevents the requirement for widespread instream works across the site. Mitigation includes: - The proposed new stream crossings and upgrade of an existing crossing will be clear span bridge crossings and the existing banks will remain undisturbed. No in-stream excavation works are proposed at these locations. Abutments will be constructed from precast units combined with in-situ foundations; - All guidance / mitigation measures required by the OPW and/or the Inland Fisheries Ireland (IFI) is incorporated into the design of the proposed crossings; - All drainage measures will be installed in advance of the works; - Plant and equipment will not be permitted to track across the watercourse; - Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge; - Once the foundations have been completed at both sides of the watercourse, the pre-cast concrete box culvert will be installed using a crane and there will be no contact with the watercourse; Where the box culvert is installed in sections, the joint will be sealed to prevent granular material entering the watercourse; - As a further precaution, near stream construction work, will only be carried out during the period permitted by IFI for in-stream works according to the IFI (2016) guidance document "Guidelines on protection of fisheries during construction works in and adjacent to waters", i.e., July to September inclusive; - Where works are necessary inside the 50m buffer, double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase; and, - All new river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent. <i>Morphological Changes to Surface Watercourses along the Proposed Grid Connection Cabling Route</i> - A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone; - Additional mitigation measures for the GCR crossing works are prescribed in Section 9.5.2.10 of the EIAR. Mitigation for HDD is set out in further detail below. <i>Local Private Groundwater Well Supplies</i> - All groundwater flow within the site will be towards the valley of the Tullaroan Stream. On the elevated ground in the east of the site, groundwater flowpaths will be short (c. 300m) due to the low permeability glacial till subsoils and the Poor Bedrock Aquifer. In these areas of the site, groundwater flow will follow local topography, flowing to the southwest, and will discharge into the local surface water streams which flow downslope into the Tullaroan Stream. Therefore, any private dwellings to the north and east of the site are located upgradient of the proposed works and have no potential to be impacted.

	- There is 1 no. farmhouse located within the site, c. 600m south-west of T02. Whilst a potential groundwater well at this location may be downgradient of the proposed works, the separation distance is sufficient from the nearest proposed turbine location given the short groundwater flowpaths in this area of the site. - Similarly, due to the local topography, there is no potential for effects on any groundwater sources to the west of the site, including the closest inhabitable dwelling to T07 (c. 700m to the west/south-west). T07 is located downgradient from these properties and there is no potential for effects, - In the valley of the Tullaroan Stream, groundwater and surface water will interact as the local sand and gravel aquifer is unconfined in this area. The closest downgradient dwellings are situated c. 1.2km south of the nearest turbine (T07). Mitigation is provided in the preceding sections of this EIAR chapter to deal with typical construction phase surface and groundwater hazards such as oils and fuels. Siltbuster - The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur; - Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system; - Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment; - Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and, - Use of biodegradable chemical agents can be used at very sensitive sites (i.e. adjacent to SACs). Directional Drilling along the Proposed GCR The various mitigation measures are set out in detail in Section 9.5.2.13 of the EIAR. The various measures also include a 'Fracture Blow-out (Frac-out) Prevention and Contingency Plan'. Piled Foundations The proposed mitigation measures designed for the protection of downstream surface water quality and groundwater quality will be implemented at all construction work areas. For the piling works, the following measures are noted: - Strict QA/QC procedures for piling works will be followed; - Piles will be kept vertical during piling works; - Good workmanship will be employed during all piling works; and, - Where required use bentonite seal to prevent upward/downward movement of surface water/groundwater. An Impact Assessment Associated with Potential Piling at T7 and with all other turbine locations has been provided within Section 9.5.1.14 of the EIAR. Karst Features - Site drainage will be put in place in order to prevent any poor quality drainage water reaching the local karst features (Section

	9.5.2.2 and 9.5.2.10). - Mitigation measures relating to hydrocarbons, cementitious materials and wastewater disposal as prescribed in Section 9.5.2.6 (hydrocarbons), Section 9.5.2.7 (cement-based products) and Section 9.5.2.8 (wastewater) will provide adequate protection to groundwater and surface water quality and will ensure that groundwater quality will not be impacted. - It is noted that potential effects on the underling karst aquifer are limited because: - In limestone areas, there are no mapped karst features in the immediate vicinity of the proposed GCR; and, - The proposed works are minor and transient in nature. <i>Downstream Surface Water Abstractions</i> For the Ballyragget water supply, the source of the raw water source is an infiltration gallery adjacent to the River Nore. There is no direct surface water abstraction from the River Nore and therefore the source is less sensitive to water quality in the River Nore. It is considered that due to the prescribed mitigation measures set out in the preceding sections with respect to surface water quality, the nature of the source (i.e. infiltration gallery), and the minor and transient nature of the proposed works along the proposed GCR, any impacts, even in worst-case unmitigated scenarios, will be imperceptible with neutral impacts to the Ballyragget Public Water Supply. <i>Public and Group Groundwater Supplies</i> <u>Callan PWS</u> - The mitigation measures described in Section 9.5.2.1 (clear felling), Section 9.5.2.2 (suspended solids), Section 9.5.2.6 (hydrocarbons), Section 9.5.2.7 (cement-based products), Section 9.5.2.8 (wastewater) and Section 9.5.2.9 (morphological changes) will ensure the protection of water quality during the construction phase; - The proposed drainage design will ensure the recharge of attenuated and treated water to the sand and gravel deposits. <u>BallyCallan Shale and BallyCallan Sand and Gravels GWSs</u> - Mitigation measures for the protection of surface and groundwater water quality will be implemented during the construction phase of the proposed development. <u>Tullaroan GWS</u> - As above. <i>Hydrologically Connected Designated Sites</i> - Mitigation measures relating to the protection of surface water drainage regimes and surface water quality within the proposed wind farm site have been detailed in Section 9.5.2.1 (tree felling), Section 9.5.2.2 (suspended solids), Section 9.5.2.6 (hydrocarbons), Section 9.5.2.7 (cement-based products), Section 9.5.2.8 (wastewater) and Section 9.5.2.9 (morphological changes). - Mitigation measures have also been proposed along the proposed grid connection in Section 9.5.2.10 and 9.5.2.13. - Similarly, mitigation measures for the protection of groundwater quantity and quality have been detailed in Section 9.5.2.5 (groundwater levels), Section 9.5.2.6 (hydrocarbons), Section

	9.5.2.7 (cement-based products), Section 9.5.2.8 (wastewater). Surface Water and Groundwater WFD Status - As above.
Operational Phase	Progressive Replacement of Natural Surface with Lower Permeability Surfaces - Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader; - Swales/road side drains will be used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling; - On steep sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off the road into swales/road side drains; - Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock; - Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, - Settlement ponds have been designed in consideration of the greenfield runoff rate. Runoff Resulting in Entrained Sediment - Mitigation measures for sediment control are the same as those outlined above for the construction phase. Release of Hydrocarbons - Onsite re-fuelling of normal operational vehicles will not be carried out during the operational phase of the development. These vehicles will be refuelled offsite; - Fuels stored on site will be minimised and any hydrocarbons stored on-site will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity; - The substation will be bunded appropriately to the volume of oils likely to be stored, and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; - Oil in the turbine transformers will be fully bunded within the enclosed turbine and as such, there is no potential pathway to the water environment i.e. the pathway has been blocked; - Any plant used during the operational phase will be regularly inspected for leaks and fitness for purpose; and, - Spill kits will be available to deal with accidental spillages. Water Supply at Substation No mitigation proposed. The abstraction rate for the proposed groundwater well at the substation will be comparable to a domestic well, with a well supplying a single household typically abstracting less than 1m³ /day. The well is proposed in a regionally important gravel aquifer which forms part

	of the Kilmanagh Gravels GWB. Due to the proposed abstraction rate, no effects on local groundwater levels will occur. Surface Water and Groundwater WFD Status There is no direct discharge from the proposed development to downstream receiving waters or groundwater. Mitigation for the protection of surface water and groundwater during the operational phase will ensure SWBs and GWB status qualitative status is not altered. Public and Group Water Supplies Mitigation for the protection of surface water and groundwater during the operational phase will ensure that the qualitative status of the SWBs, local PWS and GWS will not be altered by the proposed development.
Decommissioning Phase	Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures. A Decommissioning Plan has been prepared (Appendix 4-5), the detail of which will be agreed with the local authority prior to any decommissioning. It is indicated that the Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time.

Residual Effects

9.11.4.26. The residual effects of the proposed development are summarised in the below table.

Table: Residual Effects

Construction Phase		
Activity	Receptor	Residual Effect
Tree Felling	Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the proposed wind farm site.	Negative, imperceptible, indirect, temporary, likely effect on downstream watercourses and associated water-dependent ecosystems.
Earthworks Resulting in Suspended Solids Entrainment in Surface Waters	Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the proposed wind farm site.	Negative, imperceptible, indirect, short term, likely effect on water quality, and water-dependant ecosystems downstream of the proposed wind farm site and proposed GCR.
Works Within the Hydrological Buffer Zones within the Proposed Wind Farm site	Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the proposed wind farm site.	Negative, imperceptible, indirect, short term, likely impact on down gradient watercourse and water-dependant ecosystems.
Excavation Dewatering	Wind Farm: Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the site. Grid Connection: All watercourses in the vicinity of the route including the Tullaroan Stream, the Arigna, Nuenna and Nore rivers, the Lisdowney	Negative, imperceptible, indirect, short term, unlikely impact on local surface watercourses and associated water-dependent ecosystems.

	Stream and other small watercourses and associated water-dependent ecosystems.	
Groundwater Levels During Excavation Works	Groundwater levels within the underlying Ballingarry GWB and the Kilmanagh Gravels GWB.	Negative, imperceptible, direct, short term, unlikely effect on groundwater levels.
Potential Release of Hydrocarbons During Construction and Storage	Wind Farm: Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the site. Grid Connection: All watercourses in the vicinity of the route including the Tullaroan Stream, the Arigna, Nuenna and Nore rivers, the Lisdowney Stream and other small watercourses and associated water-dependent ecosystems.	Negative, imperceptible, indirect, short term, unlikely impact to local groundwater quality. Negative, imperceptible, indirect, short term, unlikely impact to surface water quality.
Use of Cement-Based Products	As above.	Negative, imperceptible, indirect, short term, unlikely effect on surface and groundwater quality.
Wastewater	As above.	Negative, imperceptible, indirect, temporary, unlikely effect on surface water or groundwater quality.
Morphological Changes to Surface Watercourses within the Proposed Wind Farm	Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the proposed wind farm site.	Negative, imperceptible, direct, long-term, unlikely effect on downstream water quality and aquatic habitats.
Morphological Changes to Surface Watercourses along the Proposed GCR	All watercourses in the vicinity of the proposed GCR including the Tullaroan Stream, the Arigna, Nuenna and Nore rivers, the Lisdowney Stream and other small watercourses and associated water-dependent ecosystems.	Negative, imperceptible, direct, long term, likely effect on surface water flows and surface water quality.
Local Private Groundwater Well Supplies	Down-gradient groundwater supplies (groundwater wells).	Negative, imperceptible, indirect, long-term, unlikely effect in terms of quality or quantity on local private groundwater abstractions.
Siltbuster	Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the proposed wind farm site.	Negative, imperceptible, indirect, temporary, unlikely effect on downstream water quality.
Directional Drilling along the Proposed GCR	All watercourses and associated water-dependent ecosystems downstream of the proposed GCR.	Negative, imperceptible, indirect, temporary, likely effect on surface water in the downstream watercourses.
Piled Foundations	Groundwater quality in the underlying GWBs and groundwater hydrochemistry.	Negative, imperceptible, indirect, short term, unlikely effect on groundwater flow, and ground quality/peat water hydrochemistry.
Karst Features	Local karst features and the	Indirect, negative,

	Regionally Important Karst Aquifer.	imperceptible, short-term and unlikely.
Downstream Surface Water Abstractions	Ballyragget Water Supply.	Negative, imperceptible, indirect, short term, unlikely effect on surface water abstractions.
Public and Group Groundwater Supplies	Callan PWS, BallyCallan Shale, BallyCallan Sand and Gravels and Tullaroan GWSs	Negative, imperceptible, indirect, short term, unlikely effect on local public and group water supplies.
Hydrologically Connected Designated Sites	Down-gradient water quality with the River Barrow and River Nore SAC, the River Nore SPA, River Nore/Abbeyleix Woods Complex pNHA and the Inchbeg pNHA.	Negative, imperceptible, indirect, short term, unlikely effect on downstream designated sites.
Surface Water and Groundwater WFD Status	WFD status of downstream surface water bodies and underlying GWBs.	No residual effect on Groundwater Body WFD status will occur. No residual effect on Surface Water Body WFD status will occur.
Operational Phase		
Activity	Receptor	Residual Impact
Progressive Replacement of Natural Surface with Lower Permeability Surfaces	Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the proposed wind farm site.	Neutral, indirect, long term, likely effect on down gradient streams/rivers.
Runoff Resulting in Entrained Sediment	Surface waters (Tullaroan Stream, Munster and King's rivers) and associated water-dependant ecosystems downstream of the proposed wind farm site.	Negative, imperceptible, indirect, temporary, unlikely effect on downstream water quality.
Release of Hydrocarbons	Groundwater and surface water at the proposed wind farm site and proposed GCR.	Negative, indirect, imperceptible, short term, unlikely effect on surface water quality and groundwater quality.
Water Supply at Substation	Groundwater levels	Direct, negative, imperceptible, permanent, likely effect on local groundwater levels.

Assessment

9.11.4.27. I have examined, analysed and evaluated Chapter 9 of the EIAR and all of the associated documentation and submissions on file in respect of hydrology and hydrogeology. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP and other relevant national planning guidelines. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation and advertisement which included additional details that are of direct relevance to this Chapter. I wish to point out now that a number of observers had raised concerns

regarding the name the Applicant had attributed to the principal watercourse that is located within the wind farm site. Whilst the Applicant has referred to it as the Tullaroan Stream, observers have noted that this watercourse is known to locals as the Oldtown, Kilmanagh or the Tullaroan River. In response to those concerns, the Applicant confirms that they utilised the EPA's nomenclature and it was never their intention to mislead any stakeholders. While I acknowledge the concerns raised, the Applicant's approach is reasonable in my view. To ensure consistency and avoid any confusion, this report refers to the watercourse as the Tullaroan Stream throughout.

9.11.4.28. As noted, the wind farm site is bisected by the Tullaroan Stream, with a number of secondary streams and drainage channels traversing the overall lands, the majority of which ultimately discharge into this principal watercourse. As part of the proposed development, a series of watercourse crossings will be required to facilitate site access and the delivery of infrastructure within the wind farm site. The crossings comprise a combination of culverted crossings at smaller streams and drainage features and the installation of a clear-span bridge structure for the crossing of the Tullaroan Stream between T6 and T7. Whilst the proposed GCR would be predominantly laid within the existing public road corridor, the works would also necessitate 13 no. watercourse crossings along the entire route, using a combination of either HDD or flatbed trench formations. As I have outlined, concerns have been raised by Third Parties regarding the potential for adverse impacts on both surface water and groundwater receptors during the construction and operational phases of the development. Overall, observers contend that the proposed development has the potential to give rise to significant environmental impacts, particularly when considered in conjunction with the hydrogeological sensitivity of the receiving environment and the reliance of local communities on groundwater-fed water supplies. It is contended that the Applicant has not adequately demonstrated that the mitigation measures as outlined in the EIAR would be sufficient to avoid significant adverse effects on ground and surface water quality, aquatic ecology, and associated drinking water resources. Significant concerns have also been raised regarding the potential for increased flood risk associated with the proposed development. Similar concerns have been echoed by the Planning Authority, and I will address the various issues below under the following sub-headings. I note that concerns have also been highlighted regarding the adequacy

of the onsite investigations to inform the Applicant's assessment. I note that I have addressed this matter in my assessment of Chapter 8 of the EIAR above.

Ground and Surface Water Protection

9.11.4.29. A principal concern of the observers relates to the risk of surface water and groundwater pollution arising from the proposed works and the perceived inadequacy of the Applicant's mitigation measures. Particular concern has been expressed regarding the extensive excavation works associated with the borrow pit and turbine foundations, direct impacts to watercourses, drainage interventions and the potential for sediment release, hydrocarbon spills, concrete washout, or contamination associated with turbine construction and operation (i.e. gas, oils, chemical coatings). Third parties contend that the hydrological sensitivity of the receiving environment significantly elevates the risk of contamination pathways developing between construction areas and the underlying groundwater body, the on-site watercourses and downstream receptors.

9.11.4.30. I note that the Applicant has proposed a comprehensive suite of mitigation measures to protect surface water features across the various elements of the construction phase which I have summarised above. I have reviewed same and I am generally satisfied that these are tried and tested measures and once implemented and maintained, will ensure the protection of surface water quality across the site. I note that a 50m buffer zone has been proposed to be implemented around all EPA-mapped watercourses to mitigate potential impacts and I have outlined the locations of the various crossings in the below table. While the turbines and associated infrastructure are generally positioned outside these zones, a significant number of the watercourse crossings intersect them. Whilst the majority of these crossings are acceptable, I had initial concerns regarding the level of detail submitted for the crossing of the Tullaroan Stream and the rudimentary nature of the submitted plans. The Applicant was therefore requested to submit a site-specific plan and section diagram of the bridge crossing between T6 and T7. This was to clearly illustrate the relationship between the proposed clear span bridge and the new access roads on either side of the watercourse. Whilst updated drawings for this crossing have been submitted as part of the Applicant's FIR, they do not include details of the relevant mitigation measures to protect surface water quality as requested. As illustrated on the section diagrams,

it is proposed to be build up the road on either side of the river embankment to facilitate the bridge installation. Mitigation would typically include the installation of double or triple silt fences along the river embankment to reduce the risk associated with sediment laden run off entering the watercourse. As all concrete deliveries must enter the site from the south, these mitigation measures would be required to support both the bridge installation and the high volume of HGV traffic during construction. In this regard, it is my recommendation that a condition be included which requires the submission of an updated drawing for the watercourse crossing, these plans are to be prepared in conjunction with and signed off by the project ecologist and clearly identify the mitigation measures that are to be installed and maintained throughout the construction phase.

Table: Watercourse Crossings

Location	Feature
South of site entrance	Detail B1
East of T1	1 no. Culvert B2
South of T2	1 no. Culvert B2
South of T3	1 no. Culvert B2
West of T4	1 no. Culvert B2
North of T5	2 no. Culvert B2
East of T5	1 no. Culvert B2
South of T6	Detail B1
South-east of substation	Existing watercourse crossing to be upgraded
Crossing of Tullaroan Stream	Clear span bridge
South-east of T7	2 no. Culvert B2

9.11.4.31. Within the northern portion of the site, the Applicant has proposed 2 no. extensive spoil management areas. One of these areas is positioned to the north-west of T5 and encroaches within the buffer zone of an existing surface water feature. Whilst this is not an EPA mapped watercourse, it ultimately feeds into the Tullaroan Stream further to the south. I note that silt fencing has been proposed along the eastern extent of the spoil management area to mitigate any potential impacts. However, given its proximity to the surface water feature, it is my view that a condition be included which requires the submission of a section diagram to illustrate the relationship between the spoil management area and the surface water feature. Again, the details of which should be prepared in conjunction with the project ecologist. Similarly, the spoil management area to west of T4 has incorporated silt fencing along its southern extent given its siting relative to the EPA mapped watercourse. However, there is an existing surface water feature to its immediate east that drains towards this watercourse. The silt fencing

should therefore be extended along the entirety of its eastern boundary to mitigate any potential impact on the adjacent surface water feature. The drainage proposals for the remaining spoil management areas utilise a combination of upstream interceptor drains, downstream collector drains (with settlement ponds) and silt fencing and are acceptable in my view.

9.11.4.32. As noted above, the risks associated with the deeper excavations on site (i.e. borrow pit and turbine foundations) was highlighted by Third Parties and the Planning Authority throughout the assessment and appeal phase. It was opined that there was the potential for significant impacts to groundwater, particularly in the absence of detailed site investigations for T7. Similar concerns were noted with respect to the proposed borrow pit. Potential impacts associated with dewatering at these locations, its interaction with surface water receptors and inadequacy of the Applicant's mitigation strategy were also fundamental concerns. Having considered the application documents, I was also of the view that the absence of data prohibited an adequate assessment of the potential impacts on both groundwater quality and flow dynamics and surface water flows and quality at these locations. As part of the Applicant's FIR, further detailed site investigations were undertaken which included drilling additional monitoring wells at the proposed borrow pit and at a location in the vicinity of T7. In the case of T7, a slow water strike was encountered in the clay deposits at a depth of 5.5mbgl, with a more significant strike at 11.5mbgl in the underlying sand and gravel deposits. The Applicant contends that the results of the additional site investigation do not alter the conclusions presented in the EIAR, where both gravity and piled foundations were assessed. However, the additional data indicates that a piled foundation solution will most likely be implemented at T7, subject to confirmatory site investigation and detailed design. In the case of the Applicant's 'Bored Pile Foundation Detail' (Figure 4-7), piles with an indicative length of between c. 15-18m have been identified. The Applicant's consultant refers to the robust impact assessment in the EIAR for piled foundations at T7 and has concluded that with the implementation of the prescribed tried and tested best practice mitigation measures for the protection of water quality, there will be no significant effects on local groundwater quality. Furthermore, it is contended that there is limited potential for groundwater flow paths to be blocked due to the small footprint of the proposed pile

clusters with groundwater in the sand and gravel aquifer flowing around the piles. It is also their contention that the recorded relatively high permeability value in 25MW01 (of 1.79×10^{-4} m/s) supports this assessment. In terms of the proposed borrow pit, the geological log of that well (25MW2) is provided in the Applicant's FIR and no significant water strikes were encountered. The water level was recorded at 5.5mbRef on 18th August 2025 and 4.10mbRef on 02nd October 2025 and the permeability was determined to be 3.97×10^{-7} m/s following testing. In summary, it is contended that due to the topographic setting of the proposed borrow pit, the local hydrogeological regime, the separation distance between the proposed borrow pit and both nearby streams and the regionally important sand and gravel aquifer, combined with the implementation of the tried and tested best practice mitigation measures for the protection of local water quality and quantity, there will be no potential for significant effects on local watercourses or the sand and gravel aquifer. Having considered the additional data provided by the Applicant and the analysis of same provided by the Commission's Senior Environmental Scientist (as detailed in Appendix 7 of this report), I am satisfied that the significant effects on groundwater will not arise, subject to compliance with the mitigation measures as set out within the EIAR. As a result of the site's topographic setting, the local hydrogeological regime and the additional data provided by the Applicant, it has also been adequately demonstrated that there will be no significant inflows of groundwater that will require dewatering in the turbine and borrow pit excavations. Where dewatering is required, it is considered that the suite of mitigation measures set out in the EIAR will ensure that significant adverse effects on surface or groundwater quality and flows will not arise.

9.11.4.33. In terms of the operational phase, it is acknowledged that the replacement of the vegetated surface with impermeable surfaces could potentially result in an increase in the proportion of surface water runoff reaching the surface water drainage network. During storm rainfall events, additional runoff coupled with increased velocity of flow could increase hydraulic loading, resulting in erosion of watercourses and impact on aquatic ecosystems. However, the Applicant's assessment demonstrates a potential increase of c. 0.2% in the average daily/monthly volume of runoff from the site area in comparison to the baseline pre-development site runoff conditions. Furthermore, the operational phase drainage system will be installed and constructed in conjunction

with the road and hardstanding construction work as described in Section 9.5.3.1 of the EIAR and as shown on the submitted Drainage drawings. Overall, I would concur with the Applicant that no significant effects on the surface or groundwater quality will arise as a result of entrained sediment or the release of hydrocarbons during the operational phase of the development. However, a review of the drainage drawings suggests the Applicant is proposing to discharge both treated (via settlement pond) and untreated water via overland flow being directly discharged into the front garden of an existing dwelling at the southern end of the site (i.e. Receptor ID H003). Whilst I note that this may be a drafting error, a condition should be included which requires this discrepancy to be clarified prior to the commencement of development and revised drawings submitted for written agreement of the Planning Authority.

9.11.4.34. I note that concerns have been raised regarding impacts associated with ground or surface water pollution from the accidental release of gear oil or gases used in the turbine hubs or leaching from the chemical coatings used on the turbine blades. I note that mitigation measures have been provided in the EIAR which confirm that oil in the turbine transformers will be fully banded within the enclosed turbine, therefore blocking any potential pathway to the water environment. I am satisfied that no significant effects will therefore arise once mitigation is taken into account. In terms of the use of chemical coatings on the turbine blades, I agree with the Applicant that the potential for leaching does not constitute a significant impact. Furthermore, I note that no substantive evidence has been submitted establishing a correlation between blade degradation and adverse environmental effects.

9.11.4.35. As discussed above, the proposed GCR is c. 23km in length and located primarily within the public road corridor, with a short section (c. 260m) located within a private road south-west of the proposed on-site substation and another short section (c. 660m) passing through a number of agricultural fields and a private access track north of the Ballyragget substation. A total of 31 no. joint bays are proposed along the GCR and 13 no. watercourse crossings along the route have been identified. It is confirmed that the construction methodology for the 13 no. EPA/OSI mapped and the unmapped watercourse crossings has been designed to eliminate the requirement for in-stream works at each of the locations. I note that I had identified some discrepancies in terms

of what methods were being proposed at the various crossings. However, the Applicant clarified these discrepancies as part of their FIR and updated watercourse crossing drawings for watercourses WC2, WC3, WC5, WC6, WC7 and WC11 were submitted. It is noted that a combination of HDD and flatbed formation over bridge/culverts are proposed as confirmed in Table 2 (Updated Watercourse Crossing Methodologies) of the Applicant's FIR. The Applicant was also requested to submit a detailed site layout plan for the crossing of the River Nore where HDD is proposed. This plan was to clearly identify the location of the launch and reception pits on either side of the river, along with details of all the proposed mitigation measures. A similarly detailed layout plan was also requested for all other locations where HDD is proposed. In response, the Applicant submitted Drawing No. 230502-76FI which provided details of the proposed HDD crossing under the River Nore and updated drawings were submitted for the additional crossings where HDD is proposed. Whilst I note that Third Party observers were not satisfied with the level of detail provided on the updated drawings, when taken into consideration with the absence of instream works and the detailed mitigation measures outlined in Section 9.5.2.10 and 9.5.2.13 (HDD) of the EIAR, I am satisfied that significant effects on surface water in the downstream watercourses will not arise during the construction of the proposed GCR. Due to the shallow nature of the cable trench excavation (i.e. 0 ~1.2m) along the proposed GCR, significant impacts to groundwater quality are also not envisaged once mitigation is taken into account. Furthermore, no groundwater level impacts are predicted due to the depth of the trenches, a conclusion which I consider reasonable on the basis of the information presented in the EIAR. In terms of the operational phase, there will be no potential increase in runoff along proposed GCR. I note that the works are predominantly located in the carriageway of the existing road corridor and no change in surface water runoff rates will result as the trench and road surface will be reinstated. I am therefore satisfied that significant effects on ground or surface water receptors will not arise during this phase of the development.

9.11.4.36. In response to concerns raised that vegetation filters had not been indicated/labelled on the drainage drawings, the Applicant notes that vegetation filters comprise of the vegetated land between the point at which the treated water from the proposed project drainage system is released and the nearest hydrological feature. It is confirmed that

here will be no direct discharge from the proposed drainage system into any watercourse, and all proposed outfall locations are indicated on the submitted drainage drawings. All treated water will be released onto vegetated land which will provide further opportunities for infiltration and filtration before the treated water can reach a local watercourse as surface water runoff. It is also noted that no element of the proposed drainage system works in isolation and the elements work together as part of a series of treatment and attenuation systems. Furthermore, it is stated that all settlement ponds will be designed to ensure that flows/discharge are restricted to greenfield runoff rates, therefore ensuring there is no potential to alter runoff rates to the Kilmanagh/Tullaroan River.

9.11.4.37. In terms of the construction phase water quality monitoring, observers noted that it is not clear what will be monitored, the quality of the river, or the output of the traps/fences/ponds. As detailed in Section 9.5.2.2 of the EIAR, field testing and laboratory analysis of a range of parameters with relevant regulatory limits and Environmental Quality Standards (EQSs) will be undertaken for each primary watercourse and specifically following heavy rainfall events (as per the CEMP included in Appendix 4-2 of this EIAR). As part of the Applicant's FIR, it is confirmed that the monitoring locations (SW1, SW2 and SW3) and parameters to be monitored will be the same as those used to characterise the baseline hydrological environment, including suspended solids, BOD, nitrite, nitrate, ammonia, orthophosphate and chloride. Furthermore, the field testing will comprise of on-site measurements for turbidity, temperature, pH and electrical conductivity. This approach is considered to be reasonable in my view.

Impacts to Drinking Water

9.11.4.38. A number of Third Parties have highlighted the presence of public and group water schemes within the wider area, including the source protection zones that underlie or are hydrologically connected to the site and sections of the proposed GCR. Dr. Pamela Bartley (Hydro G), engaged by KBT Responsible Energy, prepared submissions at the application and appeal stages. These, along with submissions from the Kilkenny West Group Water Scheme Cooperative Society, have been received and I have outlined the key issues they raised earlier in this report. In summary, it has been contended that insufficient information has been provided to demonstrate that the proposed

development would not adversely affect these drinking water sources. These concerns are compounded by the underlying geological and hydrogeological characteristics of the site, whereby portions of the wind farm site are classified as having “high”, “extreme” or “Rock at or near Surface or Karst” groundwater vulnerability, thereby increasing the susceptibility of the underlying aquifers to contamination from pollutants. In this context, it has been submitted that any accidental discharge or release of contaminants during construction could rapidly infiltrate groundwater and adversely affect its quality. Furthermore, concerns have been raised that the Applicant has not sufficiently demonstrated that the proposed mitigation measures are robust enough to prevent significant impacts to these sensitive hydrogeological receptors. It was also the Planning Authority’s view that the Applicant had failed to demonstrate that the proposed development will not lead to unacceptable risks to groundwater within groundwater and surface water abstraction catchment zones, or impact on existing water services infrastructure contrary to public health.

9.11.4.39. In terms of the proposed infrastructure, a total of 5 no. turbines, spoil management areas, onsite substation, construction compounds, new roads and existing roads for upgrade are mapped within the Outer Source Protection Area of the Callan Public Water Supply (PWS). Approximately 3.9km of the proposed GCR is also mapped within this area. It is noted in the EIAR that the sands and gravels associated with the Kings’ River and the Tullaroan Stream that stretch from Callan to Tullaroan, are believed to be unconfined between Tullaroan and Kilmanagh (i.e. in the area of the proposed wind farm site) and are considered to supply the medium through which the bedrock aquifers supply groundwater to the Callan Spring. In addition, the source protection area associated with the Ballycallan Shale Group Water Scheme (GWS) and the Ballycallan Sand and Gravels GWS are mapped in the southern extent of the wind farm site, with c. 150m of new proposed road being mapped in this area. Furthermore, the source protection area associated with the Ballycallan Limestone is mapped c. 900m to the south-east of the wind farm site. The proposed GCR (c. 1.1km) is also mapped to overlie the source protection area associated with the Tullaroan GWS. In terms of domestic wells, the Applicant undertook a search of private well locations (accuracy of 1 – 50m only) using the GSI well database (www.gsi.ie) and they note that several wells have been mapped by the GSI within the wind farm site,

with a high density of wells mapped in the south near Kilmanagh. It is acknowledged by the Applicant that the GSI database does not include all potential water wells. Therefore, it has been assumed for the purposes of the assessment that there is a groundwater well source at each local house location as identified in Chapter 5 of the EIAR. This conservative approach is reasonable in my view.

9.11.4.40. Potential impacts on the various public and group water schemes are addressed in Section 9.5.2.17 of the EIAR. The Applicant notes that the proposed mitigation and drainage design proposals were designed towards providing a “best in class” drainage management proposal for the proposed development considering the sensitive nature of the hydrogeological and hydrological environment. Overall, it is concluded that the proven and effective measures to mitigate the risk of surface and groundwater contamination will break the pathway between the potential sources and the receptor, thereby safeguarding local public and group water supplies. Impacts to private domestic wells is also addressed in Section 9.5.2.11 of the EIAR and it acknowledges that the biggest risk is from groundwater contamination due to the accidental release of hydrocarbons and cement-based products as a result of construction activities within the site. Due to the shallow nature of the proposed GCR works, no effects on private groundwater well supplies are anticipated with this element of the development. An impact assessment has been undertaken by the Applicant which has considered the separation distances from domestic properties and the prevailing geology, topography and groundwater flow directions) of the site. Once mitigation for surface and groundwater protection is taken into account, it is considered that no significant effects on existing groundwater supplies or quality will occur.

9.11.4.41. As I have highlighted above, I have had regard to the further site investigations and analysis undertaken by the Applicant, with particular regard to the additional groundwater investigations carried out in the vicinity of T7 and at the location of the proposed borrow pit. I have also had regard to the commentary provided by the Commission’s Senior Environmental Scientist (See Appendix 7 of this Report) whose has undertaken a review of the application documents, the Applicant’s FIR and the various submissions of the Third Party observers. It is considered that the supplementary investigations, together with the accompanying analysis and technical

justification submitted by the Applicant, have provided a more comprehensive understanding of the local groundwater environment. When considered in conjunction with suite of mitigation measures, I am satisfied that it has been adequately demonstrated that the proposed development will not give rise to significant adverse effects on groundwater quality, flows or supplies in the area. For these reasons, it is considered that existing public water supplies, group water schemes and private domestic wells in the surrounding area will not be adversely impacted by the proposed wind farm development. The proposed development is therefore acceptable in my view.

9.11.4.42. Within their report on file, Uisce Eireann had recommended that the EIAR be updated to include the Kilkenny City (Troyswood) Water Supply as a Surface Water Resource and clearly set out any mitigation measures, where applicable. Within their First Party appeal, the Applicant has confirmed that this water resource had been screened out of the impact assessment as no potential for effects on this drinking water supply had been identified. It was noted that the closest downstream surface water abstractions to the site (located on the Nore_220 river waterbody) and the proposed GCR (located on the Nore_120 river waterbody) were assessed in the EIAR and the WFD Compliance Assessment and it was concluded that there would be no significant effects on these drinking water protected areas, which are the nearest downstream abstractions. This conclusion is reasonable in my view, and I am satisfied that the proposed development has no potential for significant effects on the Troyswood supply given the scale of works, their transient nature and the separation distance from the water supply.

Flood Risk

9.11.4.43. Although the Planning Authority does not appear to have meaningfully engaged with the issue of flooding within their assessment, they nevertheless arrive at a conclusion that the Applicant had failed to adequately consider recent downstream flood events nor did they adequately demonstrate that the substantial works proposed would not lead to an increase in flood risk potential downstream of the wind farm site. This conclusion appears to derive, at least in part, from the detailed concerns raised by Third-Party observers throughout the course of the application. Of note, a submission prepared by Dr. Pamela Bartley raised concerns regarding the potential implications

of the proposed development for downstream receptors. In this regard, substantial concern had been expressed regarding the absence of detailed hydraulic modelling to determine the extent to which the proposed development may alter flow characteristics, increase flood risk or affect downstream lands. Therefore, it was their view that the potential impacts on downstream receptors remained uncertain and insufficiently quantified. Further concerns were raised regarding the alterations to the Tullaroan Stream within the site boundary, and the Applicant's failure to adequately incorporate or assess those modifications within the submitted Flood Risk Assessment. It has been argued that these existing alterations may materially influence the hydraulic behaviour of the watercourse and therefore should have formed part of a comprehensive assessment of flood risk associated with the proposed development.

9.11.4.44. The original FRA (EIAR Appendix 9.1) submitted with the application undertook a semi quantitative (Table 9.20 of the EIAR)) and a qualitative assessment of potential for increase in flood risk. On the basis of the assessment, it is confirmed there is no risk of coastal/tidal flooding, pluvial flooding and the risk of rising groundwater levels is considered to be low. This conclusion is reasonable in my view given the characteristics of the site and the nature and siting of the proposed development. In terms fluvial flooding risk, it is noted that the majority of the wind farm site is located in Fluvial Flood Zone C, where there is a low risk of fluvial flooding (Based on National Indicative Fluvial Flood Mapping (NIFM)). Due to the slope of the land on the sides of the valley, water flows rapidly downslope in the numerous 1st and 2nd order streams which drain towards the Tullaroan Stream. It is stated that there is little risk of fluvial flooding in these areas of the site. Meanwhile, NIFM fluvial flood zones are mapped along the Tullaroan Stream. The FRA also notes that some existing and proposed watercourse crossings along the GCR are mapped in fluvial flood zones. However, the majority of the GCR is mapped in Fluvial Flood Zone C and is at low risk of flooding. It is confirmed that no instream works are proposed at any of the watercourse crossings.

9.11.4.45. All "Highly Vulnerable Development" infrastructure including the proposed onsite 38kV substation and 7 no. turbines are located in Flood Zone C (Low risk) and are therefore

considered as appropriate from a flood risk perspective. However, some elements of the proposed wind farm, comprising a new crossing over the Tullaroan Stream, new access roads to the east and west of this new proposed crossing and c. 240m of upgrades to existing site roads are located in Fluvial flood Zone A. As noted, the watercourse crossing over the Tullaroan Stream will be achieved through the use a clear span crossing and the construction methodology has been designed to eliminate the requirement for in-stream works at this location. To mitigate the risk of the new proposed access road flooding, the sections of access road within the modelled flood zones will have the track surface raised at least 500mm above the 100-year fluvial flood level. In addition, in order to maintain flowpaths in the floodplain during flooding events, culverts will be placed at 25m intervals in these sections of the access roads to maintain the hydrological regime and to prevent a damming effect occurring during flood events. The access tacks will also be constructed of porous stone, so they will not fully prevent the flow of water. Culverts will be inspected and maintained annually to ensure ongoing functionality. A justification test has been carried out by the Applicant, and it was determined that the increase in flood risk as a result of the proposed development will be minimal. Furthermore, it was concluded that the risk of the proposed development contributing to downstream flooding is also very low, as the long-term plan for the site is to retain and slow down drainage water rates prior to release. This is to be achieved through the robust drainage measures on the site that include swales, silt traps, check dams, settlement ponds and buffered outfalls.

9.11.4.46. Noting the various concerns raised by Third Parties and the history of flood events immediately downstream of the site within the village of Kilmanagh, the Commission requested the Applicant to submit an updated FRA which included detailed site-specific hydraulic modelling of the Tullaroan Stream. It was noted that this FRA should examine the potential impact on the existing floodplain or on flood risk elsewhere downstream and shall also have regard to the alterations that have been undertaken to the Tullaroan Stream within the boundaries of the site. The updated FRA focussed on two main hydrological/hydraulic aspects of the development:

- The impact of the proposed wind farm infrastructure, namely the internal wind farm road network, new stream crossings, hardstands and turbines on the hydrology of the Tullaroan stream catchment and Breagagh Tributary

catchment at this location, and,

- The flood risk both upstream and downstream of the proposed wind farm (attention is given to Kilmanagh area also) by comparing existing and design water levels and flow rates.

It is noted that the channel alterations within the site are also included in the modelled scenarios. I note that the detailed site-specific flood modelling concludes there will be no significant increase in flood water levels and flood flows downstream of the wind farm site arising from the proposed development, and the downstream areas include the village of Kilmanagh and the associated amenity pitches (hurling pitch). The proposed development includes mitigation for drainage discharge controls for protection of water quality and attenuation of runoff to greenfield flows. The proposed mitigation also includes for attenuation of drainage to greenfield runoff rates, so after mitigation is included, the net effect is “no change” in flow rates.

9.11.4.47. I note that Dr. Bartley reviewed the Applicant's FIR on behalf of KBT Responsible Energy and continued concerns have been raised regarding the adequacy of the further analysis. In summary, it is argued that the hydrological assessment was not comprehensive enough, that other suitable hydrological techniques and equations should have been considered in order to ensure that an appropriate and conservative determination of Q_{med} is accounted for, that a pivotal site adjustment factor should have been utilised, that growth factors should have been selected utilising a 'best fit' methodology, concerns over the use and accuracy of the LiDAR/RGB Drone surveying, concerns relating to the absence of information on the watercourse channel, adjacent lands and hydraulic structures survey, the failure of the new culverts to be designed in accordance with OPW Section 50 requirements and the erroneous miscalculation of the hydraulic modelling exercise which concludes that the hurling pitch immediately downstream of Kilmanagh bridge does not flood despite the history of recent flood events. As part of the submitted hydraulic modelling, it is noted that there has been no attempt to calibrate the hydraulic model against any of these previous and well documented flood events. Concerns are also raised that the hydraulic model only extends for a distance of c. 60m downstream of Kilmanagh bridge and it is contended that potential impact of the spoil management areas and the proposed borrow pit on the existing hydrological regime of the area have not been

assessed or quantified in any way as part of the hydraulic modelling exercise.

9.11.4.48. Notwithstanding the concerns raised, I refer to the commentary of the Commission's Senior Environmental Scientist (See Appendix 7 of this Report) who is satisfied that the potential for the proposed development to exacerbate the potential for downstream flood risk has been adequately addressed in the Applicant's updated assessments. It is noted that the additional hydraulic modelling for the Tullaroan stream has corroborated the findings of the original flood risk assessment, and the footprint of the site is 0.22% of the catchment north of Kilmanagh and as such, the potential for the site to impact downstream flows is limited. Furthermore, they are satisfied that proposed mitigation measures (as referenced above) will allow for all waters from the drainage network for the site to leave at existing greenfield run-off rates. Overall, I would concur with this view, and it is considered that the potential for the proposed development to contribute to or exacerbate flooding either on site or elsewhere downstream is limited.

WFD

9.11.4.49. Under the WFD, there is an obligation on the Commission to ensure that developments will not result in the deterioration in status of surface or groundwaters, support the restoration of surface and groundwater to good status, protect and enhance the status of artificial or heavily modified bodies and achieve compliance with the standards and requirements for designated protected areas. At application and appeal stage, Dr. Bartley has opined that the Applicant's WFD Assessment is a desk study that fails to acknowledge or reference the site-specific field results presented in the Aquatic Baseline Report (Appendix 6-3) of the same EIAR. It is the observer's view that this is contrary to the tenets of the WFD and its associated Irish Statutory Instrument named the Surface Water Regulations (2009, as amended). Furthermore, it is contended that the proposal is in direct contravention of Ireland's River Basin Management Plan 2022 – 2027. In response, the Applicant has noted that the approach presented in the WFD Compliance Assessment utilises the available WFD status for local waterbodies, in line with best practice for the completion of WFD Compliance Assessments and it is noted that the WFD status should not be assigned to a waterbody by the public or by private environmental consultancies. Regardless of whether the Tullaroan stream_030

SWB is of 'Good' status (WFD 2016-2019 cycle) or 'Poor' status (biological monitoring completed as part of the baseline assessments), it is contended that the tried and trusted, best-practice mitigation measures prescribed in the EIAR for the protection of surface water quality and quantity, will ensure that the proposed development will not result in the deterioration in status of surface or groundwaters. A WFD Compliance Assessment is set out in Appendix 9-3 of the EIAR, and I note that my assessment of potential effects on water has determined that post-mitigation, there is no direct discharge to downstream receiving waters, and the qualitative status of the receiving surface water bodies will not be altered by the project. In addition, I note that there is no direct discharge to groundwater, and the qualitative status of the receiving groundwater bodies will not be altered by the project. Although I have summarised the baseline hydrological conditions of site / surrounds above, it is relevant to identify the overall status of the ground and surface water bodies as per the most recent WFD 2019-2024 monitoring events. These are highlighted in the below table.

Table: 2019-2024 WFD Status for Ground and Surface Water Bodies

WFD Groundwater Body Status	Overall Status 2019-2024	Risk Status
Ballingarry	Good	Not at risk
Kilmanagh Gravels	Good	Not at risk
Durrow	Good	Not at risk
Kilkenny-Ballynakill Gravels	Good	Not at risk
WFD Surface Body Status		
Tullaroan Stream_010	Moderate	Under review
Tullaroan Stream_020	Good	Not at Risk
Tullaroan Stream_030	Good	Under review
Munster_030	Good	Not at Risk
King's (Kilkenny)_030	Moderate	Under review
Arigna (Kilkenny)_010	Moderate	At Risk
Nuenna_020	Poor	At Risk
Nore_120	Moderate	At Risk
Nore_130	Good	Not at Risk
Nore_140	Good	Not at Risk
Nore_150	Moderate	Not at Risk

9.11.4.50. An assessment of the proposed development has been undertaken in accordance with Article 4 of the EU Water Framework Directive (2000/60/EC), as transposed by the European Communities (Water Policy) Regulations 2003, as amended, and with regard to the Eastern/South Eastern River Basin Management Plan 2022–2027. The receiving water environment has been identified and assessed as detailed in the preceding sections of this report. Relevant water bodies within the zone of influence

of the proposed development and their status under the River Basin Management Plan are identified in above table. Having regard to the nature, scale, and location of the proposed development, and the mitigation measures incorporated into the design, it is concluded that the proposed development will not:

- Result in deterioration of the ecological, chemical, or quantitative status of any relevant surface water or groundwater body;
- Increase pollutant loading or alter the hydrological regime of any receiving watercourse;
- Prevent or impede achievement of environmental objectives under the applicable River Basin Management Plan.

Any residual risks are capable of being addressed through the proposed mitigation measures outlined in the EIAR and the implementation of a Construction Environmental Management Plan (CEMP). The proposed development is therefore considered to be in compliance with the requirements of Article 4 of the Water Framework Directive.

Cumulative Effects

9.11.4.51. Dr. Bartley has raised concerns in her various submissions regarding the incorrect application of Cumulative Impact as required by the EIA Directive and its associated EIA Regulations. In this regard, she has referred to Clare County Council's refusal of a wind energy development (PI 24-60411) which she considers could similarly be applied to the Cumulative Assessment approach presented in the Land, Soils and Geology Chapter 8 and the Water Chapter 9 of the EIAR. I note that the hydrological cumulative study area is identified in Figure 9-17 of the EIAR and as highlighted above, this cumulative assessment considers the proposed development in the context of other wind energy and grid connection developments, agriculture, forestry, EPA licenced wastewater treatment facilities and other developments. Overall, I am satisfied that the potential cumulative impacts on water as a result of the proposed development, in combination with the proposed project and other developments have been adequately assessed. I accept the conclusion of the EIAR that no significant cumulative effects on water are anticipated.

Conclusion: Direct and Indirect Effects

9.11.4.52. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. It is considered that the Applicant has provided sufficient survey data to enable assessment of likely effects on the hydrological and hydrogeological resources of the site and surrounding area. Overall, I am satisfied that the Applicant has provided sufficient baseline data to enable assessment of likely effects on the water environment. Having regard to the detailed assessment carried out, the proposed mitigation measures, which are typically standard good practice measures and which are proven to be effective at preventing adverse effects on water flows and water quality, I am satisfied that no significant, adverse direct, indirect, or cumulative effects on the water environment, water quality or WFD objectives will arise as a consequence of the proposed development.

Air Quality

9.11.5. Issues Raised

Third Parties

9.11.5.1. As detailed within earlier in this report, issues have been raised by Third Parties during the application and appeal regarding the potential impacts associated with the construction phase of the development, including borrow pit construction and the additional volumes of traffic on the local road networks and the associated impacts on local receptors.

Local Authority/Prescribed Bodies

9.11.5.2. The Planning Authority has opined the absence of a commitment in the Applicant's EIAR to carry out air quality (and dust) monitoring during the construction phase. Furthermore, they have indicated that the EIAR has not specified dust control measures for blasting or rock/breaking/crushing from the proposed borrow pit. I note that the HSE in their report on file have recommended that the dust control measures outlined in the chapter are included as a condition of planning permission in order to ensure the protection of public health.

9.11.6. Examination, analysis and evaluation

Context

9.11.6.1. Chapter 10 (Air Quality) of the EIAR identifies, describes and assesses the potential

significant direct and indirect effects on air quality arising from the construction, operation and decommissioning of the proposed development. In terms of the methodology, the air quality zone for the site was selected, followed by a review of EPA collated baseline air quality data namely Sulphur Dioxide (SO₂), Particulate Matter (PM₁₀), Nitrogen Dioxide (NO₂), Carbon Monoxide (CO) and Ozone (O₃) for the selected air quality zone to determine the representative levels of such emissions for the proposed development. The EPA has designated four Air Quality Zones for Ireland and it is noted that the site lies within Zone D, which represents rural areas located away from large population centres.

- 9.11.6.2. In terms of 'Dust', it is noted that the Institute of Air Quality Management in the UK (IAQM) guidance document 'Guidance on the Assessment of Dust from Demolition and Construction' (2024) was considered in the dust impact assessment. The methodology outlined in this guidance has been used to predict the likely risk of dust as a result of the construction phase works, operational phase activities and decommissioning phase. The major dust generating activities are divided into four types within the IAQM guidance (2024) to reflect their different potential impacts. The earthwork requirements as outlined in Appendix 4-2 of the EIAR results in the classification of the proposed wind farm site as 'Large' for Earthworks and Construction activities. The grid connection falls under the classification of 'Medium' for Earthworks and Construction due to the lower volumes of construction material required.

Baseline

- 9.11.6.3. It is noted that the air quality in the vicinity of the proposed development is typical of that of rural areas of Ireland, i.e., Zone D. Prevailing south-westerly winds carry clean, unpolluted air from the Atlantic Ocean onto the Irish mainland. The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The most recent report on air quality in Ireland, 'Air Quality in Ireland 2022' was published by the EPA in 2023. The EPA reports provide SO₂, PM₁₀, NO₂, CO and O₃ concentrations for areas in Zone D, the results of which are provided in Table Nos. 10-13, 10-14, 10-15, 10-16 of the EIAR. It is stated that there is an expectation on professional judgement that SO₂, PM₁₀, NO₂, CO and O₃ values at the site would be similar or lower than those recorded for the Zone D sites.

9.11.6.4. In terms of dust, EPA guidance suggests that a deposition of 10 mg/m² /hour can generally be considered as posing a soiling nuisance. This equates to 240 mg/m² /day. The EPA recommends a maximum daily deposition level of 350 mg/m² /day when measured according to the TA Luft Standard 2002. It is noted that this limit value can also be implemented with regard to dust impacts from construction activities associated with the proposed development. Construction dust has the potential to be generated from on-site activities such as excavation and backfilling. Construction traffic movements also have the potential to generate dust as they travel along the haul route.

Potential Effects

9.11.6.5. Potential significant effects of the development, as identified in the EIAR, are summarised in the below table.

Table: Summary of Potential Effects

<i>Do Nothing</i>	A 'Do Nothing' scenario would result in the site remaining undeveloped. The impact of this is considered neutral in the context of the EIAR. If the proposed development were not to proceed, there would be no potential for negative effects on human health during the construction phase of the proposed development related to potential emissions to air of dust. However, the opportunity to capture an even greater part of County Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to further contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.
<i>Construction Phase</i>	<u>Exhaust Emissions - Construction of Infrastructure</u> <u>Wind Farm</u> - Exhaust emissions associated with vehicles and plant such as NO₂, Benzene and PM₁₀ will arise. - The construction of turbines and associated foundations and hardstanding areas, meteorological mast, access roads, temporary construction compound, underground cabling, site drainage, hedgerow felling, and all ancillary works and apparatus, will require the operation of construction vehicles. - The proposed borrow pit and spoil management areas will require the use of construction machinery and plant, thereby giving rise to exhaust emissions. <u>Grid Connection</u> - The proposed grid connection will require the use of construction machinery and exhaust emissions associated with vehicles and plant such as NO₂, Benzene and PM₁₀ will arise.

	<i>Exhaust Emissions: Transportation to and from the Site</i> <u>Wind Farm</u> - The transport of turbine components, supporting infrastructure materials, construction and staff vehicles, small volume of aggregate material, and waste removal vehicles to/from the site, the departure of empty vehicles and/or minor waste volumes from the site and daily staff movements, will give rise to exhaust emissions associated with the transport vehicles. <u>Grid Connection</u> - The transport of substation infrastructure, construction vehicles, aggregate material, waste removal vehicles and construction staff to/from the site for the construction of the GCR, the departure of empty vehicles and/or minor waste volumes from the site and daily staff movements, will give rise to exhaust emissions associated with the transport vehicles. <i>Dust Emissions: Construction of Proposed Project Infrastructure</i> <u>Wind Farm</u> - The construction of turbines and associated foundations and hard-standing areas, meteorological mast, access roads, temporary construction compound, underground cabling, site drainage, tree felling, hedgerow felling, and all ancillary works and apparatus will give rise to dust emissions. - The majority of the construction materials for the wind farm will be won onsite from the borrow pit where an estimated 70,000m³ of material will be extracted. - The removal of the topsoil followed by its transportation and deposition at the spoil management areas during the construction phase will give rise to dust emissions. Dust deposition impacts can occur for a distance of 250m from works areas, but the majority of deposition occurs within the first 50m (IAQM, 2024). The high sensitivity receptors were identified using a constraints mapping process, and detailed and updated planning searches which informed the project sensitive receptor dataset. - There is 1 no. high sensitivity receptor located within 20m of the proposed wind farm footprint; - There are 5 no. high sensitivity receptors within 50m of the proposed wind farm footprint; - There are 9 no. high sensitivity receptors within 100m of the proposed wind farm footprint; - There are 49 no. high sensitivity receptors within 250m of the proposed wind farm footprint. As demonstrated in Table 10-18 (Sensitivity of the Area to Dust Soiling Effects on People and Property). Table 10-19 (Sensitivity of the Area to Human Health Impacts from the Proposed Wind Farm construction works) and Table 10-20 (Summary Dust Risk Table for Proposed Wind Farm Activities), the overall risk of dust emissions impacts with no mitigation applied for the major dust generating activities during the construction

	phase of the proposed wind farm is Low. Therefore, the potential effects of dust from the construction phase of the proposed wind farm are considered to be equivalent to short-term, slight negative effects. <u>Grid Connection</u> The construction of the proposed GCR will give rise to dust emissions. Aggregate materials for the construction of the proposed onsite substation and temporary construction compound will be sourced from the proposed onsite borrow pit, where possible. It is also proposed to provide construction grade materials (approx. 20,000m³) for the proposed GCR infrastructure from local licenced quarries. The number of high sensitive receptors within 250m from Grid Connection works areas and their likely risk of dust impacts during the construction works, as highlighted in the IAQM (2024) methodology are as follows: - There are 141 no. high sensitivity receptors located within 20m from the proposed grid connection footprint; - There are 193 no. high sensitivity receptors located within 50m of the proposed grid connection footprint; one of which is also located within 50m of the proposed wind farm footprint. - There are 259 no. high sensitivity receptors located within 100m of the proposed grid connection footprint; three of which are also located within 100m of the proposed wind farm footprint. - There are 367 no. high sensitivity receptors located within 250m of the proposed grid connection footprint, eight of which are also located within 250m of the Proposed Wind Farm footprint. As demonstrated in Table 10-21 (Sensitivity of the Area to Dust Soiling Effects from Grid Connection construction works on People and Property), Table 10-22 (Sensitivity of the Area to Human Health Impacts from Proposed Grid Connection construction works), Table 10-23 (Sensitivity of the Area to Ecological Impacts), and Table 10-24 (Summary Dust Risk Table for Proposed Grid Connection Activities), the overall risk of dust emissions impacts with no mitigation applied for the major dust generating activities during the construction phase of the proposed grid connection is Medium. Therefore, the potential effects of dust from the construction phase of the GCR are considered to be equivalent to temporary, moderate negative effects. <i>Dust Emissions: Transport to and from the Site</i> <u>Wind Farm</u> The transport of turbine components, supporting infrastructure materials, construction and staff vehicles, small volume of aggregate material and waste removal vehicles to/from the site, the departure of empty vehicles and/or minor waste volumes from the site and daily staff movements will also give rise to some localised dust emissions during periods of dry weather. <u>Grid Connection</u> The transport of construction vehicles, aggregate material, waste removal vehicles and construction staff to/from the site for the construction of the

	proposed grid connection will give rise to some localised dust emissions during periods of dry weather. The L5024 local road, along which the main construction site entrance is located was scoped in for assessment (track out). Beyond either end of this road, it is stated that construction traffic will disperse in different directions along different routes to a degree that there will be no potential for significant effects from trackout related dust emissions. In relation to the turbine delivery route and construction traffic related to the temporary site access along the L1009 to the south of site, it is considered that the numbers of vehicle movements per day are so low that there will be no potential for significant effects from trackout related dust emissions. The L5024, scoped in for assessment, is a 2.2km stretch of local road that runs in an east-west orientation to the north of the proposed wind farm site. There are: - 4 no. high sensitivity receptors located within 20m of the L5024; - 10 no. high sensitivity receptors within 50m of the L5024; - 13 no. high sensitivity receptors within 100m of the L5024; - 20 no. high sensitivity receptors within 250m of L5024. As per Table 10-25 of the EIAR, the overall sensitivity of the area to dust soiling impacts is considered to be Low. In addition, the overall sensitivity of the area to human health effects of PM₁₀ is considered to be Low. The overall risk of dust emissions impacts with no mitigation applied for the major dust generating activities during the construction phase of the proposed wind farm and proposed GCR is Low. Therefore, the potential effects of dust from the construction phase of the proposed wind farm are considered to be equivalent to short-term, slight negative effects.
Operational Phase	<i>Exhaust Emissions: Proposed Project Infrastructure</i> <u>Wind Farm</u> - The operational phase of the proposed development will generate additional traffic to the area in the form of light goods vehicles (LGVs) visiting the site 1-2 times per day for inspections but on occasion, daily visits by LGVs and HGVs may be required over short periods during maintenance/component replacement activities. <u>Grid Connection</u> - The permanent 38kV substation will be operated and maintained by the Electricity Supply Board (ESB). It is anticipated that substation operators will visit the site 1-2 times per day in LGVs but on occasion, HGVs may be required to visit the site for maintenance/substation component replacement. On occasion, the removal of hydrocarbons (transformer oil) and waste from substation welfare facilities will be removed from the site by a licenced waste disposal company. <i>Overall Effect on Air Quality</i> <u>Carbon Offsetting</u> By providing an alternative to electricity derived from coal, oil or gas-fired power stations, the proposed development will result in emission savings of carbon dioxide (CO₂), oxides of nitrogen (NO_x), and sulphur dioxide

	(SO ₂). The production of renewable energy from the proposed development will have a Long-Term Moderate Positive effect on air quality due to the offsetting of approximately 31,578 tonnes of CO ₂ per annum.
<i>Decommissioning Phase</i>	A Decommissioning Plan is included as Appendix 4-5 of the EIAR, the detail of which will be agreed with the local authority prior to any decommissioning. Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less effect. The mitigation measures prescribed for the construction phase will be implemented during the decommissioning phase thereby minimising any potential effects.
<i>Cumulative Effect</i>	During the construction phase and the construction of other permitted or proposed projects and plans in the area (Section 2.8 in Chapter 2 and Appendix 2-3 of the EIAR), there will be emissions from construction plant and machinery and potential dust emissions associated with the construction activities. However, once the mitigation proposals are implemented during the construction phase, there will be no cumulative negative effect on air quality. Exhaust and dust emissions during the operational phase will be minimal, relating to the use of maintenance vehicles onsite, and therefore there will be no measurable negative cumulative effect with other developments on air quality. The nature of the proposed development is such that, once operational, it will have a long-term, moderate, positive impact on the air quality. There will be no measurable negative cumulative effect with other developments on air quality.

Mitigation

9.11.6.6. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

Construction Phase	<i>Exhaust Emissions - Construction of Infrastructure</i> - Construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. - The Site Supervisor/Construction Manager produce and follow a site inspection and machinery checklist which will be followed and updated if/when required. - All plant and materials vehicles shall be stored in dedicated areas (onsite). - Machinery will be switched off when not in use. - Turbines and construction materials will be transported to the site on specified routes only. - All plant and materials vehicles shall be stored in dedicated areas (onsite). Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. - The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the site. Therefore, all wastes streams generated onsite will be deposited into a single waste skip which will be covered. This waste material will be

	transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the emissions associated with vehicle movements. - Aggregate materials for the construction of the proposed wind farm infrastructure will be predominantly sourced onsite. A CEMP will be in place throughout the construction phase (Appendix 4-2). <i>Exhaust Emissions: Transportation to and from the Site</i> - Measures listed above pertaining to exhaust emissions will be implemented for the transportation of vehicles to and from the site. - Aggregate materials for the construction of site access tracks and all associated infrastructure will all be sourced from the proposed onsite borrow pit where possible, or else locally sourced, where possible, which will further reduce potential emissions. - Turbines and construction materials will be transported to the Site on specified haul routes only. - Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the emissions associated with vehicle movements. - Implementation of the CEMP. <i>Dust Emissions: Construction of Proposed Project Infrastructure</i> - Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, to increased runoff. - All plant and materials vehicles shall be stored in dedicated areas within the site. - Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. - Turbines and construction traffic will be transported to the site on specified haul routes only. - The agreed haul route road adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary. - The roads adjacent to the site entrances will be checked weekly for damage/potholes and repaired as necessary. - The transportation of materials from the borrow pit around the site will be covered by tarpaulin or similar covered vehicles where necessary. - The transportation of construction materials from locally sourced quarries for the proposed GCR and a small volume for the proposed wind farm to the site will be covered by tarpaulin where necessary. - If necessary, excavated material will be dampened prior to

	transport to the spoil management areas. - Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Proposed Project to reduce the amount of emissions associated with vehicle movement. - Implementation of the CEMP. <i>Dust Emissions: Transport to and from the Site</i> - Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff. - All plant and materials vehicles shall be stored in dedicated areas within the Site. - Turbines and construction vehicles will be transported to the Site on specified haul routes only. - Proposed GCR infrastructure will be transported to the Site on specified haul routes only. - Construction materials for the GCR and a small volume for the Proposed Wind Farm will be sourced locally from licenced quarries. - The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary. - The roads adjacent to the site entrances will be checked weekly for damage/potholes and repaired as necessary. - The transport of construction materials around the site from the nearby quarry facilities will be covered by tarpaulin where necessary. - Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the amount of emissions associated with vehicle movements. - Implementation of the CEMP.
Operational Phase	<i>Exhaust Emissions: Proposed Project Infrastructure</i> - Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any emissions that arise. - When stationary, delivery and onsite vehicles will be required to turn off engines. - Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements.

Residual Effects

- 9.11.6.7. There are no likely significant impacts on the air quality associated with the proposed development of the site. It is not anticipated that any significant impacts will arise following the implementation of the mitigation measures discussed above. The residual effects are summarised in the below table.

Table: Residual Effects

Feature	Residual Effect
<i>Exhaust Emissions - Construction of Infrastructure</i>	Short-Term, Imperceptible, Negative Effect
<i>Exhaust Emissions: Transportation to and from the Site</i>	Short-Term, Slight, Negative Effect
<i>Dust Emissions: Construction of Proposed Project Infrastructure</i>	Wind Farm - Short-Term, Not Significant, Negative Effect Grid Connection – Temporary, Slight, Negative Effect
Dust Emissions: Transport to and from the Site	Short-Term, Imperceptible, Negative Effect
<i>Exhaust Emissions (Operational): Proposed Project Infrastructure</i>	Long-Term, Imperceptible, Negative Effect
Overall Effect on Air Quality	Long-Term, Moderate, Positive Effect

Assessment

- 9.11.6.8. I have examined, analysed and evaluated Chapter 10 of the EIAR and all of the associated documentation and submissions on file in respect of air. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation and advertisement. Notwithstanding the concerns raised by the Planning Authority, I have had regard location of site infrastructure, including the proposed borrow pit and spoil management areas, the separation distances provided from residential receptors, the nature of the proposed GCR works and the Applicant's analysis within the chapter and I am satisfied that the key impacts in respect of the likely effects on air quality as a consequence of the proposed development have been identified. Overall, I am satisfied that no significant effects will arise as a consequence of dust or other particulate emissions once the suite of proposed mitigation measures are adhered to.

Conclusion: Direct and Indirect Effects

9.11.6.9. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. It is considered that the Applicant has provided sufficient survey data to enable assessment of likely effects on the environment. I am satisfied that the potential for significant adverse impacts on air quality can be avoided, managed and/ or mitigated for the proposed development by the measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. Overall, it is considered that the proposed development will have a long-term moderate positive effect on air quality due to the offsetting of approximately 31,578 tonnes of Carbon Dioxide (CO₂) per annum.

Climate

9.11.7. Issues Raised

Third Parties

9.11.7.1. No concerns raised by Third Parties regarding potential climate related impacts.

Local Authority/Prescribed Bodies

9.11.7.2. There is commentary in the Planning Authority's report that potential for flood risk downstream from the site has not been adequately assessed. I note that this matter is addressed in my assessment of Chapter 9 (Hydrology and Hydrogeology) of the EIAR.

9.11.8. Examination, analysis and evaluation

Context

9.11.8.1. Chapter 11 (Climate) of the EIAR assesses the potential significant direct and indirect effects on climate arising from the construction, operation and decommissioning of the proposed development. It is indicated that the aim of the proposed development, when in operation, is to reduce the input of carbon intensive energy into the national grid and reduce the amount of greenhouse gas emissions being released to the atmosphere that are associated with electricity generation and use. Included as an appendix to the Chapter is:

- Appendix 11-1 - Carbon Calculations.

The Chapter provides a summary of the relevant Greenhouse Gas Emission and Climate Targets at international, national and local level.

Baseline

- 9.11.8.2. In terms of climate and weather in the existing environment, it is noted that the closest weather and climate monitoring station to the site is the Kilkenny weather station in Kilkenny City, located c. 13.7km south-west of the proposed wind farm. Meteorological data recorded at Kilkenny over the 30-year period from 1978-2007 is shown in Table 11-5 of the EIAR which shows that the wettest months are October and December, and July is usually the driest. July is also the warmest month with a mean daily temperature of 15.8° Celsius. Recent monthly meteorological data recorded at Oak Park, Co. Carlow, located c. 42.3km north-east of the site, from January 2021 to January 2024 shows that September 2022 was the wettest month in this time period, with 153.2mm of rainfall recorded, while February 2023 was the driest month with 14.3mm of rainfall. July 2021 was the warmest month in this time period, with a mean monthly temperature of 17.7° Celsius. December 2022 was the coldest month in this time period with a mean monthly temperature of 3.8° Celsius.

Calculating Carbon Losses and Savings

- 9.11.8.3. It is noted that there is no peat present within the wind farm site. For this reason, the carbon balance between the use of a renewable energy and the loss of carbon stored in the peat is not assessed in the EIAR. Carbon dioxide is released in the manufacture and transportation of turbines and construction materials to the site, as well as throughout the construction process and therefore a carbon loss/saving calculation for the proposed development has been undertaken.
- 9.11.8.4. The Macauley Institute methodology is the methodology being utilised as detailed in Section 11.5.2 of the EIAR. The carbon losses as a result of the manufacture, transportation and erection of the proposed turbines were included in the calculation. Tree felling will be required within and around the wind farm infrastructure footprint to allow for the construction of the proposed turbines, access roads underground cabling, and the other ancillary infrastructure. If the forestry is felled for the development, as is the case for the proposed development, the effects are judged to be attributable to the wind farm development. Alterations in soil carbon levels following felling are calculated using the equations for drainage and site restoration already described. It is noted that the outputs of the Macauley Institute web-based carbon calculator are included in Appendix 11-1 of the EIAR.

- 9.11.8.5. The full life cycle and embodied carbon of the proposed turbines have been taken account of in the Macauley Institute model. The emissions associated with the embodied carbon, along with the construction phase transport movements, of the remaining features of the site are considered using the Transport Infrastructure Ireland (TII) Carbon Tool (TII 2022). The TII Carbon Tool is customised for road and light rail projects in Ireland, using emission factors from recognised sources during the construction, maintenance and operation of TII projects in Ireland.
- 9.11.8.6. The main CO₂ losses due to the proposed development are summarised in Table 11-6 of the EIAR. The worksheet models and online tools calculate that the proposed development will give rise to 89,717 tonnes of CO₂ equivalent losses over its 35-year life. Of this total figure, the turbines directly account for 42,510 tonnes, or 47%. Losses due to backup account for 31,850 tonnes, or 36%. Losses from reduced carbon fixing potential accounts for 1.2% or 1,070 tonnes. Losses from soil organic matter, i.e., CO₂ loss from disturbed soil and subsoils, will equate to 488 tonnes, or 1%. Losses due to forestry felling account for 1,987 tonnes or 2%. Losses due to embodied carbon accounts for 11,472 tonnes or 13% and losses due to construction phase transport emissions accounts for 0.4% or 339 tonnes. The values discussed above are based on the assumption that no habitat enhancement or afforestation activities will take place. As detailed, the estimated 4.3ha of forestry that will be permanently felled for the footprint of the infrastructure will be replaced or replanted on a hectare for hectare basis as a condition of any felling licence that will be issued in respect of the proposed development. Similarly, a BMEP has identified enhancement activities such as planting of hedgerow and woodland, and the incorporation of a riparian buffer zone. Therefore, the actual CO₂ losses for forestry felling and reduced carbon fixing potential are expected to be lower than the values detailed over the life-time of the proposed development.
- 9.11.8.7. In terms of Carbon Savings, 31,578 tonnes of carbon dioxide will be displaced per annum from the largely carbon-based traditional energy mix by the proposed wind farm. Over the proposed 35-year lifetime of the development, therefore 1,105,230 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity

generation. It is noted that the 89,717 tonnes of CO₂ that will be lost to the atmosphere due to changes in soil and ground conditions and due to the construction and operation of the proposed development will be offset by the proposed wind farm in approximately 34 months (2.8 years) of operation.

Potential Effects

9.11.8.8. Potential significant effects of the development, as identified in the EIAR, are summarised in the below table.

Table: Summary of Potential Effects

<i>Do Nothing</i>	In a 'Do Nothing' scenario, the opportunity to further significantly reduce emissions of greenhouse gases, including carbon dioxide (CO ₂), oxides of nitrogen (NO _x), and sulphur dioxide (SO ₂) from fossil fuels to the atmosphere would be lost. The opportunity to contribute to Ireland's commitments under the Kyoto Protocol, the Paris Agreement, and EU law would also be lost. This would be a long-term slight negative effect.
<i>Construction Phase</i>	<i>Greenhouse Gas Emissions</i> <u>Wind Farm</u> The construction the proposed development will require construction materials (such as cement), and the operation of construction vehicles and plant on and off-site, and the transport of workers to and from the site. Greenhouse gas emissions, e.g., carbon dioxide (CO₂), carbon monoxide and nitrogen oxides, associated with the production of construction materials, and operation of vehicles and plant will arise as a result of the construction activities. This effect will be short-term and slight only, given the quantity of greenhouse gases that will be emitted to the atmosphere and will be restricted to the duration of the construction phase. Some potential long-term imperceptible negative effects will occur due to the removal of carbon fixing vegetation and habitat. However, that has been avoided where possible by the design and layout, which has ensured the utilisation of as much of the existing roads within the site as possible to gain access to the proposed turbine locations and minimise the construction of additional roads. This effect will be long-term and imperceptible only, given the quantity of greenhouse gases that will be emitted to the atmosphere. <i>Grid Connection</i> The works will require the operation of construction vehicles and plant on and off-site, and the transport of workers to and from route. Greenhouse gas associated with vehicles and plant, such as carbon dioxide (CO₂), carbon monoxide, and nitrogen oxides will arise as a result of construction activities. This effect will be short-term and slight only, given the quantity of greenhouse gases that will be emitted to the atmosphere and will be restricted to the duration of the construction phase. <i>Transport to Site</i>

	The transport of turbines and construction materials to the site will give rise to greenhouse gas emissions associated with the transport vehicles and exhaust emissions. This impact will be short-term and slight only, given the quantity of greenhouse gases that will be emitted and will be restricted to the duration of the construction phase. <i>Waste Disposal</i> Construction waste will arise from excavation and unavoidable construction waste including material surpluses, damaged materials and packaging waste. This potential impact will be short-term and slight only, given the quantity of greenhouse gases associated with the generation and management of these waste streams that will be emitted to the atmosphere and will be restricted to the duration of the construction phase.
<i>Operational Phase</i>	<i>Greenhouse Gas Emissions</i> <u>Wind Farm</u> For the purposes of this EIAR, a rated output of 7MW per turbine has been chosen to calculate the anticipated power output, which would result in an estimated output of 49MW, displacing approximately 31,578 tonnes of carbon dioxide per annum from traditional carbon-based electricity generation. This will have a long-term significant positive impact on climate. Some potential long-term slight negative impacts that may occur during the operational phase are the release of carbon dioxide to the atmosphere due to maintenance and monitoring activities and the removal of carbon fixing vegetation and habitat, as well as associated drainage. With respect to transport volumes, there will only be an average of c. 1 to 2 trips made to the site by car or light goods vehicle per day. <u>Grid Connection</u> While there will be c. 1 to 2 trips made to the proposed wind farm site by car or light goods vehicle per day from maintenance and monitoring crews on site for maintenance activities, this will be less than those needed at the route during the operational phase. <u>Transport to and from the Site</u> In the unlikely event that a turbine blade is damaged and must be replaced during the operational phase, the impacts described above will be the same. <u>Waste Disposal</u> Waste is not proposed to be generated on the site during the operational phase, any waste that does arise will be minimal and any impact will be short-term and imperceptible.
<i>Decommissioning Phase</i>	Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less impact. The mitigation measures prescribed for the construction phase of the proposed development will be implemented during the decommissioning phase thereby minimising any potential impacts. A Decommissioning Plan has been prepared (Appendix 4-5) and will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will

	agree with the competent authority at that time.
<i>Cumulative Effect</i>	During the construction phase and the construction of other permitted or proposed projects and plans in the area, there will be emissions from construction plant and machinery associated with the construction activities. However, once the mitigation proposals are implemented during the construction phase, there will be no cumulative negative effect on climate. Exhaust emissions during the operational phase will be minimal, relating to the use of maintenance vehicles onsite, and therefore there will be no measurable negative cumulative effect with other developments on climate. The nature of the proposed development is such that, once operational, it will have a long-term, moderate, positive impact on the climate. There will be no measurable negative cumulative effect with other developments on climate. Any cumulative impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less impact. The mitigation measures prescribed for the construction phase of the proposed development will be implemented during the decommissioning phase thereby minimising any potential cumulative effects.

Mitigation

9.11.8.9. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

Construction Phase	<i>Greenhouse Gas Emissions</i> - All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. - When stationary, delivery and on-site vehicles will be required to turn off engines. - Turbines and construction materials will be transported to the site on specified routes only unless otherwise agreed with the Planning Authority. - It is intended to obtain the majority of materials for the construction of the proposed wind farm from the proposed onsite borrow pit (with some material being imported from local licenced quarries as needed). This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. - A CEMP (Appendix 4-2) will be in place throughout the construction phase. - The CEMP includes a Waste Management Plan (WMP) which outlines the best practice procedures that will occur during the construction phase relating to waste material. - Where applicable, low carbon intensive construction materials will be sourced and utilised onsite.

Operational Phase	<i>Greenhouse Gas Emissions</i> - Ensure that all maintenance and monitoring vehicles will be maintained in good operational order while onsite, and, when stationary, be required to turn off engines thereby minimising any emissions that arise. - A BMEP for the wind farm has identified biodiversity enhancement and management activities such as native hedgerow planting. It is also proposed to plant some native tree species within the hedgerow habitat to further increase the biodiversity value within the site. - The identified 4.3ha of forestry that will be permanently felled will be replaced or replanted on a hectare for hectare basis as a condition of any felling licence that will be issued in respect of the felling.

Residual Effects

9.11.8.10. Following implementation of the mitigation measures outlined above, residual effects of greenhouse gas emissions arising from the construction phase will have a short-term imperceptible negative effect. However, once emitted to the atmosphere, the greenhouse gas emissions that will arise from construction phase activities will have a permanent imperceptible negative effect on Climate. While there will be greenhouse gas emissions associated with the construction of the proposed development, it is noted that this will take place under the electricity sector emissions ceiling and will be offset by the operation of the proposed wind farm within its operational life.

9.11.8.11. The loss of carbon fixing vegetation over the lifetime of the proposed development will be partially offset by the BMEP and afforestation of 4.3ha of forestry and using the precautionary principle, will have a potential long-term imperceptible negative effect on Climate. However, the proposed development will displace carbon dioxide from fossil fuel-based electricity generation, over the 35-year lifespan. The proposed development will have a long-term, moderate, positive effect on Climate as a result of reduced greenhouse gas emissions.

Assessment

9.11.9. I have examined, analysed and evaluated Chapter 11 of the EIAR and all of the associated documentation and submissions on file in respect of climate. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation. As

discussed in the foregoing, 31,578 tonnes of carbon dioxide will be displaced per annum from the largely carbon-based traditional energy mix by the proposed wind farm. In addition, the 89,717 tonnes of CO₂ that will be lost to the atmosphere due to changes in soil and ground conditions and due to the construction and operation of the proposed development will be offset by the proposed wind farm in approximately 34 months (2.8 years) of operation. Section 8.1 of this report has highlighted the Commission's obligations under the Climate Action and Low Carbon Development Act, 2015, as amended, where it must, in so far as practicable, perform its functions in a manner that is consistent with a) the most recent approved climate action plan, b) most recent approved national long term climate action strategy, c) national adaptation framework, sectoral plans, d) furtherance of the national climate objective and e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State. Overall, it is considered that the long-term, moderate positive impact from the carbon savings will support the objectives of these plans and the national transition towards a low carbon, climate resilient and sustainable nation. I have also had regard to the cumulative impact of the wind farms in the surrounding area and fully acknowledge the significant contribution this part of the country is already making towards achieving the ambitious national climate targets. In this context, there is clear potential for significant cumulative positive effects on climate to reduce greenhouse gas emissions and increase generation of electricity from renewable sources across the wider area.

Conclusion: Direct and Indirect Effects

- 9.11.9.1. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. It is considered that the Applicant has provided sufficient survey data to enable assessment of likely effects on the environment. I am satisfied that the potential for significant adverse impacts on climate can be avoided, managed and/ or mitigated for the proposed development by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions.

Noise and Vibration

9.11.10. Issues Raised

Third Parties

9.11.10.1. As detailed earlier in this report and in the attached appendices, issues have been raised by Third Parties during the application and appeal regarding potential noise related impacts. These issues have included a reliance on outdated guidance, incomplete noise assessments, lack of amplitude modulation or infrasound modelling, impacts associated with low frequency noise, the failure to supply the turbine manufacturer and the use a hypothetical turbine model, inadequate turbine separation distances provided which can result in wake effects, the exacerbation of noise impacts due to the afforested and undulating landscape and the inadequacy of the cumulative noise assessment. It is highlighted within the submission from an observer's acoustic consultant that submitted evidence confirms that residents in the area already experience intrusive turbine noise from existing developments and the potential additive effect of the proposed development has not been modelled comprehensively. The observers have also referred to relevant case law from the High Court where damages were awarded for private nuisance caused by noise from wind turbines. Furthermore, concerns have been expressed regarding noise impacts associated with the construction phase of the development.

Local Authority/Prescribed Bodies

9.11.10.2. Permission has been refused by the Planning Authority, in part, due to noise-related concerns and the impact of the development on residential amenity. Concerns have also been highlighted regarding the adequacy of the Applicant's assessment and construction phase noise impacts. Furthermore, the HSE recommend that the wind turbines which may be installed have the appropriate controls to provide appropriate curtailment, if required. Furthermore, it recommended that the effectiveness of the curtailment, if any, is validated through real time noise monitoring.

9.11.11. Examination, analysis and evaluation

Context

9.11.11.1. Chapter 12 of the EIAR provides a description and assessment of the likely impact of the proposed development in respect of noise and vibration. A noise and vibration impact assessment has been prepared for all phases of the proposed development on the nearest Noise Sensitive Locations (NSLs). To inform this assessment, baseline noise levels have been surveyed at 6 no. representative NSLs surrounding the site. It

is noted that noise predictions to the nearest NSLs have been prepared for all key elements of the proposed development with the potential for noise and vibration impacts and effects. The Chapter is accompanied by the following appendices:

- Appendix 12-1 - Glossary of Acoustic Terms,
- Appendix 12-2 - Cumulative Screening,
- Appendix 12-3 - Calibration Certificates,
- Appendix 12-4 - Sound Power Levels,
- Appendix 12-5 - Noise Model Parameters,
- Appendix 12-6 - Background Noise Analyses,
- Appendix 12-7 - Predicted Cumulative Noise, and,
- Appendix 12-8 - Predicted Cumulative Noise.

9.11.11.2. It is indicated that the assessment of impacts has been undertaken with reference to the most appropriate guidance documents relating to noise and vibration for each phase of development. The methodology adopted is summarised as follows:

- Review of appropriate guidance to identify appropriate noise and vibration criteria for both the construction, operational, and decommissioning phases,
- Characterise the receiving environment through noise surveys at various locations in the receiving environment of the proposed wind turbines,
- Undertake predictive noise calculations to assess the potential impacts associated with the construction, operational and decommissioning phases of the proposed development at NSLs,
- Evaluate the potential noise and vibration impacts and describe the effects,
- Specify mitigation measures to reduce, where necessary, the identified potential noise and vibration impact from the proposed development, and,
- Describe the significance of the residual noise and vibration effects associated with the proposed development, including cumulative effects.

9.11.11.3. In terms of the construction phase, it is indicated that there is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. In the absence of specific noise limits, regard is given to the British Standard 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise (BS 5228-1). For

the assessment of potential noise impacts from construction related traffic along public roads, the guidance from Highways England (now National Highways) Design Manual for Roads and Bridges Sustainability & Environment Appraisal LA 111 Noise and Vibration (Revision 2) (DMRB) has been used for the purposes of Applicant's assessment. In terms of vibration, consideration is given to the following documentation:

- BS 7385 – Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from groundborne vibration (1993),
- BS 5228 – Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (2009+A1:2014), and,
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA, 2004).

9.11.11.4. For the operational phase of the proposed development, regard is given to the following guidance documents

- The Assessment and Rating of Noise from Wind Farms – ETSU-R-97.
- A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, including six Supplementary Guidance Notes (IOA GPG).
- Wind Energy Development Guidelines, 2006 (WEDG 2006),
- World Health Organisation (WHO) Environmental Noise Guidelines for the European Region (2018), and,
- Draft Revised Wind Energy Development Guidelines, 2019 (draft WEDG 2019).

It is confirmed that the assessment of wind turbine noise presented in this EIAR is based on the guidance outlined in the WEDG 2006 and has been supplemented with best practice guidance from ESTU-R-97 and the IOA GPG. It is stated that if updated Wind Energy Development Guidelines are published during the application process, it is anticipated that any relevant changes affecting the noise will be addressed through an appropriate planning condition, or where a supplementary assessment is necessary, through provision of additional information.

9.11.11.5. In the case of the proposed 38kV substation, it is proposed to set fixed noise limits and consideration has been given to the Environmental Protection Agency (EPA)

publication Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (EPA NG4).

Baseline

9.11.11.6. The study area for the assessment was defined by the area where there is potential for noise and vibration impacts at NSLs associated with the proposed development. For the operational phase, this should cover, at a minimum, the area predicted to exceed 35dB L_{A90} from all existing, permitted and proposed wind turbines. It is noted that the nearest other wind turbine developments (existing, permitted or proposed) are Foyle Wind Farm, located c. 2.5km and Kyleballyoughter Wind Farm located c. 3.2km from the proposed wind farm. It is noted that Foyle Wind Farm (4 no. constructed turbines and a further 1 no. permitted turbine) and the 2 no. permitted turbines at Kyleballyoughter have been included in the EIAR's cumulative assessment. Ballybay Wind Farm, Farranroy Wind Farm and An Cnoc wind farm are between c. 5 and 10km from the proposed turbines and have been screen out as detailed in Appendix 12-2. It is noted that other wind farms within a 25km distance (namely Ballincurry, Ballynalacken, Bruckana, Freneystown, Gurteen Lower, Kiloshulan, Knockroe, Lisdowney, Lisheen I, Lisheen II, Lisheen III, Littleton and Loughhill and White Hill) were not included in the cumulative assessment on the basis of being at a distance more than 10km from the proposed turbines.

9.11.11.7. NSLs in proximity to specific construction sites and those situated along haul routes have the most potential to experience noise and vibration impacts. Taking account of the typical works associated with the construction and decommissioning phases, the study area is based on the nearest NSLs to the working areas, these distances are confirmed in the relevant sections and are typically representative of the closest identified NSL or at defined set back distances from proposed activity.

9.11.11.8. A background noise survey was undertaken to establish typical background noise levels at representative NSLs (6 no. NSLs) and it is confirmed that the background noise survey has been carried out in accordance with the IOA GPG. The location of the noise measurement locations is identified in Figure 12-2 of the EIAR. Appendix 12-6 presents the results of the background noise surveys and Table 12-11 of the EIAR presents the various derived $L_{A90,10min}$ noise levels for each of the monitoring

locations for daytime quiet periods and night-time periods. It is noted that these levels have been derived using analysis carried out on the data sets in line with guidance contained the IOA GPG and its SGN No. 2 Data Collection. A conservative 'envelope', based on the lowest derived background levels at the various wind speeds for both day and night-time is also presented in this table.

9.11.11.9. As per Section 12.4.2 (Wind Turbine Noise Criteria) of the EIAR, the operational noise limits proposed for the proposed wind farm are:

- 40dB LA90,10min in quiet environments with typical background noise of less than 30dB LA90,10min;
- 45dB LA90,10min for daytime in environments with typical background noise greater than or equal to 30 dB LA90,10min or a maximum increase of 5 dB(A) above background noise (whichever is higher), and;
- 43dB LA90,10min for night time periods or a maximum increase of 5 dB(A) above background noise (whichever is higher) for night time periods.

In line with the ETSU-R-97 guidance, a lower threshold of 45 dB LA90,10min has been applied to the NSLs involved with wind energy development. It is noted that the operational noise criteria that apply to this assessment is outlined in Table 12-12 of the EIAR.

Potential Effects

9.11.11.10. Potential significant effects of the development, as identified in the EIAR, are summarised in Table 8.7.9 below.

Table 8.7.9: Summary of Potential Effects

<i>Do Nothing</i>	The existing noise environment will remain unchanged. Traffic noise is currently a noise source in the vicinity of some road networks in the area. In the absence of the proposed development, any increases in traffic volumes on the local road network over time would not be expected to result in a significant change to the overall ambient and background noise levels in the receiving environment. If the proposed development were not to proceed, the opportunity to capture part of Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.
<i>Construction Phase</i>	It is indicated that a variety of items of plant will be in use for the various elements of the construction activities. There will be vehicular movements

	to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for generation of levels of noise at NSLs. An assessment of the main stages of the construction phase that have the potential for associated noise and vibration impacts are summarised below. It is noted that all other stages and elements are considered unlikely to have any significant noise and vibration impacts. <u>Wind Farm</u> <i>Turbines and Hardstands and Met Mast</i> The nearest NSL being H001 is at a distance greater than 500m from T04. The nearest non-involved NSL is H075, at a distance of greater than 740m from T03. Several noise sources that would be expected on a site of this nature have been identified and the noise predictions of their potential impacts to the nearest NSLs have been identified in Table 12-13. It is indicated that all levels are within the construction noise criterion (Table 12-1 of EIAR) and no significant noise impact are anticipated. <i>Proposed Access Roads and Existing Road Upgrades</i> A review of the road layout has identified that the closest NSLs are H015, H050, H083, H039 and H040 which are at distances of 27m, 27m, 33m, 46m and 95m, from the proposed road works, respectively. Table 12-14 presents outline noise calculations, considering the plant anticipated for methods of construction, at varying distances from the construction works. It is indicated that the predicted noise levels at the closest NSLs, at distances of 27m or greater from works will not have the potential to exceed the construction noise criterion of 70 dB $L_{Aeq,1hr}$. On this basis noise control mitigation measures will not be required. <i>Temporary Construction Compounds</i> There are 2 no. construction compounds associated with the proposed wind farm, being: - At 200 m north of T01, and, - At 420m South of T07. The closest house to either compound is H005 at a 510m distance. Assuming the same set of construction plant as for access roads outlined in Table 12-14, the predicted noise levels are 42 dB $L_{Aeq,T}$ at H005. It is indicated that this level of noise is within the construction noise criterion of 65dB L_{Aeq} (Table 12-1). It is therefore concluded that there will be no significant noise impact associated with the construction of the temporary construction compounds. <i>Borrow Pit</i> To assess the potential noise impacts from borrow pit operation, a comparative noise assessment has been prepared and two scenarios that have been considered include: - Scenario A Blasting operation, - Scenario B Rock breaking operation. Sound power levels for the dominant noise generating plant items in the borrow pit plant is presented in Table 12-15 of the EIAR. A noise prediction model has been prepared to calculate the expected noise emissions from the two scenarios outlined above for operation of the borrow pit. The predicted levels are detailed in Table 12-16 at the 10 no. NSLs with the highest predicted noise levels due to the borrow pit activity. The data contained in Table 12-16 confirms the following: - Predicted construction noise levels for both Scenario A and B are well within the construction noise criterion outlined in Table 12-1. It is therefore concluded that there will be no significant noise

	impact associated with the construction of the borrow pit, therefore no specific mitigation measures are required. - The blasting proposal results in lower levels of construction noise as the rock breaking plant is not required to operate to the same extent in this scenario. - Predicted noise levels are lower at all assessed locations for Scenario A. - It is accepted that the individual blast events will be audible at certain locations which may result in slight impacts. Blast events will be designed and controlled such that the best practice limits values outlined in the mitigation section of this chapter are not exceeded. <i>Other Proposed Construction Works</i> Other elements of the proposed construction works include spoil management areas, biodiversity management and enhancement measures and areas of tree felling. It is indicated that these works will be temporary in duration and similar to general agricultural works which take place regularly in the local area. Therefore, having regard to the foregoing and considering the distances from these elements of the construction works to NSLs, no significant noise effects are expected. <u>Grid Connection</u> <i>38kV Electrical Substation and Temporary Construction Compound</i> The nearest NSL to these areas is H048 at 236m. It is predicted that the potential noise levels from construction activities associated with the substation will be 58 dB $L_{Aeq,T}$. This level of noise is within the construction noise criterion outlined in Table 12-1. Therefore, it is concluded that there will be no significant noise impact associated with the construction of the on-site 38kV electrical substation and temporary construction compound, and no specific mitigation measures are required. <i>38kV Underground Electrical Cabling Route</i> The proposed underground electrical cabling route is approximately 23km long. Table 12-17 of the EIAR presents outline noise calculations, considering the anticipated plant required and methods of construction. Calculations have been prepared taking account of the distances to the nearest NSLs and assume that plant items are operating at nominal on-times. The associated construction works will occur for short durations (rolling construction method, c. 100 – 200 m per day over an estimated 115 – 230 working days) at varying distances from NSLs. Works will therefore be in proximity to the closest NSLs for a limited amount of time, i.e. less than one day. It is noted that the predicted noise levels at the closest NSLs, at distances of within 25m from works have the potential to exceed the construction noise criterion of 70 dB $L_{Aeq,1hr}$, if the works generate high noise level in proximity to the NSLs. However, on the basis that the duration of the noise effect is brief, mitigation measures are not required. <u>Construction Vibration</u> During rock breaking, there is potential for vibration to be generated through the ground. The EIAR refers to previously conducted vibration measurements undertaken by AWN Consulting Ltd under controlled conditions, during trial construction works, where breaking was carried out. The trial construction works consisted of the use various plant and equipment when measured at various distances. The values recorded were significantly below the 8 to 20 mm/s referred to in Table 12-3 of the EIAR (vibration criteria for building damage). Considering the additional distance from areas where rock breaking will be required to any NSLs, it is indicated that the likely vibration values are well below the criteria in Table 12-3.

	<u>Construction Traffic</u> The following stages are commented upon here: - Stage 1a – General construction and Grid Connection construction; - Stage 1b – Turbine Delivery and Grid Connection construction; - Stage 2a – Delivery of Large Equipment Using Extended Articulated Vehicles, and, - Stage 2b – Other deliveries using conventional articulated HGVs. Based on the traffic data presented in Table 12-18, the changes in noise level relative to the expected traffic noise from the baseline traffic flows have been calculated and are outlined in Table 12-19. It is noted that in the majority of cases, the predicted increases in traffic noise levels during each of the construction stages are less than 3dB (i.e. 'negligible' to 'minor'). During Stage 2a, along route links 4, 5 and 6, the change in noise levels correspond to potential 'moderate' to 'major' impacts. However, it is noted that the predicted traffic noise level, at 5m from the road edge is 62dB $L_{Aeq, 12hr}$ for each link. This is within the criteria of 65dB $L_{Aeq, 12hr}$ for linear construction works. Taking into account that this stage lasts just 7 days, the effect is considered 'not significant'. Therefore, it is concluded that there will be no significant noise effects associated with the additional traffic generated during the construction phase.
Operational Phase	<u>Turbine Noise Assessment</u> The predicted turbine noise levels have been calculated at all NSLs within the study area of the proposed development. The calculations are based on conditions favourable to noise propagation, i.e. downwind propagation from source to receiver and/or downward refraction under temperature inversions. The results of the noise prediction models have been compared against the turbine noise limits that have been assigned to each of the NSLs as presented in Section 12.4.2 which in turn have been derived in accordance with the criteria set out in Section 12.3.1.2.1. Results for the full set of NSLs are presented in Appendix 12-7, and noise contours are presented in Appendix 12-8 of the EIAR. Table 12-20 of the EIAR presents the locations where potential exceedances of the derived noise criteria have been predicted in the model. These include: - H008, - H012, - H048, and, - H260. <i>H008, H012 and H048</i> At these locations, it is indicated that potential exceedances of 0.2 dB to 0.6 dB at wind speeds of 6 m/s, during daytime periods only, based on the conservative envelope criteria in Table 12-12, and based on omni-directional propagation. The effect of the directionality of noise emissions from wind turbines means that in certain wind directions, noise levels are less than the values presented Table 12-18 (I note that this should read Table 12-20), as a given noise-sensitive location is not downwind of all turbines at the same time. Noise levels, taking turbine emission directionality into account, have been predicted for the locations H008, H012 and H048 where potential exceedances of the daytime noise criteria were noted at 6 m/s windspeed. The results are presented in Table 12-21. Once directionality is considered, the H008 and H012 have exceedances in the range 0.4 to 0.6dB in southwest and west wind directions only and H048 has an exceedance of 0.1dB in southeast wind direction only. It is noted that mitigation in the form of turbine curtailment is addressed in Section 12.6.2.1 of the EIAR.

	H260 In the case of H260, it is indicated that this receptor is significantly closer to Foyle wind farm than to the proposed wind farm. The contribution from proposed wind farm is more than 10dB below that of Foyle Wind Farm, which indicates that wind turbine noise at H260 is governed by Foyle Wind Farm rather than the proposed development. Therefore, it is not necessary to apply mitigation measures in respect noise at this location. Moreover, it is noted that the potential exceedances in Table 12-20 are based on criteria established through background noise surveys near the proposed wind farm and conservative noise prediction calculations for the assessment of the proposed project only. It is stated that the potential exceedances indicated in Table 12-20 should not be interpreted as an indication of noise issues associated with the operation of the Foyle Wind Farm. Description of Effects With the exception of locations H008, H012 and H048, it is noted that no significant effects are associated with the operation of the proposed wind farm, since the predicted noise levels will be within the relevant best practice noise criteria curves for wind farms according to current guidelines While ambient noise levels will increase by varying degrees, depending on receptor location, and turbine operating conditions typically dictated by the wind speed, the predicted noise levels are within criteria. With respect to the EPA criteria for description of effects, the potential effects at the nearest NSLs associated with the operation of the proposed wind turbines are described as negative, not significant and long-term. At H008, H012, and H048, Table 12-20 predicts potential exceedances of between 0.1 and 0.6dB of the criterion at 6m/s for the N163 turbine used for this assessment. It is noted that the magnitude of the predicted exceedances is considered imperceptible in the context of environmental noise and the perception of the average human ear. However, they are slightly above the applicable wind turbine noise criteria and applying the EPA criteria, they can be defined as having a negative, slight and long-term effect. Substation The noise emission level associated with a typical substation that would support a development of this nature is the order of 92dB(A) L_w. The predicted noise level from the operation of the substation at the nearest NSL (H060) at approximately 230m from the noise source at the substation (transformer of substation layout) is 24dB L_{Aeq,T}. It is concluded that there will be no significant noise emissions from the operation of the substation at any NSL. In addition, plant will be selected to ensure that there are no tonal or impulsive characteristics from the plant audible at any NSL during night time periods. The effect is described as negative, not significant and long-term.
Decommissioning Phase	It is stated that similar overall noise levels as those calculated for the construction phase would arise, as similar tools and equipment will be used. It is not intended to decommission the proposed GCR. Considering that in all aspects of the construction phase, the predicted noise levels are expected to be below the appropriate criteria at all NSLs, it is concluded that for the decommissioning phase, the impact is not significant.
Cumulative Effect	Construction Phase It is not anticipated that there will be any other construction activities that would give rise to significant cumulative impacts during the construction phase. With the implementation of mitigation measures, the predicted noise emissions for the proposed development are not of enough magnitude to cause an increase in the cumulative construction noise

	emissions exceeding the threshold for significant impacts at any NSL. For the proposed GCR, construction activities may occur near NSLs. The construction activities at the site which is closest to the NSL is expected to be the dominant noise source, with a lower contribution expected from sites farther away from the NSL. In most cases, the setback distances to the NSLs will ensure no significant cumulative impacts. In the unlikely event that works from other sites also occur near a receptor (within c. 30m), it is assumed that the maximum increase in predicted construction noise levels due to cumulative contributions would be no more than 3dB. While a 3dB increase represents a doubling of sound energy, subjectively, any change in noise level below 3dB would be barely perceptible. Additionally, the works associated with the GCR will occur for short durations and are expected to be near the closest NSLs for a limited amount of time, i.e., less than one day. The anticipated effects are therefore Negative, Slight & Short-term. <i>Operational Phase</i> <u>Wind Turbine Noise</u> A review of existing, proposed and permitted wind turbine developments in the wider study area has been undertaken in accordance with the guidance contained in the IOA GPG. Foyle and Kyleballyoughter Wind Farms are included in the cumulative assessment and the anticipated associated effects at the nearest NSLs associated with cumulative impacts from the proposed wind farm are described as Neutral, Imperceptible & Long-term. <u>Grid Connection</u> It is not considered that any significant cumulative operational noise or vibration effects are likely in relation to the proposed GCR infrastructure. The underground cabling route will not generate any noise during the operational phase, and the predicted operational noise levels at the nearest NSL from the operation of the onsite 38kV substation are well below the noise criteria. Furthermore, the distance to any other developments will ensure that any contribution to cumulative noise will not be significant. Therefore, the anticipated effects are therefore Negative, Slight & Short-term.

Mitigation

9.11.11.11. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

<i>Construction Phase</i>	Due to the potential for significant construction noise impact effects at receptors within 25m of the existing road upgrades and the proposed GCR, specific mitigation measures are proposed. For all other elements of the construction phase, the proposed development is expected to comply with the criteria and therefore no specific mitigation measures are required. Notwithstanding this, best practice mitigation measures from BS5528-1 standard will be implemented for the duration of the construction phase as detailed in Section 12.6.1 of the EIAR. This also details best practice mitigation with respect to rock breaking and blasting, all of which are outlined in the CEMP. <i>Access Roads and Existing Road Upgrades</i> The contractor will utilise screening in order to reduce noise impacts on nearby sensitive receptors when the works take place proximate to them

	along the proposed route. It is noted that the closest NSL to these works (H015) is involved landowner in the proposed development. Proprietary screens are available from suppliers that can be mounted to mobile fencing, with suitable care and attention this method can provide up to 10 dB of attenuation. With this mitigation measure in place, noise levels at 10m distance from construction activity are predicted to be within the criterion for linear construction works. The resulting noise effect is negative, not significant and brief to temporary. Additional or alternative mitigation measures include: - Monitoring typical levels of noise and vibration during critical periods and at noise sensitive locations; - Selection of plant with low inherent potential for generation of noise and/ or vibration, and; - Placing of noisy / vibratory plant as far away from noise sensitive properties as permitted by site constraints <i>Grid Connection Underground Cabling Route</i> For linear works, the brief nature of the noise effects at any individual NSL implies that the noise effects are not significant, therefore mitigation measures are not required.
<i>Operational Phase</i>	It is noted that modern wind turbines can be programmed to run in reduced modes of operation (or low noise modes) in order to achieve noise criteria during certain periods (i.e. day or night) and in specific wind conditions (i.e. wind speed and direction). Once constructed, a compliance noise survey will be carried out to quantify the wind turbine noise levels due to the proposed project and assess their compliance with noise criteria. Should predicted exceedances be confirmed at the commissioning stage, it is proposed to mitigate this through curtailment of turbine(s) in the relevant wind speed and directions. The curtailment strategy will be developed for the specific relevant turbine installed on the site and the associated noise emissions at the various operational wind speeds. If necessary, a detailed curtailment strategy matrix will be developed at the detailed design stage in order to achieve the relevant noise criteria at all NSLs. For the Nordex N163 turbine adopted for the assessment, the potential exceedance, if realised, can be mitigated through curtailment of the specific turbine(s) for the relevant wind speeds directions and periods. The N163 turbines have been modelled with all turbines operating in normal mode ('Mode 0') with STE blades. The N163 turbines can be configured for up to 18 no. operating modes. As an example of this turbine control capability, Table 12-22 shows the sound power levels for the Nordex N163 turbine at the hub height of 103.5m for Normal Operation and should be read as augmenting Table 12-10, along with the sound power levels for the various operational modes that can be applied to this turbine. The table demonstrates that at mid to higher wind speeds, a reduction in the noise level of the order of 5dB can be achieved dependent on the operational mode set on the specific turbines. To address the exceedances at H012, the curtailment strategy in Table 12-23 has been developed and would apply during daytime periods at windspeeds of 6m/s in southwest and west wind conditions. H008 is located adjacent to H012. Thus, the curtailment described in Table 12-23 also addresses the exceedances at H008. For H048, the curtailment strategy is proposed for southeast wind directions and is illustrated in Table 12-24. With the implementation of turbine curtailment as outlined in tables 12-23 & 12-24, the predicted noise levels (i.e. as per Table 12-25) demonstrate that no exceedances of the criteria are noted at H012, H008

	or H048. <i>Amplitude Modulation</i> In the event that a complaint which indicates potential Amplitude Modulation (AM) associated with turbine operation, it is noted that the operator will employ a qualified acoustic consultant to assess the level of AM in accordance with the methods outlined in the Institute of Acoustics IOA Noise Working Group (Wind Turbine Noise) Amplitude Modulation Working Group Final Report: A Method for Rating Amplitude Modulation in Wind Turbine Noise (9 August 2016) or subsequent revisions. The measurement method outlined in the IOA AMWG document, known as the 'Reference Method', will provide a robust and reliable indicator of AM and yield important information on the frequency and duration of occurrence, which can be used to evaluate different operational conditions including mitigation. These mitigation measures, if required, will consist of the implementation of operational controls for the relevant turbine type, which may include turbine curtailment and/or stopping turbines under specific operational conditions. <i>Monitoring</i> An operational noise survey will be undertaken to ensure compliance with any noise conditions applied to the development. It is common practice to commence surveys within six months of the wind farm being fully commissioned. If an exceedance of the noise criteria is identified as part of the assessment, the guidance outlined in the IOA GPG, specifically Supplementary Guidance Note 5: Post Completion Measurements (July 2014) will be followed, and relevant corrective actions taken. This could include the implementation of noise reduced operational modes resulting in curtailment of turbine operation for specific turbines in specific wind conditions. Such curtailment can be applied using SCADA system without undue effect on the wind turbine performance. Following implementation of these measures, noise surveys will be repeated to confirm compliance with the noise criteria.
<i>Decommissioning Phase</i>	No specific mitigation measures are required for decommissioning. To ameliorate any potential noise impacts that may present during the decommissioning phase, a schedule of noise control measures has been formulated in accordance with best practice guidance as outlined in the CEMP.

Residual Effects

9.11.11.12. The residual impacts are described in the below table.

Table: Residual Effects

Construction Phase	
<i><u>Wind Farm</u></i>	
Turbines and Hardstands	Negative, Not Significant & Short-term
Access Roads and Existing Road Upgrades	Negative, Not Significant & Short-term
Temporary Construction Compounds	Negative, Not Significant & Short-term
Borrow Pit	Negative, Not Significant & Short-term
Other Proposed Construction Works	Negative, Not Significant & Short-term

<u><i>Grid Connection</i></u>	
38kV Electrical Substation and Temporary Construction Compound	Negative, Not Significant & Temporary
Grid Connection underground cabling route	Negative, Not Significant & Brief to Temporary
Construction Traffic	Negative, Not Significant & Short-term
Operational Phase	
<i>Wind Turbine Noise</i>	Negative, Not Significant & Long-term
<i>38kV Substation Noise</i>	Negative, Not Significant & Long-term
Decommissioning Phase	Negative, Not Significant & Short-term

Assessment

9.11.11.13. I have examined, analysed and evaluated Chapter 12 of the EIAR and all of the associated documentation and submissions on file in respect of noise and vibration. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP, as well as other relevant regional and national policy. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation and advertisement which included additional details with respect to noise. The observations at application and appeal stage from KBT Responsible Energy have included commissioned opinions from Grosvenor Consulting (Planning & Noise Consultancy Services), Huson & Associates, Mr Con Sheehan and the International Acoustics Research Organisation (IARO). I also note that reference is made by Grosvenor Consulting to Irish judgements and international papers in respect of low frequency noise, infrasound and wind turbine noise and human health impacts. While noting the contents of same and knowledge of the authors, it is not considered that the papers themselves or judgements would lead to a conclusion that the subject proposal would lead to noise nuisance from amplitude modulation, infrasound or low frequency noise, given that it does not refer to the particulars of the subject proposal or the documentation submitted in respect of same. Parties to the appeal have raised a number of issues which I address below.

Noise Guidance and Baseline Noise Monitoring

9.11.11.14. It is noted within Section 11.5.3 of the (Development Management Guidance) of the 2021-2027 DP that all planning applications for wind energy developments shall be assessed against the WEDG 2006, (and any revisions thereof) and the County Council's Wind Energy Strategy. However, this is contradicted by Section 11.5.3.4 (Noise Impact Assessment and Noise Limit) of the 2021-2027 DP which notes that noise modelling

carried out by the applicant in advance of and submitted with the planning application must test and demonstrate compliance with the required noise limits specified in the draft WEDG 2019. I note that the approach for setting noise limits at receptors in the WEDG 2006 are based on ETSU-R-97. Notwithstanding the DP policy, the draft WEDG 2019 Guidelines are still subject to review, and the Commission will note that one of the key aspects being reviewed is the approach to noise. At the time of writing this report, no timelines were available for a further draft or finalisation of the revised guidelines. Therefore, the WEDG 2006 remain in force and as such, I consider the methodology and noise limits within ETSU-R-97 to be generally supported by national planning policy.

9.11.11.15. Within the submission from Huson & Associates, it is noted that the determination of whether an area can be described as having a low background sound level (below 30dB(A)) is best assessed using BS 4142 and ISO 1996-1:2016. It is contended that it has been incorrectly interpreted in the EIAR that when background sound levels determined from a trend line analysis become greater than 30dB(A) at higher wind speeds, that the lower range of noise limits suggested in WEDG 2006 (35 to 40 dBLA90) do not apply and the limit suddenly reverts to 45 dBLA90. It is stated that this is incorrect and it is their view that the test of a quiet area is made at lower wind speeds (below 5 m/s, where according to BS 4142, wind-induced noise on a microphone is minimised) and once determined, applies at all higher wind speeds where the background plus 5dB approach then applies to set target noise limits. It is also their contention that the lower target sound level of 35 dB(A) plus 5dB should apply, not 40 dB(A) plus 5dB. With less optimistic noise modelling and more realistic daytime noise limits, the submission opines that many more dwellings are non-compliant.

9.11.11.16. Whilst the concerns are noted, I am satisfied that a robust background noise survey has been undertaken to establish typical background noise levels at representative NSLs which has been carried out in accordance with the IOA GPG. I note that BS 4142 is typically designed for fixed industrial sources, whereas ETSU-R-97 accounts for higher wind speeds and higher turbine speeds, primarily by linking noise limits to the background noise levels at specific wind speeds. Therefore, as wind speeds increase, background noise will also increase, allowing for higher noise limits to be applied. In the case of the subject proposal, background noise data is utilised to establish suitable

noise criteria curves for each of the NSLs, where measurements were undertaken. A summary of derived background noise levels during quiet daytime periods is set out in Table 12.11 of the EIAR and ranges from 25.1dB(A) (at NML-A & NML-F) for low wind speeds to 45.7dB(A) (at NML-C) for higher wind speeds. The prevailing background noise levels during nighttime periods is also set out in this table and ranges from 21.0dB(A) (at NML-A & NML-F) for low wind speeds to 43.1dB(A) (at NML-C) for higher wind speeds. For all other locations, a conservative approach has been adopted where a background noise envelope based on the lowest levels derived from the various survey locations has been employed for the purpose of the assessment. While it is contended by Huson & Associates that many more dwellings would be non-compliant if less optimistic noise modelling was undertaken and more realistic daytime noise limits applied, it is evident from examining the predicted omni-directional noise levels (i.e. Appendix 6 of Applicant's FIR) that a relatively modest number of properties (14 no. additional properties) would record exceedances above 40dB in the range of between 0.1dB to 1.3dB at the higher wind speeds of 7-9m per second. Overall, I am satisfied that a robust noise assessment, informed by adequate background noise monitoring, has been undertaken and the application of noise limits is in accordance with ETSU-R-97 and the WEDG 2006. In addition, the turbine curtailment strategy as set out in Section 12.6.2.1.1 of the EIAR will ensure that all noise levels at all noise sensitive receptors will be within the relevant best practice noise criteria curves for wind farms and I would concur with the Applicant that no significant effects are associated with the proposed wind farm's operation. I do however recommend the inclusion of a condition to limit daytime and night-time noise at noise sensitive receptors in line with the WEDG 2006. Furthermore, there should be an obligation on the Applicant to submit and agree a noise compliance monitoring programme with the Planning Authority. This shall include the mitigation measures required to achieve compliance with the noise limits, including turbine curtailment in the context of the 3 no. NSLs (i.e. H008, H012 and H048), where exceedances may occur.

9.11.11.17. In response to the Planning Authority's concerns that it was not possible to check whether the extent of the study area was appropriate, the Applicant refers to the Figure titled 'Predicted Cumulative Noise Contours' which shows the cumulative noise contours, including that for 35 dB LA90 (See Appendix 3 (Response by AWN Consulting

Ltd. of the First Party appeal submission). The locations of NSLs are shown as points and it can be seen that the area covered by the points, extends beyond the 35 dB L_{A90} contour. I note that a new Noise Contour Map was submitted to the Commission by way of further information which corrected a number of NSL references and included a scale bar. Table 3-1 of the AWN response (Appendix 3) also clarifies which noise criteria were applied at each receptor. Overall, I am satisfied that the Applicant's rationale for the study area is acceptable.

Turbine Noise Model & Calculations

9.11.11.18. Observers have raised concerns that the exact make and model of the turbine installed on the site will be dictated by a competitive procurement process. As indicated, the noise profiles of the Nordex N163 wind turbine have been used for the purposes of the assessment. However, it is confirmed that the exact make and model of the turbine installed on the site will adhere to the specifications and parameters as set out in the EIAR and will not give rise to noise levels of greater significance than that used for the purposes of the assessment, to ensure the findings remain valid. This approach is acceptable in my view.

9.11.11.19. The appeal submission from Huson & Associates Report acknowledged that the EIAR has used the 'full' ISO 9613-2 noise model, implemented in DGMR iNoise Enterprise (Version 2023.02), that includes ground absorption. However, it is contended that the EIAR does not state if a correction for propagation 'across a valley' due to ground concave profile effects has been considered, as required in the IOA GPG. I note that it is confirmed in the EIAR that the selected software (i.e. DGMR iNoise Enterprise (Version 2023.02)) calculates noise levels in accordance with ISO 9613: Acoustics – Attenuation of sound outdoors, Part 2: General method of calculation, (ISO, 1996). In terms of the Ground Absorption Factor 'G', AWN Consulting Ltd. have also confirmed in the First Party appeal submission that the value of this parameter (i.e. 'G') was $G=0.5$. AWN note that this is fully supported in the guidance once the allowance for uncertainty in the sound power level is also applied. In this regard, they refer to Section 12.3.7 of the EIAR which states that 'As per best practice guidance contained within the IOA GPG, an allowance for uncertainty in the measurement of turbine source levels of +2 dB is applied in modelling to all turbine sound power levels'. In relation to Huson & Associates commentary regarding a lack of clarity as to whether the +2 dB for

uncertainty has been added to the sound power levels listed in Table 12.10 of the EIAR, Awn also confirm that the highest sound power level of 106.6dB L_{WA} was used throughout the assessment and the +2dB allowance for uncertainty was added to that for the noise model value, giving 108.6dB(A). Overall, I am satisfied that this Applicant's approach is acceptable and follows best practice.

Amplitude Modulation

9.11.11.20. Amplitude modulation (AM) has been raised as issue of concern by a significant number of residents. In KBT Responsible Energy's commissioned opinion, Huson & Associates are of the view that AM is likely to arise given the configuration of the proposed wind farm (noting the turbine spacing and tower height to rotor diameter ratio) and an additional penalty to the predicted sound levels is warranted to account for this special audible characteristic. Section 12.3.2.2 of the EIAR distinguishes between Normal Amplitude Modulation (NAM) and Other Amplitude Modulation (OAM). It is acknowledged that in some cases, OAM is observed at large distances from a wind turbine (or turbines) and is generally heard as a periodic 'thumping' or 'whoomphing' at relatively low frequencies. It is indicated within the EIAR that there is no industry consensus or recognised methodology that can be applied to predict the likelihood of AM at a particular wind farm at the planning stage and a site-specific assessment would therefore need to be undertaken at post commissioning stage. Should a complaint arise regarding AM in the context of the subject proposal, mitigation includes the appointment of a qualified acoustic consultant to assess the level of AM and mitigation is to be employed which may consist of the implementation of operational controls, including turbine curtailment and/or stopping turbines under specific operational conditions. I note that there is currently no requirement in the WEDG 2006 for a penalty scheme to account for amplitude modulation and I would concur with the Applicant that these are potential operational noise characteristics that can only be confirmed, if applicable, and addressed during the wind farm's operation. Overall, I am satisfied that the commitment to investigate noise complaints and where applicable, implement appropriate mitigation measures as outlined in the mitigation measures of the EIAR adequately addresses this matter.

Infrasound and Low Frequency Noise

9.11.11.21. Concerns have been raised with respect to the potential for infrasound and low

frequency noise and it is contended that studies have shown that this noise, especially during night hours, disrupts sleep patterns, potentially leading to stress and other health problems over time. Section 12.3.2.1 (Infrasound/Low Frequency Noise) of the EIAR notes that low frequency noise is noise that is dominated by frequency components less than c. 200Hz, whereas Infrasound is typically described as sound at frequencies below 20Hz. It is contended within the EIAR that there is a significant body of evidence to show that the infrasound associated with wind turbines will be below perceptibility thresholds and typically in line with existing baseline levels of infrasound within the environment. Studies referenced include 'Health Effects of Exposure to Ultrasound and Infrasound, UK Health Protection Agency, 2010', 'UK Institute of Acoustics Bulletin, IAO JS2009, March 2009', 'Infrasound levels near windfarms and in other environments, EPA, 2013', and 'Low Frequency Noise incl. Infrasound from Wind Turbines and Other Source, State Office for the Environment, Measurement and Nature Conservation of the Federal State of Baden-Württemberg, 2016'.

9.11.11.22. Within the commissioned opinion by Huson and Associates, it was their view that the studies referenced by the Applicant do not hold weight as they have used the dBG filter to assess wind farm infrasound and low frequency noise. It is also contended that the EIAR has not considered low frequency noise impacts. As part of their original submission on the application, KBT Responsible Energy commissioned IARO to prepare a 'Report on the 'High-Resolution Infrasonic and Low-Frequency Sound Recordings conducted at Kilmanagh, County Kilkenny'. Noise monitoring was undertaken at a number of homes within the vicinity of the site, and the report concludes that wind turbine acoustic signatures (WTAS) with a fundamental frequency of 1 Hz (hertz) were identified in 8 of the 11 Homes in which recordings were taken. It is contended that the proposed development will generate more WTAS within these homes and any increase in such contamination would exacerbate potential health impacts. Whilst these concerns are acknowledged, I note the 'preliminary' nature of the IARO report, and I am not satisfied that a direct link between the recordings and existing wind turbines have been established given that it is generally accepted that natural and environmental processes may generate similar frequencies. I note that they have acknowledged within their report that the dominant energy in their recordings arise from wind noise. However, weather data and analysis, which is critical for distinguishing wind

effects from external sources, has not been included as it is states that it would be undertaken as part of final report. I note that no final report has submitted in support of the claims. Having regard to the separation distances provided between the proposed turbines and existing homes which are in excess of the draft WEDG 2019 and the information submitted by the Applicant, including the international research referenced in Section 12.3.2.1 of the EIAR, I am satisfied that the proposal would not result in infrasound or low frequency noise of a type or magnitude that would result in significant impacts on receptors within the vicinity of the site.

Construction Phase Noise

9.11.11.23. I note that concerns were raised by Third Parties regarding the potential for noise impacts associated with the construction phase of the development. Furthermore, the Planning Authority noted the potential for noise limit exceedances associated with linear construction works, blasting of bedrock, piling associated with the construction of turbine foundations and traffic noise. In the absence of specific noise limits, it is noted in Section 12.3.1.1.1 of the EIAR that appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Noise (BS 5228-1). Given the rural nature of the site in general, reference has been made to the quietest properties near the development which have daytime ambient noise levels typically in the range of 30 to 50dB $L_{Aeq,1hr}$. Therefore, for the purposes of the assessment, as a precautionary approach, all properties were afforded a 'Category A' designation for initial assessing of construction noise impacts (Max. of 65dB during the daytime). However, a fixed construction noise limit of 70dB $L_{Aeq,T}$ has been applied to the proposed GCR works. The rationale for the adoption of a fixed limit is that noise from associated construction activities is variable and typically occurs for a short period of time only and is at its highest when closest to the NSL. It is acknowledged within the EIAR that the predicted noise levels at the closest NSLs, at distances of within 25m from works have the potential to exceed the construction noise criterion of 70dB $L_{Aeq,1hr}$. However, on the basis that the duration of the noise effect is brief, mitigation measures are not deemed to required. Notwithstanding this, it is noted in the appeal submission that the Applicant has committed to, in discussion with the relevant property owners, using mobile screens to reduce noise levels during these works where the noise-sensitive locations are within 25m of the cable route. I am satisfied that

compliance with a condition recommending same will ensure that undue noise impacts on receptors along the proposed GCR will not arise. I note that potential noise impacts associated with blasting from the proposed borrow pit and piling for the turbine foundations shall be well within the noise limit of 65dBL_{Aeq} at all NSLs. In terms of construction traffic, it is acknowledged that during Stage 2a (i.e. Concrete foundation delivery), along route links 4, 5 and 6, the change in noise levels correspond to potential 'moderate' to 'major' impacts. However, it is noted that the predicted traffic noise level, at 5m from the road edge is 62 dB L_{Aeq, 12hr} for each link. Given it is below the 65dBL_{Aeq} and that this stage lasts just 7 days, I would concur with the Applicant that the effect is considered 'not significant'.

Conclusion: Direct and Indirect Effects

9.11.11.24. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. It is considered that the Applicant has provided sufficient survey data to enable assessment of likely effects on the environment. I am satisfied that the potential for significant adverse impacts from noise and vibration can be avoided, managed and/or mitigated by the measures that form part of the proposed scheme, the proposed mitigation measures and through adherence with suitable conditions. I am satisfied that the proposed development would not have unacceptable direct, indirect or cumulative impacts from noise and vibration.

9.12. Material Assets, Cultural Heritage and the Landscape

Material Assets

Chapter 15 (Material Assets) of the EIAR assesses the likely significant effects of the proposed development on transportation infrastructure (Section 15.1 Traffic and Transport), on Telecommunications and Aviation (Section 15.2) and Other Material Assets (Section 15.3).

Material Assets (Traffic & Transport)

9.12.1. Issues Raised

Third Parties

9.12.1.1. As detailed earlier in this report, issues have been raised by Third Parties during the

application and appeal with respect to the excessive number of grid routes in the area which have not been adequately addressed in the application and appeal, the location of the haul route through Kilmanagh Village and safety related impacts, the unsuitability of the surrounding road network to cater to a development of this scale, an inadequate assessment of the requirement for significant road widening, tree felling and upgrading and the overall adverse impact of the works associated with GCR on residential amenity, cultural heritage and existing infrastructure.

Local Authority/Prescribed Bodies

- 9.12.1.2. It is noted that there is a detailed submission on file from the Planning Authority's Road's Section which has raised concerns in terms of the GCR selection, GCR construction details and traffic management, cumulative effects of traffic disruption, wind farm traffic management, road opening licenses and site access. In light of same, a request for further information was recommended by the Road's Section. The Planning Authority also highlighted issues arising from overlapping of timelines for other GCR works and an approach where there is a reliance on potential discussions between contractors as a measure of avoidance. It is contended that this approach provides insufficient assurance regarding the overlapping of concurrent works programmes and the potential for significant cumulative effects.
- 9.12.1.3. In their report on file, TII have raised concerns regarding the absence of a plan led approach for private grid connections which presents significant risk to the strategic national road network maintenance and operation, as well as impacting project delivery of independently proposed renewable energy projects.

9.12.2. Examination, analysis and evaluation

Context

- 9.12.2.1. This section of the EIAR assesses the effects on roads, traffic and transport of the traffic movements that will be generated during the construction, operational and decommissioning phase of the proposed development. It is acknowledged within the chapter that the construction phase is the critical period with respect to the traffic effects experienced on the surrounding road network in terms of the additional traffic volumes that will be generated on the road network, and the geometric requirements

of the abnormally large loads associated with the wind turbine components. Relevant appendices to this chapter include:

- Appendix 15-1 - Traffic Count Data,
- Appendix 15-2 - Traffic Management Plan, and,
- Appendix 15-3 - Autotrack Assessment – Port.

9.12.2.2. The methodology for this section of the EIAR includes:

- A review of the existing and future transport infrastructure in the vicinity of the proposed development, including the proposed turbine delivery route, an assessment of base 2023/2024 traffic flows and traffic forecasts during an assumed construction year of 2028,
- A description of the nature of the proposed development and the traffic volumes that it will generate during the different construction stages and when it is operational,
- A description of the abnormally large loads and vehicles that will require access to the site,
- A review of the effects of proposed development-generated traffic on links and junctions during construction and when the facility is operational,
- An assessment of the effects during the proposed GCR,
- Traffic management of large deliveries and a geometric assessment of the routes and their capacity to accommodate the abnormal loads associated with the proposed development,
- An assessment of the provision for sustainable modes of travel,
- A description of potential effects of the proposed development on Roads and Traffic.

Baseline

9.12.2.3. The nearest turbine (T7) is located c. 1.2km to the north of the settlement of Kilmanagh with settlement of Tullaroan located c. 2.7km north of the T1. The R695 regional road runs immediately south of the site in an east-west orientation entering Kilmanagh and then heading south towards Callan. Existing access into the proposed wind farm site is via farm entrances off the L5023 local road to the north-west, L5024 to the north, and L1009 to the south. It is noted that the site is traversed by a number of existing

agricultural roads and tracks.

9.12.2.4. The port of entry for the turbine components is Belview Port in Waterford City and the proposed Turbine Delivery Route (TDR) has been detailed as follows:

- From Belview Port the route travels north on the N29 for c. 4km before heading west on the N25 for c. 6km.
- The route then turns off the N25 at the Grannagh Roundabout to access the N9 heading west for a further 0.8 km to the Quarry Roundabout that connects with the M9.
- From the Quarry Roundabout, the route heads north on the M9 for c. 35km exiting at Junction 9 onto the N10.
- From this point the route travels north on the N10 for c. 7.2km to the Waterford Roundabout on the southern section of the Kilkenny City ring road.
- The route then heads northwest on the N76 Kilkenny City ring road for c. 1.2km to the Callan Road roundabout.
- From the Callan Road roundabout the TDR travels southwest on the N76 for c. 14.2km to the junction with the R695 just north of the town of Callan. At this point the route turns right off the N76 and heads north on the R695 for c. 9.4km to the priority junction with the local L1009 in Kilmanagh.
- At this junction the TDR turns left to head west for c. 0.2km to a point where the abnormally sized loads will turn right off the L-1009 to access the proposed wind farm site at a temporary access junction.

9.12.2.5. In terms of the construction traffic haul route, it is noted that all concrete required for each turbine foundation will be delivered to the site in one day per foundation for a total of 7 days and all concrete deliveries provided by local quarries will access the site via the temporary access off the L1009 located at the southern end of the site (Figure 15-1b of EIAR). Section 15.1.4.1 of the EIAR notes that this junction will only be used on:

- the 19 nights that a convoy of abnormally sized loads will be delivered to the Site accompanied by an escort provided by An Garda Síochána and the haulage company, and,
- the 7 days that the concrete deliveries will be to the site for the construction of

the turbine foundations.

Once the construction phase is complete, this temporary access will be closed and the land and existing boundary treatments re-instated and will only be re-opened for the replacement of abnormally large turbine components (if required).

9.12.2.6. It is proposed that all other materials will be accessed via the proposed new permanent access junction off the L5024 located at the northern end of the site. Therefore, it is confirmed the route for general construction traffic will avoid the settlement of Kilmanagh. The proposed delivery routes for all other materials required for the construction of the proposed wind farm and GCR are to and from the direction of Kilkenny and are designated a different route for deliveries accessing the site and for those exiting the site to minimise the impact on the local road network. It is noted that this access will be retained for the operational phase of the development.

9.12.2.7. A total of 6 no. locations were included in the link flow assessment for which base year 2023/2024 traffic count data was collated. These locations are identified in Figure 15-2b of the EIAR and include:

- Link 1 – N10 between M9 and Kilkenny,
- Link 2 – N76 east of Callan,
- Link 3 – R695 north of Callan,
- Link 4 – R695 south of Kilmanagh,
- Link 5 – L-1009 west of R695 in Kilmanagh,
- Link 6 – R695 east of Kilmanagh.

For Link 1 on the N10 between the M9 and Kilkenny the data was obtained from an automatic traffic counter maintained by TII. For the remaining five links, 12 hour (07:00 to 19:00) traffic counts were undertaken at two junctions to provide 2-way link flows and junction turning count data.

9.12.2.8. Based on TII growth rates it is estimated that traffic volumes will increase by 6.4% from 2023, and 5.1% from 2024 to the year 2028, when the construction of the proposed development is forecast to take place. Traffic flows for the base years 2023/2024 and the construction year of 2028 are compared in Table 15-5 of the EIAR. TII traffic count data recorded at the TII count site on the N10, together with the

classified traffic count undertaken for the purpose of this assessment, were also used to determine the existing percentage of HGVs on the proposed delivery routes. The observed percentage of HGVs are shown in Table 15-6 of the EIAR and range from a minimum of 3.1% observed on Link 1 on the N10 between the M9 and Kilkenny, to a maximum of 9.2% observed on the N76 to the east of Callan.

9.12.2.9. It is noted that the traffic generation estimates set out in the EIAR are based on a total construction period of 12 months. The shortest potential construction phase duration of 12 months was assumed for the construction phase in order to test a precautionary scenario as the shortest construction period will give rise to higher volumes of construction traffic at any one time. In terms of trip generation during the construction phase, it is proposed that the construction of the proposed GCR (230 days) will be undertaken concurrently with the general construction days (222 days) and the turbine delivery standard HGV deliveries resulting in the 4 types of days for the purpose of the network traffic impact assessment (see Table 15-15 of the EIAR). It is noted that the days are not in the order that they will occur but provide a realistic representation of the delivery days that will occur within the 1 year construction period. The first 2 types of construction days are;

- General construction + GCR construction (222 days), and,
- Turbine delivery (standard HGVs) + GCR construction (7 days).

It is confirmed that no development generated trips on these days will travel through the settlement of Kilmanagh. The 3rd and 4th types of construction days are;

- Concrete foundation pouring days (7 days), and,
- Turbine delivery days (abnormal loads) (19 days).

For these delivery days, all trips will travel to and from the site via the temporary access road off the L1009 to the west of Kilmanagh.

9.12.2.10. It is estimated that the traffic volumes that will be generated by the proposed wind farm once operational will be minimal, with an estimated 1-2 staff employed on the proposed wind farm site at any time. Traffic generation to the site during decommissioning will be similar to that of the construction phase but significantly less because much of the materials brought into the site during construction will be left in-situ

9.12.2.11. Section 15.1.6.4 (Effect on Junctions – During Construction) indicates that the junctions most affected on the delivery route will be the junction between the N76 and the R695 and R695 / L1009 approaching the proposed wind farm site access junction. For this reason, a detailed junction capacity test was undertaken for both of these junctions and is discussed in detail in Section 15.1.6.4.2 (N76 / R695 Junction Capacity Test Results) and Section 15.1.6.4.3 (R695 / L-1009 Junction Capacity Test Results) of the EIAR. For the N76 / R695 Junction, the results show that the additional car trips passing through the junction will have a slight effect on the operation of the junction, increasing the maximum ratio of flow to capacity (RFC) at the junction from 36.8% to 37.9% during the AM peak hour, and from 34.6% to 41.2% for the movement affected during the PM peak hour. In the case of the R695 / L-1009 Junction, the additional car trips passing through the junction will result in an increase in the maximum ratio of flow to capacity (RFC) at the junction from 6.4% to 12.9% during the AM peak hour, and from 3.6% to 10.9% during the PM peak hour.

Proposed GCR

9.12.2.12. As noted, the GCR measures c. 23km, of which c. 22.1km is located within the public road corridor. The extent of the underground cabling route that will impact on the public road network is illustrated in Figure 15-4a of the EIAR and the link length (km), construction duration (days) and diversion during the construction phase is summarised in the below table.

Table: GCR link summary, link length (km), construction duration (days) and diversion during construction

Underground Cabling Route Section	Traffic management	Length (kms)	Construction duration (days))	Diversion length (kms)	Additional trip length (kms)
Off road at proposed wind farm site	Off-road	0.3	3	N/A	N/A
Section 1 – L-5023	Closure	1.0	10	6.8	5.8
Section 2 – L-5023 / L-1008	Closure	4.8	48	6.3	1.5
Section 3 – L-1003 / L-1002	Closure	6.2	62	13.1	6.9
Section 4 – L-1001 / R693 /	Stop & go	0.6	6	N/A	N/A

R694					
Section 5 – R694	Closure	2.6	26	5.9	3.3
Section 6 – R694	Closure	5.5	55	7.6	2.1
Section 7 – N77	Stop & go / 2-way flow	1.1	11	N/A	0.0
Off road section and River Nore crossing	Off-road	0.7	7	N/A	N/A
Section 8 – R432	Stop & go	0.1	1	N/A	N/A
Off road section at Ballyragget Substation site	Off road	0.1	1	N/A	N/A
Total		23	230		

Abnormal Load Route Assessment

9.12.2.13. As noted, Belview Port in Waterford City is the proposed point of arrival for the large turbine components for the proposed wind farm. A route assessment has been undertaken covering the entire delivery route between the port and the proposed wind farm site and an autotrack assessment from Belview Port to Kilkenny Southern Ring Road (N10) is included within Appendix 15-3 of the EIAR. It is confirmed that the abnormal loads will be accommodated on that section of the route with minor temporary alterations within the curtilage of the existing road network. For the section of the TDR approaching the site from the N76 which travels south-west from the Kilkenny Southern Ring Road, a swept path assessment has been undertaken at the locations shown in Figure 15-2a of the EIAR (i.e. a total of 7 no. locations). The analysis was undertaken to establish the locations where the wind turbine transporter vehicles will be accommodated and the locations where some form of remedial measures may be required.

Wind Farm Site Access Junctions

9.12.2.14. In terms of Locations 8 and 9 – R695 / L1009 junction and the temporary access on the L-1009), the swept path analysis undertaken for these junctions are shown for the blade and tower transporters in Figures 15-20 and 15-21 of the EIAR. At the R695 / L-1009 junction, Figure 15-20 shows that the blade transporter will be required to utilise the existing carpark on the east side of the L-1009. It is proposed that access for general construction traffic will be provided via an improved access junction off the L-

5024 (north of site), as shown in Figure 15-23. It is noted that the proposed junction has a radii of 13m to provide for standard HGVs turning right into the site and right out of the site, in accordance with TII guidelines Geometric Design of Junctions (DN-GEO-03060). It is noted that visibility splays that will be kept clear during the construction and operational stages of the proposed development are shown in Figure 15-24 of the EIAR.

Potential Effects

9.12.2.15. Potential effects of the development, as identified in the EIAR, are summarised in the below table.

Table 8.8.1: Summary of Potential Effects

<i>Do Nothing</i>	There will be no additional traffic generated or works carried out on the road network and therefore no effects with respect to traffic. If the proposed development were not to proceed, the opportunity to capture part of Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.
<i>Construction Phase</i>	<i>Wind Farm</i> For 222 days, when general construction works will take place at the same time as the construction of the GCR, an additional 123 PCUs will travel to/from the proposed wind farm site. During these days it is forecast that the increase in traffic volumes will range from +1.3% on the N10 between the M9 and Kilkenny (Link 1), to +1.2% on the N76 just to the east of Callan (Link 2) and +3.5% on the R695 just to the north of Callan (Link 3). Travelling north toward the site, background traffic volumes decrease resulting in a 13.6% increase on the R695 approaching Kilmanagh (Link 4), a 9.3% increase on the L-1009 just west of Kilmanagh. A temporary slight negative effect for existing traffic on the delivery routes and on the route of the proposed GCR and at the proposed access junction on the L5024 is forecasted. For 7 days when the delivery of smaller turbine components are made to the site by standard HGVs at the same time as the remaining 7 days required for the construction of the GCR, it is forecast that an additional 85 PCUs will travel to/from the proposed wind farm site. On these days it is forecast that the increase in traffic volumes will range from +0.9% on the N10 between the M9 and Kilkenny (Link 1), to +0.8% on the N76 just to the east of Callan (Link 2) and +2.4% on the R695 just to the north of Callan (Link 3). Travelling north toward the site it is forecast that there will be a 9.4% increase on the R695 approaching Kilmanagh (Link 4), a 6.4% increase on the L-1009 just west of Kilmanagh (Link 5). A temporary slight negative effect for existing traffic on the delivery routes and on the route of the proposed GCR and at the proposed access junction on the L5024 is

	forecasted. For 7 days when concrete is delivered to the site for the construction of the turbine foundations via the TDR and the temporary junction on the L1009 west of Kilmanagh, an additional 584 PCUs will travel to/from the site. On these days it is forecast that the increase in traffic volumes will range from +6.0% on the N10 between the M9 and Kilkenny (Link 1), to +5.6% on the N76 just to the east of Callan (Link 2) and +16.5% on the R695 just to the north of Callan (Link 3). Travelling north toward the site, it is forecast that there will be a 64.5% increase on the R695 approaching Kilmanagh (Link 4) and a 44.2% increase on the L-1009 just west of Kilmanagh (Link 5). A temporary moderate negative effect for existing traffic on the delivery route and at the temporary access junction on the L-1009 is forecasted. On the 19 nights that the abnormal loads carrying the large turbine components travel to the proposed wind farm, an additional 105 PCUs will travel to/from the site. On these days the volumes of traffic will remain at similar level in terms of pcus when it is forecast that the increase in traffic volumes will range from +1.1% on the N10 between the M9 and Kilkenny (Link 1), to +1.0% on the N76 just to the east of Callan (Link 2) and +3.0% on the R695 just to the north of Callan (Link 3). Travelling north toward the site it is forecast that there will be a 11.6% increase on the R695 approaching Kilmanagh (Link 4) and an 8.0% increase on the L-1009 just west of Kilmanagh (Link 5). A temporary moderate negative effect for existing traffic on the delivery route and at the temporary access junction on the L-1009 is forecasted. <i>Grid Connection</i> It is estimated that there will be c. 14 daily return trips made by a truck transporting materials, and 8 return trips made by a car to transport construction staff, to and from the site. Short term diversions are required for local traffic (as discussed in Section 15.1.7 of the EIAR). It is noted that the traffic volumes that will be impacted on the local road network are low. Therefore, by its nature, the effects of these additional trips and diversions on the network will be transient, will be temporary and will be slight.
<i>Operational Phase</i>	It is noted that the impacts on the surrounding local highway network will be negligible given that there will only be an average of c. 1 to 2 trips made to the wind farm site by car or light goods vehicle per day, with less than that required for the GCR. The effects of the maintenance traffic on the surrounding highway network will therefore be imperceptible.
<i>Decommissioning Phase</i>	<i>Wind Farm</i> Following the end of their useful life (c. 35 years), the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the site may be decommissioned fully. The impacts and associated effects will be materially less than during the construction phase as significant ground works are not required to decommission a wind farm. Following decommissioning, turbine foundations, hardstanding areas and site tracks will be rehabilitated, i.e. left in place, covered over with local soil/subsoil and allowed to re-vegetate naturally, if required. The internal site access tracks may be left in place, as they may serve as useful access to the agricultural and forestry land.

	While the actual number of loads that will require to be removed from the site in the event that the proposed wind farm is decommissioned has not been determined at this stage, the impact in terms of traffic volumes will be significantly less than during the construction stage. <i>Grid Connection</i> The proposed grid connection will remain in place as it will remain under the management and operation of ESNB. There are no impacts anticipated.
<i>Cumulative Effects</i>	<i>Other Wind Farms</i> As per Table 15-30 of the EIAR, it is noted that there are 4 permitted wind farm developments and a further 2 at the pre-application stage located within 10km of the proposed development, yet to be constructed, that have the potential to cause cumulative effects in relation to traffic and transport. Of these 6 no. wind farms, the permitted Farranrory Wind Farm (9 turbines) shares part of the TDR with the proposed development, including the southern section of the R695 and could potentially have concrete delivery and general construction delivery routes that share common parts of the road network. A similar assessment is made for the Kyleballyoughter Wind Farm (2 turbines), although less traffic will be generated by this development as it is smaller in scale. It is therefore proposed that the construction phase of the proposed development will be scheduled, where possible, to avoid the construction phases of the permitted Farranrory Wind Farm and the Kyleballyoughter Wind Farm. It is stated that this will ensure that the potential for cumulative effects is minimised. <i>Other development applications in the planning system</i> It is noted that a detailed cumulative assessment has been carried out for all planning applications (granted and awaiting decisions) within the cumulative assessment area for the proposed wind farm site and the proposed GCR. The planning applications identified within the study area for new dwellings or renovations of existing dwellings, associated wastewater treatment systems as well as for the erection of farm buildings. The planning applications have been reviewed based on their type, scale and proximity to the proposed wind farm site. Based on the scale of the works, their proximity to the site and the temporal period of likely works, no cumulative effects will occur as a result of the proposed development (construction, operation and decommissioning phases). A desk study of planning applications within 200m of the GCR was also undertaken. It is stated that the majority of these applications relate to the construction or renovation/extension of domestic dwellings, which will not generate potential cumulative effects due to their scale. However, there is a permission for the construction of a battery energy storage system in the vicinity of Ballyragget substation. Once the mitigation measures for the management of traffic through all phases are implemented, it is stated that there is no potential for significant cumulative effects on traffic and transport. The works along the proposed GCR are minor and transient, similar to roadworks being completed across the country and have no

	potential for significant cumulative effects on traffic and transport.

Mitigation

9.12.2.16. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

Construction Phase	<i>Design</i> - Selection of the most appropriate delivery route to transport the wind turbine components, requiring the minimum remedial works to accommodate the vehicles. - Selection of the shortest GCR, minimising the impacts on the existing road network and traffic. <i>Construction</i> It is noted that a Traffic Management Plan (TMP) (Appendix 15-2) will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior to construction works commencing. <u>Temporary Access Junction for Abnormally Sized Loads and Concrete Foundation Deliveries on L-1009</u> - For 19 nights, convoys comprising of 3 abnormal loads will gain access and exit the site at this proposed temporary junction. Transient traffic management measures on these nights will comprise of transient traffic management measures provided by an escort provided by An Garda Síochána and the haulage company. - For 7 days, concrete loads will be delivered to the site during the construction of the turbine foundation. On these days c. 107 concrete loads will access and leave the site over a 12-hour period, resulting in 7 HGV trips accessing and exiting the site at this junction per hour. On these days it is proposed that temporary traffic management measures, including signs and the presence of flagmen will be in place during the hours of operation. - At all other times during the construction phase this temporary access will be closes by means of security gates. On completion of the construction phase, the temporary access will be permanently closed and existing boundary treatment reinstated and opened only for the purpose of the replacing a large turbine component. <u>Construction and Operational Site Access off the L-5024</u> In order to separate traffic movements travelling to and from the site, it is proposed that all traffic accessing the site will travel east along the L5024 and turn right into the site, with all traffic exiting the site turning right out onto the L5024. It is proposed that temporary traffic management measures will be introduced at this location during the construction phase, including signs and the presence of a Flagman on days with high volumes of construction material deliveries. Proposals include the provision of

	signage (construction access), the introduction of a temporary speed limit and signage warning the presence of flagmen. It is noted that the detailed TMP will also include the following measures: - Traffic Management Coordinator. - Delivery Programme. - Information to locals. - A Pre and Post Construction Condition Survey. - Liaison with the relevant local authorities. - Implementation of temporary alterations to road network at critical junctions. - Identification of delivery routes. - Travel plan for construction workers to site. - Temporary traffic signs. - Delivery times of large turbine components. - Diversion routes during the construction of the Proposed GCR. - Additional measures. - Re-instatement works.
Operational Phase	None proposed during the operational phase.
Decommissioning Phase	In the event that the proposed development is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Chapter 4 and Appendix 4-5 Decommissioning Plan.

Residual Effects

9.12.2.17. The residual effects are summarised in the below table.

Table: Residual Effects

Construction Phase	During the 12 -18 month construction stage, it is forecast that the additional traffic that will appear on the public road network will have a slight to moderate, short-term negative effect on existing road users, which will be minimised with the implementation of the mitigation measures included in the proposed TMP as included Appendix 15-2 of the EIAR.
Operational Phase	As the traffic impact will be imperceptible during the operational stage, there will be no residual effects during this stage.
Decommissioning Phase	In the event that the proposed wind farm is decommissioned, a decommissioning plan will be prepared and implemented in order to minimise the residual effects during this stage. The residual effect will be less than for the construction stage as set out above and will be an imperceptible to slight, negative, temporary effect. For the proposed GCR, the onsite 38kV substation and underground cabling route will remain in-situ and continue to operate as part of the national electricity grid network.

Assessment

9.12.2.18. I have examined, analysed and evaluated Chapter 15 of the EIAR and all of the associated documentation and submissions on file in respect of traffic and transport. I

have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation and advertisement which included additional details regarding traffic and transport. Given the nature of the proposed development, I would concur with the Applicant's assessment that the impacts will not be significant during the operational phase as minimal traffic would be generated. In terms of decommissioning, whilst the works will be similar to the construction phase, the extent will be substantially less as the turbine foundations, access tracks and other infrastructure will be left *in situ*. Subject to compliance with a decommissioning plan to be agreed with the Planning Authority, I am satisfied that the traffic impacts associated with this phase of development would not be significant. Parties to the appeal have raised a number of issues which I address below.

Wind Farm Construction Traffic

9.12.2.19. As touched on above, the proposed wind farm site is reliant on 2 no. access points. A new permanent entrance to the north off the L-5024 and a temporary entrance to the south on the L-1009 within the settlement of Kilmanagh. Four types of days have identified for the purpose of the network traffic impact assessment. Whilst these days are not in order, they have been provided to give a realistic representation of the delivery days that will occur within the 1 year construction period (i.e. precautionary scenario). The access for general construction traffic and for maintenance traffic during the operational phase will be from the north (L-5024) and it is confirmed that the southern temporary entrance will only be used on the 19 no. nights that a convoy of abnormally sized loads will be delivered (An Garda Siochana escort) and the 7 no. days for concrete deliveries associated with the construction of the turbine foundations. I note that there have been significant concerns raised by residents regarding the negative impact of the additional volumes of traffic through the village of Kilmanagh. Of note, many observers were concerned about associated impacts on the existing school within the village, disruption to GAA club members and congestion in general. Pedestrian safety concerns were also noted. While I acknowledge that traffic through the village will be especially heavy during the concrete pour period and may cause a nuisance for residents, this phase is temporary and limited to a total of 7

no. days. In addition, oversized loads will be delivered under escort at night over a similarly short time frame (19 no. nights). Provided that a finalised construction traffic management plan is strictly adhered to, I am satisfied that no significant impacts are likely to arise through the use of the temporary southern site entrance.

9.12.2.20. All other construction-related traffic will enter and exit the site via the proposed northern entrance, and it is confirmed that these routes will avoid the settlement of Kilmanagh. It has been assumed within the EIAR that the proposed delivery routes are to and from the direction of Kilkenny with a different route designated for deliveries accessing the site and for those exiting the site. This has been done in an attempt to minimise the impact on the local road network and to ensure that HGV trips generated by the development do not meet when travelling in opposing directions. The proposed routes have been identified in Figure 15-1a of the EIAR. I note that a total of 6 no. locations have been included in the Applicant's link flow assessment along the proposed TDR which I have highlighted above. For construction traffic using the northern access only, it is acknowledged within the EIAR (Section 15.1.12.2) that movements will occur along routes other than the TDR. Notwithstanding this, projections for these phases of construction (i.e. 222 days for general construction & 7 days for deliveries of the smaller turbine components) have been provided along the TDR, despite it being clear that this route will not be used. A similar matter had been raised by the engineers in the Planning Authority's Road's Section report. It was noted that the Applicant had failed to provide a detailed assessment of the material delivery route to and from the northern access to ascertain the suitability of the proposed routes in the context of the background traffic and whether the roads could cater adequately for two-way traffic in terms of cross section and structural capacity. In order to address this matter, the Commission requested the Applicant by way of further information to demonstrate that the surrounding local road network could adequately cater for the additional traffic generated during the construction phase, noting the EIAR remained relatively silent on the condition/capacity of the surrounding local road network (exception of the L-1009). They were also requested to clarify how construction access to the site via the L5024 is to be maintained during the proposed road closures and diversions within Section Nos. 1 and 2 (Table 15-29) associated with the proposed GCR. I also acknowledge that residents have raised concerns regarding the

unsuitability of the surrounding local road network to cater to the associated construction traffic, and it is contended that there will be a requirement for significant road widening, tree felling and upgrading. Furthermore, impacts associated with the additional volume of construction traffic through the village of Tullaroan have been highlighted.

9.12.2.21. Within their FIR, the Applicant confirms that an assessment of the L1009 located just to the west of Kilmanagh and for which a traffic count was undertaken (Link 5) has been included in the EIAR. Whilst they acknowledge that this location is not on the local access routes to and from the site access junction on the L5024, it is their view that this may be taken to be representative of the local roads on these routes in terms of link capacity and background traffic flows. Based on site visits to the L5024 access, the Applicant notes that the background traffic levels on the local roads comprising the delivery routes are less than the volume observed on the L1009 west of Kilmanagh. Background traffic volumes on the L1009 during the construction period have been forecasted by the Applicant to be 1,320 pcus. In accordance with Table 6.1 of TII Rural Road Link Design, DN-GEO-03031, 2017, the L1009 (Local Primary) has a link capacity of 5,000 pcus per day. It is stated that this is also the case for the majority of access route (shown in light blue on Figure 15-2b), including the local primary roads L1007 (12.6km), and the L1008 (0.6km), with short sections being local secondary roads, including the L5023 (1.1km) and the L5024 (0.8km). For the exit route (shown magenta on Figure 15-2b), there is a section of a local secondary road on the L5024 (2.6km), followed by a local primary road on the L1010 (4.3km), before the route joins the R695. As it is their view that the capacity of the L1009 is representative of the local roads accessing and exiting the site, they reiterate the analysis included in the EIAR (Table 15-26) that the traffic levels on the local road network will operate at 26% of link capacity, increasing to 29% on the 222 days that general construction takes place at the same time as the GCR works, and at 28% of link capacity on the 7 days that standard HGVs deliver small turbine components at the same time as the GCR works. However, the Applicant acknowledges that there are locations where the carriageway characteristics narrow to short stretches of one-way operation. In the absence of Irish guidance for such situations, the Applicant has referred to a UK Department for Transport Traffic Advisory Leaflet which recommends that a maximum hourly capacity

for a single lane road with passing opportunities is 300 vehicles per hour. Based on this, a conservative 24-hour capacity of 3,000 PCUs (10 peak hours) per day is adopted. At locations where this occurs on the local road network, the constrained sections of the local road will operate at 44% of link capacity, increasing to 48% on the days that general construction takes place at the same time as the GCR works (i.e. 222), and at 47% of link capacity on the 7 days that standard HGVs deliver small turbine components at the same time as the GCR works. In addition, the Applicant has referred to the various traffic management measures as set out in the EIAR to ensure that the impact of the additional traffic that will be generated on the local road network will be minimised during the construction phase.

9.12.2.22. I note that the submission on behalf of KBT Responsible Energy was not satisfied that the Applicant's FIR was not backed by any credible data and they have opined the absence of any new traffic counts, surveys or pre-condition surveys of the roads and or any assessment either individually or cumulatively as to the predicted impact the project would have on local roads and their users. From my observations during my inspections of the site and the surrounding road network, I would concur with the Applicant that the L1009 is generally representative of the capacity of the other local roads that are to be utilised during the development's construction phase (i.e. northern entrance). Overall, I am satisfied that it has been demonstrated in the Applicant's assessment that there is adequate capacity in the local road network to accommodate the volume and frequency of construction traffic associated with the proposed development. Given the rural nature of the environment and the considerable increase in traffic, including HGV traffic, I fully acknowledge that the impacts will be significant from the perspective of the local population. However, these are likely to be short-term temporary negative impacts and are of a type that can be successfully mitigated through adherence with a comprehensive Construction Traffic Management Plan (CTMP) and suitable planning conditions. It was evident from my inspections of the site and surrounding network that there are stretches where passing opportunities would indeed be restricted, particularly in the context of HGV traffic. This was particularly evident along the L5024 to the east of the site and the northern section L1010. Notwithstanding this, there are number existing natural passing opportunities that readily allow smaller vehicles to safely pass. Furthermore, larger agricultural vehicles would regularly utilise these local roads given the presence of a number of

working farms. Whilst I accept that there may be construction related traffic impacts for residents and farmers in the area, I again note the temporary nature of the impacts. In my view, this would not warrant a refusal of permission, particularly in light of the pressing need to deliver renewable energy projects and achieve the ambitious national climate targets which I have discussed above. As mentioned, potential construction phase impacts can be mitigated through adherence with a robust traffic management system that could be implemented throughout this phase of the development. It is therefore my view that a specific condition be included requiring the submission of a detailed CTMP which has been prepared by a suitably qualified transport engineer. The CTMP shall include a requirement to appoint a resident liaison or point of contact to ensure that residents located along delivery route are informed of peak delivery times, anticipated disruptions or other related matters. Mitigation within the EIAR also includes the introduction of temporary traffic management measures at the L5024 access junction (including presence of flagmen) and pre and post construction condition surveys on the delivery routes and the re-instatement of all road surfaces and boundaries to predevelopment condition, which shall be agreed with the Local Authority. Subject to compliance with the CTMP condition and the proposed mitigation measures, I am satisfied that the proposed development is acceptable from a traffic management perspective.

9.12.2.23. In response to the query as to how construction access to the site via the L5024 will be maintained during the proposed road closures and diversions within Section Nos.1 and 2 (Table15-29) associated with the proposed GCR, the Applicant noted in their FIR that there is just one part of Section 2 with a distance of c. 1.6km that is common to both the general construction route accessing the proposed wind farm site and the GCR. It is estimated that this section of the GCR will take 16 days to construct and the Applicant has made a commitment that the construction schedule will be developed to ensure that there will be no occasion when the proposed GCR is constructed on the relevant part of Section 2 at the same time as deliveries are made to the wind farm site on this route. This is an acceptable approach in my view.

GCR Construction Traffic

9.12.2.24. The proposed GCR measures c. 23km, of which c. 22.1km is proposed to be located within the public road corridor. For the purposes of the EIAR, the route has been

divided into 8 no. sections, and a description of each section has been included. With the exception of a 600m section in Freshford Village, a 1.1km on the N77 and a 100m section on the R432 where Stop/Go traffic management is proposed, single lane and full road closures have been envisaged by the Applicant and indicative diversion routes have been identified. Third Party observers have raised significant concerns regarding the proposed GCR and the associated disruption due to the road closures and diversions. Similar concerns regarding the extent of road closures were raised by the Planning Authority's Road's Engineers. In addition, the suitability of these potential diversions to cater for the construction traffic and diverted local traffic was noted. It was their view that there was insufficient information to fully assess the traffic management arrangements for the GCR. I note that road closures and diversions are proposed for Section Nos. 5 & 6 (Table 15-29 of the EIAR) of the proposed GCR. This comprises a c. 8.1km stretch of the R694 between Freshford Village and the N77 and it is confirmed within the EIAR that this portion of the route will be subject to road closures for a period of c. 81 days. As the Planning Authority had identified the R694 as a key route linking Freshford to Ballyragget and the uncertainty regarding the adequacy of the diversion routes to cater to the anticipated increases in commercial traffic, the Commission requested the Applicant to consider whether full road closures along this route could be avoided or significantly minimised given that work zone works will typically vary from 100m to 200m in length. Where diversions cannot be avoided, the Applicant was requested to demonstrate that the indicative diversion routes can adequately cater for two-way traffic.

9.12.2.25. It is confirmed within the Applicant's FIR that a precautionary scenario of road closures along the full length of Sections 5 and 6 of the GCR was adopted in the assessment of the potential traffic impacts (Section 15.1.7 of the EIAR). However, they note that the traffic management measures to be implemented along the GCR will be prepared by the Applicant in consultation with the Local Authority and will likely include significant stretches of the R694 where it will be feasible to retain 2-way operation by means of a "stop & go" arrangement. In terms of the diversion routes, the Applicant states that these are routes that may be used and are identified for the purpose of assessing the potential impacts to local traffic. However, they note that the routes identified are based on the shortest feasible diversion routes available. In practice, it

is suggested that alternative routes of a similar or higher standard may be considered as a preferred solution and will be finalised as part of the detailed traffic management plan for the construction of the GCR which will be agreed with the Local Authority prior to the commencement of development. I note that this is largely a reiteration of what was stated in the EIAR.

9.12.2.26. The KBT Responsible Energy submission again raised concerns regarding the absence of an amended TTA or EIAR and in summary they were not satisfied that the matters raised could be addressed or details be agreed by way of condition. As stated within their First Party appeal, the Applicant has anticipated that on any single day during the construction of the GCR, where a road closure is required, only a very short section of the public road network will be inaccessible to local road users. It is also confirmed that access for local residents and landowners into and out of the sections of the public road network that are subject to full road closures will be maintained at all times. Notwithstanding the Commission's request, I note that the Applicant has not demonstrated that the indicative diversion routes can adequately cater for two-way traffic as requested. Of note, the Commission had concerns regarding the use of the L1810 and L1811 for Section 5 and the L1811 for Section 6 given the length of the diversions and the potential volumes of traffic that would be displaced from a regional road that links Freshford and Ballyragget. Following a further site inspection, it became evident that the proposed diversion for Section 5 included a substantial number of pinch points where two-way traffic would be constrained (notably along the L1810 and L1811), raising concerns regarding its suitability. This issue is less pronounced along the L1811 for Section 6, where I observed that oncoming traffic could easily pass along the majority of the local road. Given the transient nature of the GCR construction, I acknowledge that there will be disruption to local traffic. As discussed, the road closures and diversions are proposed to be sequentially implemented over 8 no. sections, with different diversions of varying duration, over 201 no. days (230 no. days for full GCR construction). From the perspective of locals, I accept that this will have a significant impact on the local and regional road network along the GCR. However, I am satisfied that that these impacts can be reasonably mitigated through strict adherence with a CTMP which has been carefully developed and approved by the Planning Authority. The Applicant has also confirmed in their response that there are

significant stretches of the R694 where it will be feasible to retain 2-way operation by means of a “stop & go” arrangement. Furthermore, access for local residents and landowners will be maintained at all times. Given the temporary nature of the works and the requirement for the Applicant to agree a CTMP with the Planning Authority, I am satisfied that the confirmation of the finalised road closures and diversions are matters that can be addressed prior to the commencement of development. As is the case for the haul routes associated the wind farm site, the inclusion of a conditions requiring surveys, reinstatement requirements etc. is appropriate should the Commission be minded to grant permission.

GCR Selection and Cumulative Impacts

9.12.2.27. In terms of the GCR selection, the Planner’s Report has referred to the commentary of the Road’s Engineers who have identified a number of concurrent energy projects in the planning/development stage in the wider area which have proposed underground grid connections to the Ballyragget 110kv ESB substation, including the Farranrory wind farm which is located c. 5km from the application site. They note that this c. 31km grid connection runs broadly parallel to the proposed GCR, with a degree of overlap in the vicinity of the N77. The Planning Authority had concerns that there would be separate ducting runs for each development which will severely limit the public road capacity and the Local Authority’s ability to carry out its functions in respect of maintenance works and future services provision. The Local Authority engineers opined the lack of a plan-led strategy and co-ordinating mechanism for the delivery of private grid connection infrastructure from multiple energy developments which are being planned or delivered independently of each other. Furthermore, they note that the public road network is of limited capacity and grid connection installations risk restricting or sterilising the road network for future development. It was also their view that EIAR consideration of alternatives was inadequate, particularly in relation to the selection of the grid connection point.

9.12.2.28. Similar issues have been highlighted by TII, where they note in their report on file that grid connections accommodated on national roads have the potential to, inter alia, result in technical road safety issues such as differential settlement due to backfilling trenches and can impact on ability and cost of general maintenance, upgrades and safety works to existing national roads. They have also referred to the other energy

projects that seek to utilise the same section of N77 and they have noted that it is not technically feasible to lay multiple electricity connections in the same section of road arising from the required separation distances. As is the case with the Local Authority, they have opined the absence of a plan-led and co-ordinating mechanism for private grid connections. Furthermore, they refer to Section 12.4.1.1 'Accelerate Renewable Electricity Generation' of the Climate Action Plan 2024 (CAP24) which outlines the objective of reaching 80% of electricity demand from renewable sources by 2030 through a range of measures, including; 'All relevant public bodies will carry out their functions in a manner which supports the achievement of the renewable electricity targets, including, but not limited to, the use of road and rail infrastructure to provide a route for grid infrastructure where this is the optimal solution'. In this regard, they queried whether the proposed GCR represents the optimal routing solution and it was their recommendation that a full assessment of all route alternatives for grid connection be undertaken, including alternatives to public road, where appropriate.

9.12.2.29. In order to address the issue of alternatives raised by TII and the Planning Authority, the Commission requested the Applicant to provide a rationale for the identification of Ballyragget 110kV substation as the optimum connection node for the proposed development, noting that a total of 4 no. 110kV substations were identified within 25km of the development site. As part of the Applicant's FIR, they have provided a breakdown of the 3 no. alternative grid connection routes and a rationale for the identification of Ballyragget 110kV substation as the optimum connection node. When considering the 3 no. alternative substations, the Applicant concludes that Ballyragget 110kV substation was chosen due to lower potential effects across multiple environmental considerations, such as air quality, climate and material assets, as well as reduced construction duration and costs associated with an increased grid connection length. On balance, I am satisfied that the Applicant has demonstrated that the Ballyragget substation is the optimum connection node in this instance. The proposed GCR is the shortest of all routes and it is evident that a connection to the Kilkenny substation would include a c. 3km stretch of the N76 and N10 to the south of Kilkenny City. Furthermore, the Thurles and Lisheen substations would necessitate separate crossings of the M8. Whilst the works required for these crossings may be less intrusive than installing cables within or alongside a national road, I'm a satisfied

that the proposed route and connection node represent an appropriate approach when all environmental factors are taken into account. Whilst I recognise the clear rationale for the rationalisation of grid infrastructure at such locations, I am not aware of any policy provision that would mandate prospective applicants to coordinate such measures with other developers. In the absence of same and in light of the pressing need to deliver renewable energy projects of this nature at scale, I am of the view that it would be unreasonable for permission to be refused on this basis. In response to the concerns of both TII and the Planning Authority in relation to differential settlement arising from trench backfilling which may have management and maintenance of the road network, I note that it is common practice for utilities to be placed in road corridors. However, it is my view that a condition should be included requiring the payment of a bond to ensure the satisfactory reinstatement of all public roads following completion of the construction phase, including the N77. The amount of the bond should be agreed with the Planning Authority prior to the commencement of development. Furthermore, the Applicant should be required to submit a series of site layout plans at an appropriate scale to clearly demonstrate the precise location of the proposed underground cable along the N77. These layout plans shall clearly identify the existing carriageway surface, road margins on both sides, and the exact alignment of the GCR, including the location of any associated infrastructure such as joint bays and shall be agreed with the Planning Authority prior to the commencement of development. Furthermore, an engineering assessment and construction methodology shall be submitted which demonstrates that the proposed installation of the underground cable and associated works will not compromise or structurally undermine the structural integrity of the N77. I am satisfied that these matters can be addressed through compliance with a condition.

9.12.2.30. Concerns have been raised by Third Parties regarding the cumulative impact of multiple grid connections. Following an examination of the application material, the Commission requested the Applicant to outline why Proposed Grid Connection Underground Cabling Route Option No.1 was discounted despite this route being adopted for the permitted Farranrory grid connection route (Kilkenny Ref. 21/627) and the absence of an acknowledgement of same within the consideration of alternatives (i.e. Chapter 2 of the EIAR). The Applicant was also requested to consider further the

potential cumulative impact from a transportation perspective given a number of the indicative diversion routes (Section Nos. 5 & 6 (Table 15-29 of the EIAR)) for the proposed GCR overlap with the permitted grid connection route (Kilkenny Ref. 21/627) serving the Farranrory Wind Farm (Tipperary Ref. 20/972). In response, the Applicant provided a rationale for discounting this route (Option No.1) and also noted that the construction of the permitted Farranrory grid connection is underway and is expected to be completed well in advance of the construction of the proposed GCR and the use of the potential diversion route Sections Nos. 5 and 6 where there is a degree of overlap. Whilst they are of the view that there is no potential for cumulative effects to arise from a traffic or transportation perspective, there is no doubt that impacts can arise due to the sequential construction activities, particularly for residents along the GCR. Although cumulative impacts are likely, I am satisfied that impacts can be mitigated through compliance with a carefully developed CTMP as discussed above.

Turbine Delivery Route & Abnormal Weight Loads

9.12.2.31. In terms of the TDR, the route travels from Belview Port via the N29, M9, N10, N76, R695 and L1009 to the temporary southern site entrance and a swept path analysis has been provided for the route. Temporary works have also been identified to accommodate the movement of the exceptional loads. Within their report on file, the Local Authority have indicated that the Applicant shall be required to conduct more detailed surveys of the route prior to delivery of wind turbine components and all accommodation works. I am satisfied that this can be addressed by way of condition.

9.12.2.32. While TII acknowledge that abnormal 'oversized' loads are addressed in the EIAR in the context of turbine component haul route proposals, they indicate that no details appear to be included in the EIAR related to abnormal 'weight' loads. Furthermore, the Planning Authority note that abnormal weight and sized loads both on the national and non-national road networks and that assessments of structures on the road network are expected to be required as part of the Abnormal Load Permit process subject to the dimensions and weights of these loads. It is confirmed by the Applicant in their appeal that no abnormal weight loads will be associated with the proposed development and therefore, a technical load assessment was not deemed necessary as part of the scope of the traffic and transport assessment. I consider it appropriate for details of pre and post construction condition survey of proposed haul routes,

bridges/structures along the route, weight of abnormal loads, and arrangements for maintenance of routes/structures during construction and repair of any damage to be submitted to the Planning Authority prior to the commencement of development and I am satisfied that this can also be addressed by way of condition.

Conclusion: Direct and Indirect Effects

9.12.2.33. The submission of the planning authority, prescribed bodies, the observations received from Third Parties, has been considered, in addition to the relevant chapter of the EIAR and the Applicant's FIR. Having regard to my assessment of the proposed development on traffic and transportation, it is considered that there will be an increase on traffic on the road network in the area of the wind farm site and along the proposed GCR during the construction works. However, significant direct, indirect and cumulative effects will largely be avoided by design and management of construction in accordance with a CTMP, which can be agreed with the relevant Planning Authority, prior to the commencement of development. Residual effects will most be short-term, temporary, slight and negative. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on traffic and transportation.

Material Assets (Telecommunications, Aviation & Other Material Assets)

9.12.3. Issues Raised

Third Parties

9.12.3.1. As detailed earlier in this report, issues have been raised by Third Parties during the application and appeal with respect the potential impact of the proposed development on broadband, mobile and TV connectivity and reception within the area.

Local Authority/Prescribed Bodies

9.12.3.2. No concerns raised by the Planning Authority with respect to Telecommunications and Aviation. There is a report on file from the Irish Aviation Authority which has recommended conditions in the event of a grant of permission.

9.12.3.3. In terms of other material assets, Uisce Éireann have noted that there are numerous locations where the proposed GCR will interact with existing Uisce Éireann assets including along the local road L5023 in Tullaroan, along the R694 road at Freshford

and Ballyragget and on the N77 which have not been identified in the application documents. A Confirmation of Feasibility from Uisce Éireann's Diversion team to build near/under or divert the existing Uisce Éireann assets is recommended.

9.12.4. Examination, analysis and evaluation

Context

9.12.4.1. Chapter 15 of the EIAR also provides an assessment of the likely significant effects of the proposed development on telecommunications and aviation assets. It is noted that the methodology for the assessment focuses on the scoping and consultation exercise conducted with telecoms operators and aviation authorities. The relevant appendix to this chapter is:

- Appendix 15-4 - Signed Protocol Agreement.

9.12.4.2. In terms of preventing electromagnetic interference, the Applicant notes that both the Guidelines and the draft Guidelines state that interference with broadcast communications can be overcome by the installation of deflectors or repeaters where required. In addition, developers are advised to contact individual local and national broadcasters and mobile phone operators to inform them of proposals to develop wind farms.

9.12.4.3. The chapter also considers other utilities or built services in the area such as electricity supply and transmission, water, gas, underground telecommunications and waste management during the construction, operational and decommissioning phases of the proposed project.

Baseline

9.12.4.4. As part of the EIAR scoping and consultation, the Applicant noted that they contacted the relevant national and regional broadcasters, fixed and mobile operators, aviation authorities and other relevant consultees. It is stated that consultation was also carried out with ComReg to identify any other additional licenced operators in the vicinity of the proposed wind farm site to be contacted, who may not have been on the list of main operators. The responses received from the various telecommunications and aviation consultees are summarised in Table 15-31 of the EIAR.

Telecom Operators with Potential for Impacts

- 9.12.4.5. It is confirmed by the Applicant that no operators have links within the proposed wind farm site and only one operator (Three Ireland Ltd) has links in proximity to the site. However, it is stated that these links are directed away from the proposed wind farm and do not cross the wind farm site. Further correspondence with this operator confirmed that there is no potential for impacts on their links (as per Appendix 2-2 of the EIAR). Within their scoping response, 2rn (RTE) noted that they have no fixed links in a 5km radius of the proposed wind farm site. The operator stated that 'There is however a risk of interference to broadcast coverage to viewers in the area. Therefore, they requested that a protocol be signed between the developer and 2rn should the site go ahead'. It is confirmed that a signed protocol is in place between 2rn and the Developer as detailed in Appendix 15-4 of the EIAR.

Aviation

- 9.12.4.6. Both the Department of Defence and the Irish Aviation Authority were issued a scoping request by the Applicant. As noted, a report is on file from the Irish Aviation Authority which has recommended conditions in the event of a grant of permission. No commentary on the application or appeal has been received from the Department of Defence.

Existing and Built Services and Utilities

- 9.12.4.7. The baseline environment in the context of built services and utilities is summarised in the below table.

Table: Built Services and Utilities

Electricity	It is stated that there are no 110kV or 38kV overhead electricity lines within or adjacent to the proposed wind farm. The GCR passes under 38kV and 110kV overhead electricity lines in the townland of Moatpark, Co. Kilkenny. It is confirmed that there are no 38kV or higher known existing underground electricity cables present on the wind farm site or along the GCR.
Gas	A data request was sent to Gas Networks Ireland in 2024. The data returned in July 2024 concluded there are no gas pipelines within or near the site.
Water	A water main runs along the L1009 located within the southern extent of the EIAR site boundary, adjacent to the temporary access road. An additional water main runs from the L1011 east of the site and enters the EIAR site boundary passing through agricultural fields. A c. 200m length of

	this water main is located within the EIAR Site Boundary. However, there is no proposed infrastructure that overlaps with the water main or which is located within 300m. The GCR also crosses a number of water mains within Tullaroan and Freshford.
Waste Management Services	There are no EPA-licensed or local authority-authorised waste facilities or activities located within the site. The closest, authorised municipal waste facility is located c. 10km to the north-east in Dunmore, Co. Kilkenny. A Waste Management Plan (WMP) has been prepared and forms part of the CEMP. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the proposed project. It is noted that the disposal of waste will be a last resort. It is not anticipated that any significant volume of waste will be generated within the Site during the operational phase of the proposed project as only a small number of operational and maintenance personnel will be present on within the Proposed Wind Farm site certain times.

Potential Effects

9.12.4.8. Potential significant effects of the development, as identified in the EIAR, are summarised in the below table.

Table: Summary of Potential Effects

Do Nothing	There would be no change to existing telecommunications, aviation operations or other material assets in the area.
Construction Phase	The potential for electromagnetic interference from the proposed project may only occur during the operational phase. There are no electromagnetic interference impacts for telecommunications and aviation assets or operations associated with the construction phase, and therefore no mitigation is required. Potential impacts during turbine erection (on aviation) and commissioning are assessed in the operational phase impact assessment. In terms of other material assets, it is stated that the proposed infrastructure has been designed to avoid existing underground electricity cables and other services and can be described as mitigation by design, therefore there is no potential to give rise to effects on electrical and other services.
Operational Phase	<i>Telecommunications</i> Wind Farm - Consultation regarding the potential for electromagnetic 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. It is stated that the development will have an imperceptible impact on telecommunications. GCR - None identified. <i>Aviation</i> Wind Farm - There are no IAA assets within the proposed wind farm site

	or surrounds that may be impacted by the proposed turbines. GCR - None identified. <i>Other Material Assets</i> It is not anticipated that any significant volume of waste will be generated within the site during the operational phase of the proposed project as only a small number of operational and maintenance personnel will be present on the proposed wind farm site at certain times. There will be no operational phase impacts or associated effects on built services and waste management associated with the proposed project.
Decommissioning Phase	<i>Telecommunications and Aviation</i> There are no electromagnetic interference impacts associated with the construction or decommissioning phases, and therefore no mitigation is required. <i>Other Material Assets</i> Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent. It is confirmed that there will be no significant effects on existing and built services, or waste management as part of the decommissioning phase.
Cumulative Effect	<i>Telecommunications and Aviation</i> In terms of cumulative impacts, it is stated that in the case of any large project that holds the potential to effect telecoms or aviation, the developer is responsible for engaging with all relevant telecom operators and the relevant aviation authorities to ensure that the proposal 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 mitigatory measures are in place. Therefore, as each project is designed and built to avoid impacts arising, a cumulative impact cannot arise. It is noted that the proposed development will have no residual impact on aviation as all lighting requirements will be met by the applicant. Therefore, there will be no cumulative effects relating to the proposed project and surrounding projects in relation to telecommunications or aviation. <i>Other Material Assets</i> The potential for cumulative effects with nearby energy developments that have been identified are not significant from the perspective of built services and waste management. With regard to the GCR, it is stated that there is potential for cumulative effects of the proposed GCR in conjunction with these other permitted projects. The construction of the GCR would be subject to a Road Opening License, as would any other similar nearby grid connection works. The timing of these works would therefore be controlled by the road opening licensing process with the relevant Local Authority and would not overlap. It is stated that it is also likely that the construction phases of these projects will not overlap with the construction phase of the proposed project. In this regard, it is concluded that during the construction, operational and decommissioning phases, there would be a short-term

	imperceptible cumulative effect on built services and waste management from the proposed project and permitted or proposed projects and plans in the area (as per Section 2.8 in Chapter 2 of the EIA).

Mitigation

9.12.4.9. It is noted that there are no electromagnetic interference impacts for telecommunications and aviation assets or operations associated with the construction and decommissioning phases of the proposed project, and therefore no mitigation is required. In terms of telecommunications and the operational phase, the following is noted:

- A signed protocol agreement between 2rn and the applicant can be found in Appendix 15-4. The protocol document ensures that in the event of any interference occurring to television or radio reception due to operation of the wind farm, the required measures, as set out in the document, will be carried out by the applicant to rectify this. The protocol document ensures that the appropriate mitigation is carried out in the event of unanticipated broadcast interference arising to television or radio reception as a result of the proposed wind farm.

9.12.4.10. In terms of aviation, no mitigation measures are required. However, it is stated that the following IAA requests will be complied:

- Agree an aeronautical obstacle warning light scheme for the wind farm development.
- Provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location, and,
- Notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.

9.12.4.11. For other material assets, specific measures are incorporated into the CEMP, to ensure that the construction of the proposed project will not have an effect on underground electrical cables and built services at the site. The mitigation measures include:

- Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works.

- Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified.
- Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services.
- The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.

Residual Effects

9.12.4.12. It is stated that the proposed development will have an imperceptible impact on the telecommunications signals of any operator, due to distance from or absence of any links in the area. The Applicant has also referred to the signed protocol agreement, ensuring no impacts on broadcast signals (Appendix 15-4). It is also stated that the proposed project will have an imperceptible residual impact on aviation as all lighting requirements will be met by the Applicant.

9.12.4.13. Following the implementation of the above mitigation measures, there will be a short-term imperceptible negative residual impact on other material assets during the construction phase of the proposed development. No operational or decommissioning phase impacts or associated effects on built services and waste management are anticipated during these phases.

Assessment / Conclusion

9.12.4.14. I have examined, analysed and evaluated Chapter 15 of the EIAR and all of the associated documentation and submissions on file in respect of telecommunications, aviation and other material assets. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. A number of Third Party observers have raised concerns regarding the potential impact of the proposed development on mobile and TV connectivity and reception within the area. Observers have also indicated that they are reliant on their existing broadband connectivity as they work remotely and concerns are raised that it may be disrupted by the proposed development. Notwithstanding the concerns raised, it is evident that the Applicant has engaged with the various service operators as

indicated in Table 15-31 (Telecommunications and aviation Scoping Responses) and operators have generally confirmed that there is no potential for impacts on their links. I also note that a signed protocol is in place between 2rn and the Developer, as per Appendix 15-2. However, a number of scoping responses as indicated in Table 15-31 do not appear to have been included in Appendix 2-1 (EIAR Scoping Exercise Responses). Therefore, I recommend the inclusion of a planning condition which will require effective measures to be introduced to minimise interference with telecommunications signals in the area in the event that the proposed development causes interference with telecommunications signals. I am satisfied that this will reasonably address the concerns raised by Third Parties.

9.12.4.15. Within their report on file, Uisce Éireann have indicated that they have mapped assets that overlap with the proposed GCR along the L5023 in Tullaroan, along the R694 at Freshford and Ballyragget and on the N77 that have not been identified in the application documents. As detailed in their First Party appeal, the Applicant confirms that a build near query would be lodged and a Confirmation of Feasibility would be acquired, where necessary along the GCR, following a grant of planning permission and prior to construction. This is a reasonable approach in my view and can be addressed by way of condition should the Commission be minded to grant permission for the proposed development.

Conclusion: Direct and Indirect Effects

9.12.4.16. The submission of the Planning Authority, prescribed bodies, the observations received from Third Parties, has been considered, in addition to the relevant chapter of the EIAR and the Applicant's FIR. Having regard to my assessment of the proposed development on telecommunications, aviation and other material assets, I am satisfied that potential effects as a result of the proposed development would be avoided, managed and mitigated by the measures which form part of the proposed development, 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 the telecommunications, aviation and other material assets.

Cultural Heritage

9.12.5. Issues Raised

Third Parties

9.12.5.1. As detailed earlier in this report, issues have been raised by Third Parties during the application and appeal with respect to the potential impact of the proposed development on archaeology and cultural heritage. Issues raised included the failure to adequately assess the impact of the development on St. Aidan's Church and Kilmanagh Creamery (RPS D38), the impact of the proposed development on sub-surface archaeology and the impact of the proposed GCR on local vernacular structures, notably the historic bridges. It is also contended that test excavations are not sufficient for the site and LIDAR surveys over the whole valley area are suggested.

Local Authority/Prescribed Bodies

9.12.5.2. Within their assessment of the application, the Planning Authority highlighted that there was a lack of assessment of historic masonry bridges. It is noted that works to the carriageway of a bridge may be problematic because:

- Insufficient road depth to accommodate the new cables,
- Road buildup results in requirements to heighten parapets, negatively impacts the character of these bridges while potentially weakens masonry elements when excavating.
- Significant rubbing strips / kerbing negatively impacts the character of these bridges, and,
- Attaching hardware directly to the facade of the bridge negatively impacts character while potentially weakens masonry elements.

9.12.5.3. Furthermore, there is a report on file from the Planning Authority's Conservation Officer who recommended FI with respect to the proposed bridge crossings along the proposed GCR. It is stated that where historic bridges are to be crossed, directional drilling under masonry bridge is the recommended approach.

9.12.5.4. A report is on file from the Department of Housing, Local Government and Heritage which recommended that an Archaeological Impact Assessment (including Archaeological Geophysical Survey and Archaeological Test Excavation) be carried out by way of FI.

9.12.6. **Examination, analysis and evaluation**

Context

9.12.6.1. Chapter 14 (Cultural Heritage) of the EIAR presents the results of an archaeological, architectural and cultural heritage impact assessment of the construction, operation and decommissioning of the proposed development. The purpose of the chapter is to assess the potential direct and indirect effects of the proposed development on the surrounding archaeological, architectural and cultural heritage landscape. Included as an appendix to this chapter is:

- Appendix 14-1 - Photographic Record.

9.12.6.2. The Chapter identifies the planning policy and legislation that is relevant to the subject proposal. In terms of the methodology, it is indicated that the assessment of the archaeology, architecture and cultural heritage of the proposed development included geographic information system (GIS) mapping, desk-based research and a field inspection.

Baseline

9.12.6.3. In terms of the results of the field inspection, it is stated that no previously unrecorded archaeological monuments were noted within the proposed wind farm site during the walk-over survey. Two items of local cultural heritage merit comprising a stone outbuilding (CH1) and a lime kiln (CH2) were noted within the site but are not located within the footprint of any proposed infrastructure.

Wind Farm

9.12.6.4. No UNESCO World Heritage Sites (WHS) or those on the Tentative list are located within 25km of the nearest proposed turbine. The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed turbines. Seven (7) no. National Monuments in State Care are located within 10km of the nearest proposed turbine and are listed in Table 14.3 and identified in Figure 14.3 of the EIAR. Two (2) no. monuments subject to a Preservation Order are located within 10km of the nearest proposed turbine and are also listed in Table 14.3. The nearest National Monument (No. 670) comprises a church at Tullaroan, located c. 2.1km from the nearest proposed turbine (T3). Three

(3) no. recorded monuments are located within the proposed wind farm site and are listed in Table 14.4 and identified in Figure 14.5 of the EIAR. A total of one hundred and forty-six (146) no. recorded monuments are located within 5km of the proposed turbines. This number includes the monuments located within the site, with the majority located in Co. Kilkenny, and 2 no. monuments located in Co. Tipperary. The monument locations are listed in Table 14.5 and identified on Figure 14.6 of the EIAR.

9.12.6.5. It is noted that there are no Protected Structures located within the wind farm site. A total of 16 no. Protected Structures are located within 5km of the nearest proposed turbine which are listed in Table 14.6 and shown on Figure 14.7 of the EIAR. Two (2) no. NIAH structures (Reg. 12307008, house and 12307009, water pump) are located within the southern limits of the site. Both structures are located within the settlement of Kilmanagh and are not located in the footprint of any proposed infrastructure. They are located c. 56m west of an existing track due for upgrade and over 100m west of a proposed new road (Figure 14.13 of EIAR). A total of twenty-two (22) no. structures listed in the NIAH are located within 5km of the nearest proposed turbine (including the two structures within the site), many of which are also listed in the Record of Protected Structures (RPS). Twenty-one (21) of the structures are located in Co. Kilkenny, with 1 no. in Co. Tipperary and are listed in Table 14.7 and shown in Figure 14.11 of the EIAR.

Grid Connection

9.12.6.6. The proposed GCR encompasses the 38kV onsite substation, associated temporary construction compound and c.23km of 38kV underground cabling connecting to the existing Ballyragget 110kV substation. Cultural heritage assets within 100m of the proposed GCR outside the proposed wind farm site are included in the assessment in order to ascertain any potential effects and any required mitigation measures to alleviate or minimise such effects if identified. A photographic record of the proposed GCR is provided in Appendix 14-1.

9.12.6.7. No UNESCO World Heritage Sites or those on the Tentative List are located within 100m of the proposed GCR or in the immediate vicinity of the footprint of the proposed onsite 38kV substation and its associated temporary construction compound. The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which

is situated c. 34km to the south-west of the proposed onsite 38kV substation. No National Monuments or those subject to a Preservation Order are located on or in the immediate vicinity of the footprint of the proposed onsite 38kV substation and its associated temporary construction compound. One (1) no. National Monument in State Care (Nat. Mon. No. 690) is located within 100m of the proposed GCR. Thirty-one (31) no. recorded monuments are located within 100m of the proposed GCR, while none are located in the footprint of the proposed onsite 38kV substation or associated temporary construction compound. The monuments within 100m of the proposed GCR are listed in Table 14.11 and shown on Figure 14.16 of the EIAR.

- 9.12.6.8. Thirteen (13) no. Protected Structures are located within 100m of the proposed GCR. It is stated that the majority of the structures are located in the urban centre of Freshford and are also included in the NIAH. They are listed in Table 14.12 and shown on Figure 14.26 of the EIAR. The GCR crosses one bridge which is included in the RPS at Freshford (Ref. C886). It comprises a clapper bridge which is also included in the NIAH (Reg. 12305031). No Protected Structures are located within the footprint or in the vicinity of the proposed 38kV substation and temporary construction compound. Twenty-nine (29) no. NIAH structures are located within 100m of the proposed GCR, while none are located within the footprint or in the vicinity of the proposed 38kV substation and temporary construction compound. The majority of the structures are located within the urban centre of Freshford and include three bridges (Reg. 12400902, 12305031 and 12305012,) over which the proposed route extends.

Proposed Turbine Delivery Route (TDR)

- 9.12.6.9. It is indicated that no junction accommodation works which will require ground works to previously undisturbed ground are proposed along the TDR. Therefore, it is contended that no potential effects to the recorded or unrecorded cultural heritage resource will occur.

Potential Effects

- 9.12.6.10. Potential significant effects of the development, as identified in the EIAR, are summarised in the below table.

Table: Summary of Potential Effects

<i>Do Nothing</i>	The 'do-nothing' scenario will have no impact on cultural heritage. If the proposed development were not to proceed, the existing use of agriculture and small scale forestry would continue. The opportunity to harness the wind energy resource of County Kilkenny would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment would also be lost.														
<i>Construction Phase</i>	<i>Indirect Effects</i> No indirect effects were identified which would occur at the construction stage. <i>Direct Effects</i> The construction phase of a development may consist of earthmoving activities such as topsoil removal and excavation works as part of the construction phase. This may have a number of potential negative effects on the known and potential archaeological heritage. <table><tr><th>Cultural Feature</th><th>Proposed Wind Farm</th><th>Proposed Grid Connection</th></tr><tr><td><i>UNESCO World Heritage Sites and those on Tentative List</i></td><td>The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed turbines. No direct effects to such assets are therefore identified.</td><td>The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed onsite 38kV substation. No direct effects to this resource will therefore occur.</td></tr><tr><td><i>National Monuments</i></td><td>The nearest National Monument (NM) comprises the church at Tullaroan (No. 670) c. 2.1km from the nearest proposed turbine, T3. No direct effects to such assets are therefore identified.</td><td>1 NM in State Care (Nat. Mon. No. 690) is located within 100m of the GCR. It comprises the church at Tullaroan and is located c. 37m to the east of the GCR which extends along the public road to the west of the church and associated graveyard. No direct effects to the National Monument as a result of the GCR are identified.</td></tr><tr><td><i>Recorded Monuments</i></td><td>3 no. recorded monuments (KK018-050---- Moated site, KK018-035001-Castle - unclassified and KK018-064----</td><td>31 no. recorded monuments are located within 100m of the GCR, while none are located in the footprint of the proposed onsite 38kV substation or associated</td></tr></table>			Cultural Feature	Proposed Wind Farm	Proposed Grid Connection	<i>UNESCO World Heritage Sites and those on Tentative List</i>	The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed turbines. No direct effects to such assets are therefore identified.	The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed onsite 38kV substation. No direct effects to this resource will therefore occur.	<i>National Monuments</i>	The nearest National Monument (NM) comprises the church at Tullaroan (No. 670) c. 2.1km from the nearest proposed turbine, T3. No direct effects to such assets are therefore identified.	1 NM in State Care (Nat. Mon. No. 690) is located within 100m of the GCR. It comprises the church at Tullaroan and is located c. 37m to the east of the GCR which extends along the public road to the west of the church and associated graveyard. No direct effects to the National Monument as a result of the GCR are identified.	<i>Recorded Monuments</i>	3 no. recorded monuments (KK018-050---- Moated site, KK018-035001-Castle - unclassified and KK018-064----	31 no. recorded monuments are located within 100m of the GCR, while none are located in the footprint of the proposed onsite 38kV substation or associated
Cultural Feature	Proposed Wind Farm	Proposed Grid Connection													
<i>UNESCO World Heritage Sites and those on Tentative List</i>	The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed turbines. No direct effects to such assets are therefore identified.	The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed onsite 38kV substation. No direct effects to this resource will therefore occur.													
<i>National Monuments</i>	The nearest National Monument (NM) comprises the church at Tullaroan (No. 670) c. 2.1km from the nearest proposed turbine, T3. No direct effects to such assets are therefore identified.	1 NM in State Care (Nat. Mon. No. 690) is located within 100m of the GCR. It comprises the church at Tullaroan and is located c. 37m to the east of the GCR which extends along the public road to the west of the church and associated graveyard. No direct effects to the National Monument as a result of the GCR are identified.													
<i>Recorded Monuments</i>	3 no. recorded monuments (KK018-050---- Moated site, KK018-035001-Castle - unclassified and KK018-064----	31 no. recorded monuments are located within 100m of the GCR, while none are located in the footprint of the proposed onsite 38kV substation or associated													

		Enclosure) are located within the site. The monuments are all located greater than 100m from the infrastructure footprint. No direct effects to recorded monuments are therefore identified.	temporary construction compound. The GCR extends through the Zone of Notification of a total of 9 no. recorded monuments. The majority comprise roadside monuments and are not located directly on the road network along which the GCR extends therefore direct effects to same are not identified. However, mitigation measures will be implemented during construction works to avoid any negative effects arising to sub-surface archaeology during construction It is stated that there are instances where direct effects to sub-surface features associated with some recorded monuments along the proposed route may occur as follows: - Sub-surface features associated with the historic town of Freshford (KK013-023- ---) - Sub-surface features and in particular human remains associated with the graveyard (KK013-023002-) at Freshford Lots. In the absence of suitable mitigation measures the potential effect to such features, if present at the aforementioned locations, would be direct, negative and permanent.
	<i>Sub-surface Archaeological Potential</i>	The potential exists that sub-surface archaeological sites or features, if present, may be directly affected by	The majority of the GCR is located along the public road network apart from a short section (c. 260m) located within a private road southwest of the proposed

		construction phase activities. The potential effect on sub-surface archaeological finds and features, should they exist, as a result of ground works associated with the construction stage are likely to be direct, negative and permanent in the absence of appropriate mitigation measures.	on-site substation and another short section (c. 660m) passing through a number of agricultural fields and a private access track north of the Ballyragget substation. While the potential for sub-surface archaeological remains along the public road network is considered to be lower than greenfield areas it should be noted that there are areas of archaeological potential along the GCR, in particular where it extends through the historic town of Freshford. Where the GCR extends through the ZoN for other road-side monuments such as at Tullaroan, there is considered to be an increased potential for the uncovering of sub-surface archaeology. Sub-surface archaeological sites or features, if present within these areas, may be directly affected by construction phase activities. The proposed onsite 38kV substation and associated construction compound are located in pasture. The potential therefore exists that sub-surface archaeological sites or features, if present within these areas, may be directly affected by construction phase activities. The potential effect on sub-surface archaeological finds and features, should they exist, are likely to be direct, negative and permanent in the absence of appropriate mitigation measures.
	<i>Newly Recorded Monuments</i>	No potential new archaeological monuments were	No potential new archaeological monuments were noted along the GCR or

		noted within the site during the walk-over survey. Direct effects to this aspect of the cultural heritage resource are not therefore identified.	in the footprint of the proposed 38kV substation and associated construction compound during the walk-over survey. Direct effects to this aspect of the cultural heritage resource are not therefore identified.
	<i>Protected Structures</i>	No Protected Structures are located within the site. Therefore, no potential direct effects to this resource are identified.	13 no. Protected Structures are located within 100m of the GCR. The majority of the structures are located in the urban centre of Freshford and are also included in the NIAH. The proposed GCR crosses 1 no. bridge which is included in the RPS at Freshford (Ref. C886). It comprises a clapper bridge which is also included in the NIAH (Reg. 12305031). However, the proposed GCR crosses a stone road bridge element of the structure. The proposed underground cable will be laid in a flatbed formation within the public road over the bridge deck at this location. No works or alterations to the bridge structure or any associated parapet walls are proposed. Direct effects to the bridge are not anticipated. No Protected Structures are located within the footprint or in the vicinity of the proposed 38kV substation and temporary construction compound.
	<i>NIAH structures and Historic Gardens</i>	2 no. NIAH structures (Reg. 12307008, house and 12307009, water pump) are located just within the southern limits of the site. Both structures are located within the settlement of Kilmanagh and are not located in the footprint of any proposed	29 no. NIAH structures are located within 100m of the GCR, while none are located within the footprint or in the vicinity of the proposed 38kV substation and temporary construction compound. The majority of the structures are located within the urban centre of Freshford and include 3 no. bridges (Reg. 12400902, 12305031 and 12305012,) over which the

		infrastructure. No direct effects to the structures are therefore identified.	proposed route extends. HDD is proposed to be utilised at Grange Bridge, therefore direct effects to this structure are not anticipated. The GCR is proposed to be laid in flatbed formation where it crosses New Bridge in Freshford (Reg. 12305012) and the stone road bridge element of Reg. 12305031 in Freshford. The route does not cross the clapper bridge portion of this structure which is located a short distance to the east of the public road. The methodology for crossing the structures in flatbed formation does not include any proposals for alterations or works to the bridge structures or associated parapet walls, therefore direct effects to same are not identified. No historic gardens are located on the GCR or in the footprint of the proposed 38kV substation and temporary construction compound.
	<i>Features of Local Cultural Heritage Merit</i>	2 no. items of local cultural heritage merit (CH1 and CH2) were noted within the site during the assessment process. They comprise a complex of ruinous stone farm buildings (CH1) and a lime kiln (CH2). Neither are located within the footprint of any proposed infrastructure. Therefore, direct effects to same are not identified.	6 no. bridges (CH3-8) of local cultural heritage merit are located on the GCR. None of the bridges, which comprise stone road bridges, are named on the historic mapping. No alterations to bridges are proposed therefore direct effects to the bridge structures are not anticipated. A ruinous stone structure (CH9) is located c. 8m north of the GCR where it extends through pasture at Moatpark townland. While no direct effects to the structure are identified, some mitigation is proposed in order to ensure that accidental damage does not

			occur to same during the construction stage of the proposed development.
Operational Phase	<i>Indirect Effects</i> The assessment of effects on visual setting was undertaken using both the Zone of Theoretical Visibility (ZTV) map in the Landscape and Visual Impact Assessment (LVIA), as presented in Chapter 13 of the EIAR, and also with reference to photomontages / Photowires. The ZTV is a bare-ground model which does not take screening vegetation into account.		
	Cultural Feature	Proposed Wind Farm	Proposed Connection
	<i>UNESCO World Heritage Sites and those on Tentative List</i>	The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed turbines. No potential effects to the setting of such sites as a result of the proposed wind farm are therefore identified	The nearest WHS (Tentative list) comprises the royal site of Cashel, Co. Tipperary which is situated c. 34km to the south-west of the proposed onsite 38kV substation. No direct effects to this resource will therefore occur.
	<i>National Monuments</i>	7 no. NMs are located within 10km of the nearest proposed turbine. 2 no. monuments subject to a Preservation Order are located within 10km of the nearest proposed turbine. They include the town defences of Kilkenny which as a walled town is also regarded as a National Monument. A change to the wider setting of the NMs is acknowledged and the effects range from Imperceptible to Moderate as detailed in Table 14.15 of the EIAR.	No National Monuments or those subject to a Preservation Order are located on or in the immediate vicinity of the footprint of the proposed onsite 38kV substation and its associated temporary construction compound. 1 no. NM in State Care (Nat. Mon. No. 690) is located within 100m of the GCR and comprises the church at Tullaroan. It is located c. 1.8km north-west of the proposed onsite 38kV substation. A change to the immediate setting of the monument as a result of the GCR will not occur. The change to the wider setting within which the monument is located is regarded as Not Significant.
	<i>Recorded Monuments</i>	3 no. recorded monuments are located within the site. A total of	31 no. recorded monuments are located within 100m of the GCR,

		146 no. recorded monuments are located within 5km of the proposed turbines. The ZTV shows that 77 of the 146 monuments are located in areas where 7 turbines will theoretically be visible. 8 no. monuments are located where 5-6 turbines will theoretically be visible, with 23 monuments in areas where 3-4 turbines will theoretically be visible. 25 no. monuments are located in areas where 1-2 turbines will theoretically be visible, while 13 no. monuments are located where none of the proposed turbines will theoretically be visible. Both the distance to the nearest turbine and the number of turbines visible from each asset are used to arrive at a level of potential effect on setting. Potential effects on setting are based on the worst-case scenario in that natural screening, boundaries, buildings and vegetation are not taken into account in the ZTV model. Table 14.16 of the EIAR outlines the potential effects of the proposed development on the setting of recorded monuments within 5km of the nearest proposed turbine. The theoretical significance of effect range from Imperceptible to	while none are located in the footprint of the proposed onsite 38kV substation or associated temporary construction compound. The nearest recorded monument to the proposed onsite 38kV substation comprises an unclassified castle KK018-035001- which is located c. 800m to the north-east. The castle has no surviving above-ground remains therefore no visual effects to the monument as a result of the GCR are identified. The moated site KK018-050-- is located c. 830m to the south-east of the proposed onsite 38kV substation. While it is an upstanding monument its immediate setting has already been altered by the surrounding modern farm buildings. It is also regarded as a low-visibility monument. No potential visual effects to its immediate setting are identified as a result of the proposed substation, however, a change to its wider setting is acknowledged and is regarded as Slight.

		Moderate.	
	<i>Sub-surface Archaeological Potential</i>	Potential visual effects to sub-surface archaeology which may exist within the site are negated by the sub-surface nature of such features that do not have any above-ground elements on which the proposed development will have a visual effect.	
	<i>Archaeological Landscapes</i>	None of the archaeological landscapes identified in the 2021-2027 DP are located in close proximity to the proposed wind farm site or the proposed GCR. The ZTV demonstrates theoretical visibility of 7 turbines from the summit of Freestone Hill. However, at a distance of c. 18km to the nearest proposed turbine, T04, the potential visual effect is regarded as Not Significant.	
	<i>Newly Recorded Monuments</i>	No potential new archaeological monuments were noted within the site. Indirect visual effects to this aspect of the cultural heritage resource are not therefore identified.	No potential new archaeological monuments were noted along the GCR or in the footprint of the proposed 38kV substation and associated construction compound during the walk-over survey. Indirect visual effects to this aspect of the cultural heritage resource are not therefore identified.
	<i>Protected Structures</i>	16 no. protected structures are located within 5km of the nearest proposed turbine. The nearest protected structure comprises a grain mill (Ref. D37) in Kilmanagh, c. 1.3km south-west of T7. Potential effects on its setting are detailed in Table 14-17 of the EIAR and are based on a theoretical model and therefore the worst-case scenario in that natural screening, boundaries, buildings and vegetation are not taken into account. It is stated that in reality, the potential effect is likely to be less than that identified. The Theoretical Significance	13 no. Protected Structures are located within 100m of the GCR. The majority of the structures are located in the urban centre of Freshford and are also included in the NIAH. The proposed route crosses 1 no. bridge which is included in the RPS at Freshford (Ref. C886). It comprises a clapper bridge which is also included in the NIAH (Reg. 12305031). The proposed underground cable will be laid in a flatbed formation within the public road over the bridge deck at this location. No works or alterations to the bridge structure or any associated parapet walls are proposed. Direct effects to the bridge are not anticipated. No Protected Structures are located

		of Effect range from Slight to Moderate as detailed in Table 14-17.	within the footprint or in the vicinity of the proposed 38kV substation and temporary construction compound.
	<i>NIAH structures and Historic Gardens</i>	2 no. NIAH structures (Reg. 12307008, house and 12307009, water pump) are located just within the southern limits of the site. A total of 22 no. structures listed in the NIAH are located within 5km of the nearest proposed turbine, many of which are also listed in the RPS. The nearest structures to the proposed turbines comprise 2 no. houses (Reg. 12307008 and 12307011) and a water pump (Reg. 12307009) also in Kilmanagh which are located c. 1.2km from the nearest proposed turbine, T7. No historic gardens are located within the site, with 4 within 5km of the nearest proposed turbine. Table 14-18 of the EIAR outlines the potential visual effects of the proposed development on NIAH structures within 5km of the nearest proposed turbine. The Theoretical Significance of Effect ranges from Imperceptible to Moderate. For historic gardens within 5km of the nearest proposed turbine, Table 14-19 of the EIAR indicates that	29 no. NIAH structures are located within 100m of the GCR, while none are located within the footprint or in the vicinity of the proposed 38kV substation and temporary construction compound. No potential effects to the immediate setting of any NIAH structure as a result of the proposed GCR are identified. A potential change to the wider setting in which the structures are located is acknowledged but is regarded as Not Significant.

		the Theoretical Significance of Effect ranges from Imperceptible to Moderate.	
	<i>Features of Local Cultural Heritage Merit</i>	2 no. items of local cultural heritage merit (CH1 and CH2) were noted within the site during the assessment process. A change to the immediate setting of these items will not occur. However, a change to their wider setting is acknowledged and is regarded as Slight.	The introduction of the proposed 38kV substation will result in a change to the wider setting of CH1 and CH2. This is regarded as Slight. 6 no. bridges (CH3-8) of local cultural heritage merit are located on the GCR. Given the underground nature of the proposed cabling, no potential visual effects to the bridges or the stone structure are identified.
<i>Decommissioning Phase</i>	There will be no significant potential effects to the archaeological, architectural and cultural heritage environment during the decommissioning phase of the proposed development. It is stated that any potential direct effects will already have been resolved through mitigation measures during the construction phase. Therefore, there is no potential for any cumulative effects to arise during the decommissioning phase.		
<i>Cumulative Effect</i>	<i>Direct Effects considering other windfarms within 20km</i> <u>UNESCO World Heritage sites (tentative), National Monuments in State Care, Recorded Monuments, NIAH and RPS</u> No UNESCO World Heritage Sites, National Monuments in State Care, RPS structures or NIAH sites are located within the footprint of the proposed project and therefore no direct effects on these resources were identified when considering the proposed project alone. When the proposed project is added to other projects therefore, it does not result in direct cumulative effects since none were identified in the first place. No cumulative effects are therefore anticipated. 2 no. recorded monuments are located within the site. 33 no. recorded monuments are located within 100m of the proposed GCR, while none are located in the footprint of the proposed onsite 38kV substation or associated temporary construction compound. Potential direct effects to sub-surface features associated with some recorded monuments along the proposed route have been identified as being direct, permanent and negative. However, these potential effects will be Not Significant after the proposed mitigation measures are implemented. The same potential construction stage effect could be identified for the other wind farm projects if utilising the same proposed GCR or since groundworks could impact on sub-surface features associated with recorded monuments. In this regard there could potentially be a cumulative effect when the proposed development is added to the other wind farm sites. Mitigation measures		

	seek to alleviate such negative effects will remove the effect altogether. Therefore, there will be no significant cumulative effects on recorded monuments. <u>Potential Sub-Surface Archaeology</u> After the mitigation measures are implemented, potential effects on sub-surface archaeology have been identified as Not Significant. The same potential construction stage effect could be identified for the other wind farm projects since groundworks could impact on hitherto unknown archaeological, finds, features or deposits or other cultural heritage assets. In this regard, there could potentially be a cumulative effect when the proposed development is added to the other wind farm sites. Mitigation measures will be employed to alleviate such negative effects. Therefore, there will be no significant cumulative effects on sub-surface remains. <i>Indirect Effects (Operational Stage) considering other windfarms within 20km</i> <u>UNESCO World Heritage sites (tentative)</u> No UNESCO World Heritage Sites (WHS) or those on the Tentative list are located within 25km of the nearest proposed turbine. No potential effects to the setting of such sites as a result of the proposed development are therefore identified. Therefore, no potential cumulative effects will occur to this aspect of the Cultural Heritage resource when considering the proposed development with the identified cumulative projects. <u>National Monuments</u> As outlined, a change to the immediate setting of the National Monuments and those subject to Preservation Orders will not occur. However, a change to their wider setting is acknowledged and ranges from Imperceptible to Moderate. In terms of the GCR, a change to the immediate setting of NM No. 690 will not occur. The change to the wider setting within which the monument is located is regarded as Not Significant. When considered cumulatively, the ZTV demonstrates theoretical visibility of the proposed turbines and the existing turbines of the existing and permitted Foyle WF turbines, the permitted Farranrory WF turbines, the existing An Cnoc turbines and some of the existing Ballybay WF turbines. It also demonstrates theoretical visibility of one of the Kyleballougher turbines and some of the Knockroe turbines further to the south-west. In this regard there is potential for cumulative effects to the wider setting of the National Monuments and those subject to a Preservation Order within the 10km study area. No cumulative effects to the immediate setting of the monuments are identified. However, as neither the proposed turbines or the existing, permitted or proposed turbines are located immediately adjacent to same, potential cumulative effects are to the wider setting within which the monuments are located and are regarded as Not Significant. <u>Archaeological Landscapes</u> As noted, none of the archaeological landscapes identified in the 2021-2027 DP are located in close proximity to the proposed development. When

	considered cumulatively with the other existing, permitted and proposed wind farms within 20km of the proposed turbines, none are located in close proximity to the archaeological landscape at Freestone Hill apart from the proposed Freneystown wind farm which is situated c. 3.6km to the north-east. At a distance of c. 18km to the west-south-west the proposed turbines are not considered to have a cumulative visual effect on the archaeological landscape at Freestone Hill when considered with the Freneystown wind farm. <u>Recorded Monuments</u> The overall significance of effects on recorded monuments within 5km range from Imperceptible to Moderate. In reality, it is stated that the effect will be less severe due to natural screening, boundaries, buildings and vegetation, which will alleviate if not remove the effect on setting in some instances. Additionally, the distance of recorded monuments from the proposed turbines and the low-visibility nature of some monuments will minimise potential visual effects. While there is potential for cumulative effects to the wider setting of recorded monuments, no significant visual effects are identified given the distance of the existing, permitted and proposed turbines to the monuments within 5km. No potential cumulative effects to the immediate setting of such monuments will occur. <u>Protected Structures and NIAH</u> The overall significance of effects will range from Slight to Moderate. In reality, it is stated that the effect will be less severe since the ZTV model does not take natural screening and buildings into consideration which will alleviate if not remove the effect on setting altogether in some instances. When considered cumulatively, it is noted that only the existing and permitted Foyle Wind Farm and the permitted Kyleballoughter Wind Farm are located within the 5km study area. The ZTV demonstrates theoretical visibility of the proposed turbines and the existing and permitted Foyle WF turbines, the permitted Farranrory WF turbines, the existing An Cnoc turbines and some of the existing Ballybay WF turbines and proposed Knockroe turbines, but at a distance in excess of the 5km study area apart from Foyle WF. While there is potential for cumulative effects to the wider setting of Protected Structures, NIAH structures and historic gardens, no significant visual effects are identified given the distance of the existing, permitted and proposed turbines to the monuments within 5km. No potential cumulative effects to the immediate setting of such monuments will occur.

Mitigation

9.12.6.11. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

Construction Phase	<i>Recorded Monuments</i> - Archaeological monitoring of ground works associated with the proposed GCR where it extends through the ZoN for the historic town of Freshford (KK013-023----) and the graveyard (KK013-

	023002-) at Freshford Lots. - Archaeological monitoring will be carried out under licence from the National Monuments Service (NMS) subject to the approval of a methodology for same. - Further mitigation such as preservation in situ (avoidance) or preservation by record (excavation) may be required depending on the results of the monitoring. - Should human remains be uncovered during the works at Freshford, all works shall cease and the NMS will be informed of the findings immediately. The services of an osteoarchaeologist will also be required. A decision on how best to proceed will be made in consultation with the NMS. - A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. <i>Sub-surface Archaeological Potential</i> - Pre-development archaeological testing of the proposed infrastructure in previously undisturbed greenfield areas of the site will be carried out under licence from the National Monuments Service. This is to identify any archaeological features at the earliest stage possible in the project to allow time to deal with any requirements such as preservation in situ (redesign / avoidance) or preservation by record (archaeological excavation). - A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority. - Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) or buffer zones may be required depending on the results of the testing. - Should archaeological remains be uncovered during the testing consultation with the NMS will be required regarding the best course of action and further mitigation. - Archaeological monitoring of all groundworks during the construction stage of the proposed development by a licensed archaeologist. - A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority as necessary. - Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the monitoring. <i>Features of Local Cultural Heritage Merit</i> - Protective temporary fencing should be placed around the stone structure CH9 for the duration of the construction works associated with the proposed grid connection route in this area.
Operational Phase	<i>National Monuments</i> The distance of the National Monuments and those subject to Preservation Orders from the proposed turbines in addition to the low-visibility /sub-surface nature of some of the monuments will mitigate potential visual effects. It is also noted that natural screening, boundaries, buildings and vegetation are not taken into account in the ZTV model and therefore potential visual effects will in reality be less severe.

	Recorded Monuments The distance of recorded monuments from the proposed turbines and the proposed onsite 38kV substation in addition to the low-visibility /sub-surface nature of some of the monuments will mitigate potential visual effects. Additionally, many of these monuments are located on private lands which are not formally accessible to the public. It is also noted that natural screening, boundaries, buildings and vegetation were not taken into consideration in the ZTV and will potentially screen some visual effects. Protected Structures, NIAH structures and Historic Gardens & Features of Local Cultural Heritage Merit It is noted that no mitigation measures are provided. However, it is indicated that natural screening, boundaries, buildings and vegetation will potentially screen visual effects.

Residual Effects

9.12.6.12. The residual impacts following mitigation are summarised in the below table.

Table: Residual Effects

Cultural Feature	Construction Phase		Operational Phase	
	Wind Farm	Grid Connection	Wind Farm	Grid Connection
<i>UNESCO World Heritage Sites and those on Tentative List</i>	None	None	None	None
<i>National Monuments</i>	None	None	Imperceptible-Moderate	
<i>Recorded Monuments</i>	None	Not Significant	Imperceptible to Moderate	
<i>Sub-surface Archaeological Potential</i>	Not Significant		None	
<i>Newly Recorded Monuments</i>	None	None	None	None
<i>Protected Structures</i>	None	None	Slight to Moderate	
<i>NIAH structures and Historic Gardens</i>	None	None	Not Significant to Moderate	
<i>Features of Local Cultural Heritage Merit</i>	None	Imperceptible	Slight	Slight
<i>Archaeological Landscapes</i>	N/A		Not Significant	

Assessment / Conclusion

9.12.6.13. I have examined, analysed and evaluated Chapter 14 of the EIAR and all of the associated documentation and submissions on file in respect of cultural heritage. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP and other relevant planning policy as set out in this report. The various elements of the proposed development are considered in further detail below.

Wind Farm

9.12.6.14. In terms of the construction phase impacts, the EIAR has identified a total of 3 no. recorded monuments (KK018-050---- Moated site, KK018-035001- Castle - unclassified and KK018-064---- Enclosure) that are located within the site. Whilst I note that these monuments are located outside the red line boundary, I would concur with the Applicant that no direct effects are envisaged given their distance and separation from the infrastructure footprint. However, it is acknowledged that the potential exists that sub-surface archaeological sites or features, if present, may be directly impacted by ground works associated with the construction phase activities. These effects have been identified as direct, negative and permanent in the absence of appropriate mitigation measures. Potential impacts on sub-surface archaeology was an issue raised by several Third Party observers and it has been contended that more detailed site investigations should have been undertaken across the entire wind farm site. Observers have also indicated that a weir formerly existed at the location of the river crossing between T6 and T7 and any works on site should be preceded by detailed geophysical surveys. I note that the Department's Development Applications Unit also recommended further archaeological testing by way of further information. Whilst their assessment focused primarily on the proposed GCR, there was a recommendation for more detailed surveying of accessible areas of the wind farm site where significant ground works are proposed. Although I acknowledged the Third Party concerns, I am satisfied that the suite of mitigation measures proposed will ensure either the preservation in situ (redesign / avoidance) or preservation by record (archaeological excavation) of any previously unrecorded sub-surface archaeological features. The Applicant has also confirmed that the Project Archaeologist will observe works at the watercourse crossing within the site to ensure the development does not impact any potential remains of this weir. Having regard to the characteristics of the

site, the pattern of recorded archaeological features in the surrounding area and the information provided within the Applicant's EIAR, I am satisfied that the requirement to undertake detailed pre-development archaeological testing under licence from the National Monuments Service is an acceptable approach and is in accordance with Objective 9C of the 2021-2027 DP which seeks to protect newly discovered sub-surface archaeological remains. Subject to compliance with the proposed mitigation measures and adherence to a suitably worded condition, it is considered that significant impacts on the cultural heritage resources of the wind farm site will be avoided.

9.12.6.15. I note that the KCC Planner's Report notably lacks a thorough assessment of cultural heritage impacts associated with the development's operational phase. However, concerns were raised in their concluding commentary regarding the development's impact on the setting of St. Aidan's Church of Ireland and Graveyard and Kilmanagh Creamery, both of which are designated Protected Structures under the 2021-2027 DP. I note that this was an issue that had been raised by a significant number of Third Party observers both at application and appeal stage. In terms of the Applicant's methodology, a standardised approach has been utilised for the assessment of indirect effects of visual setting based on the types of monuments and cultural heritage assets which may have varying degrees of sensitivity. Whilst it is acknowledged that this assessment did not include visits to each and every site, I would concur with the Applicant that this would be beyond the scope of the EIAR, given the majority of which are located on private lands to which the public have no access. It is noted that the assessment was undertaken using both the ZTV mapping in the LVIA and photomontages/photowires from specific cultural heritage assets or other relevant locations. The EIAR confirms that the tall, vertical nature of the proposed turbines make them the most prominent elements of the proposed development from a visual perspective and have the most potential to give rise to significant, indirect effects.

9.12.6.16. When considering potential impacts, a total of 7 no. National Monuments were identified as being located within 10km of the application site. It is noted that changes to the immediate setting of these monuments will not arise. Notwithstanding this, a change to their wider setting is acknowledged and potential impacts range from imperceptible to moderate. Where theoretical visibility of turbines exist, impacts to

National Monuments are generally deemed to be not significant given the separation distances and the intervening screening and topography. However, a moderate impact is anticipated to arise for National Monument No. 670. This monument comprises the ruins of a church set within an existing graveyard in Tullaroan, located c. 2.1km to the north of T3. I note that there is theoretical visibility all 7 no. turbines from this location and the Applicant has referred to VP01 as being a representative viewpoint location. Whilst I note that the visualisation does not show the development in the context of the National Monument, I would concur with the Applicant that the change to its wider setting would be regarded as Moderate given the separation distances provided and the spacing between the turbines themselves. In terms of Recorded Monuments, both the distance to the nearest turbine and the number of turbines visible from each asset was used to arrive at a level of potential effect on setting. For the 146 no. Recorded Monuments located within c. 5km of the wind farm site, potential effects ranged from imperceptible to moderate. Overall, it is considered that the Applicant's assessment is acceptable, and I would agree that in reality, the effect will be reduced as the ZTV model does not take in account natural screening that would be afforded from vegetation and buildings. I am therefore satisfied that significant impacts on Recorded Monuments will not arise as a result of the operational phase of the proposed development. I also note that the Planning Authority or the Department's Development Applications Unit did not raise specific concerns regarding potential impacts on these heritage assets.

9.12.6.17. As discussed above, the impact of the proposed development on the character and setting of a number of Protected Structures within Kilmanagh was highlighted as a significant issue by a large number of Third Party observers and the Planning Authority in their concluding commentary. Observers had the view that the EIAR remained silent on potential impacts on notable features of architectural heritage and their assessment overall, was entirely inadequate and disingenuous. In particular, they have referred to the detrimental impact of the proposed development on St. Aidan's Church and Kilmanagh Creamery. In terms of Kilmanagh Creamery (RPS Ref. No. D38), I note that this Protected Structure is located at the eastern end of the village and is described by the National Built Heritage Service as an attractive cluster of buildings forming a self-contained group representing an important element of the architectural

heritage of Kilmanagh, having traditionally supported much of the local agricultural economy. Despite a number of modifications over the course of the twentieth century, much of the character of the site remains in place, thereby augmenting the contribution the creamery complex makes to the quality of the townscape. Whilst the Applicant has suggested that a moderate effect would arise, it was evident from my observations on site that the proposed development will have an imperceptible impact on the character and setting of this Protected Structure. Having regard to the siting of this cluster of buildings and its position relative to the proposed turbines, the proposed development would not be perceived in relation to its features that help shape the village streetscape and therefore its architectural integrity would not be eroded/adversely affected.

9.12.6.18. I note that St. Aidan's Church (RPS Ref. No. C196) is located on a more elevated site at western extent of the village. While views of the church are largely screened from the network of local roads that immediately surround it, there are more prominent views that are achieved from the R695 to the south-east. Images have been provided by observers that show the church framed against the backdrop of the existing Foyle Wind Farm turbines which appear to be taken from that general direction. Noting the size of the turbines in the current proposal and the inadequate separation distances provided, it is contended that the proposed development would have a detrimental impact on the character and setting of the church and its attendant grounds. The National Built Heritage Service have described this Protected Structure as a well-composed modest-scale rural church of compact appearance which makes an attractive impression on the visual appeal of the locality: an elegantly-profiled tower with spire forms a picturesque eye-catcher that confirms the landmark status of the site. I note that my observations during my inspection of the site and surrounding area validated this description. Within their First Party appeal, the Applicant has acknowledged that the potential indirect effect on the setting of the church is considered to be moderate based on its proximity to the closest proposed turbine and the number of turbines that will be theoretically visible from that location. However, they contend that in reality the effect will be less severe since screening from vegetation and screening from other buildings are not taken into consideration which will alleviate the effect on setting. While I acknowledge that the turbines will be visible within the setting of the Protected Structure, particularly in panoramic views from the

south-east and from some closer views to the south-west, I am satisfied that significant visual impacts on the church will not arise, either individually or cumulatively when considered in combination with the Foyle Wind Farm. This is in part due to the siting of the church relative to the existing and proposed wind farms and the separation distances provided. I have also had regard to the photomontages of the proposed development taken from other vantage points which show the proposed development in the context of the village, within which the church sits. For these reasons, I am satisfied that the proposed development is acceptable having regard to the archaeological and architectural heritage of the site and surrounding area and significant impacts shall not arise.

Grid Connection

9.12.6.19. By its nature, impacts associated with the operational and decommissioning phases of the development are not anticipated to arise as the infrastructure associated with the GCR will be primarily underground. However, construction phase impacts have been highlighted as a concern by both the Planning Authority's Conservation Officer and the Department's Development Applications Unit, most notably in terms of potential impacts on Recorded Monuments and unknown sub-surface archaeology. In addition, concerns have been noted regarding the potential impact of the development on historic bridges located along the GCR. Similar concerns have been expressed by Third Party observers throughout the application and appeal phase.

9.12.6.20. It is noted within the EIAR that the proposed GCR overlaps with the Zone of Notification of a total 11 no. Recorded Monuments which I have identified above. It is however noted that the majority of these comprise roadside monuments and are not located directly on the road network along which the proposed GCR extends. Direct effects to same are therefore not identified. Notwithstanding this, it is acknowledged that direct effects to sub-surface features associated with some Recorded Monuments may arise and include the sub-surface features associated with the historic town of Freshford (KK013-023----) and the sub-surface features associated with the graveyard (KK013-023002-) at Freshford Lots, in particular human remains. In this regard, it was highlighted by the Department that the proposed development may have archaeological implications, and it was recommended that further archaeological assessments be undertaken prior to a decision on the application being made. Of note,

the excavation of test trenches at locations chosen by the Applicant's archaeologist was recommended and they have specifically referenced a location in the vicinity of the recorded monument KK013-023002- Graveyard, Freshford Lots. Whilst I note that the works associated with the proposed GCR in Freshford are located entirely within the existing public road corridor, it is acknowledged in the EIAR that this road was built in the late 18th century and routed through the former graveyard, with reports of human remains being uncovered. Notwithstanding this, the Applicant has proposed a suite of tailored mitigation measures, including archaeological monitoring of ground works associated with the proposed GCR where it extends through the ZoN for the historic town of Freshford (KK013-023----) and the graveyard (KK013-023002-) at Freshford Lots. It is confirmed that further mitigation such as preservation in situ (avoidance) or preservation by record (excavation) may be required depending on the results of the monitoring and in the event that human remains are uncovered, works shall cease and the NMS will be informed of the findings immediately. Further actions can then be agreed with the NMS and the Planning Authority. Whilst I am generally satisfied that the approach in terms of mitigation is reasonable, it is my view that the further archaeological assessments as suggested by the Department be undertaken prior to the commencement of development, and I satisfied that this could be addressed by way of condition. While the potential for sub-surface archaeological remains along the public road network is generally accepted to be lower than greenfield areas, it is acknowledged that there are areas of archaeological potential along the proposed route. In addition to where it extends through the historic town of Freshford, the GCR also extends through the ZoN for other road-side monuments, such as those within Tullaroan. At locations such as this, there an increased potential for the uncovering of sub-surface archaeology. As any archaeological sites/features, if detected, during testing and/or monitoring will either be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same, I am satisfied that significant effects on sub-surface archaeology will not arise and the range of mitigation measures proposed is acceptable in this instance.

- 9.12.6.21. The key concern raised by the Planning Authority's Conservation Officer was the potential impact of the proposed development on historic bridges along the proposed GCR, noting that a number of these are either a designated Protected Structure (RPS Ref. C886) or else included on the NIAH (Ref. 12400902, 12305031 and 12305012).

As detailed, the Applicant is proposing to lay the cable in a flatbed formation within the public road over the bridge deck or alternatively by HDD. It was noted in the Conservation Officer's report that works to the carriageway of a historic bridge may be problematic due to insufficient road depths and the potential requirement for heightened parapets which can negatively impact the character of these bridges and may possibly weaken masonry elements. Overall, it was their recommendation that HDD is the appropriate approach that should be adopted for all historic bridge crossings.

9.12.6.22. Within Section 14.3.4.8 of the EIAR, it is noted that there are 6 no. bridges (CH3-8) of local cultural heritage merit located along the proposed GCR and it is proposed to utilise HDD at all bridge crossings. However, elsewhere in the Chapter and as evidenced in the accompanying drawings, it is indicated that HDD is only proposed where the GCR will cross the River Nore and at Grange Bridge (NIAH Ref. 12400902 (WC2)). The Commission therefore requested the Applicant to clarify these apparent discrepancies and the clearly identify the method proposed at each crossing. Within their response, the Applicant notes that the reference to HDD occurring at bridges CH3 to CH8 (WC4, WC7, WC9, WC11, WC12 and WC13) was included in errata. As part of the Applicant's FIR, updated watercourse crossing drawings for watercourses WC3, WC5, WC6, WC7 (CH4) and WC11 (CH6) have been included. The Applicant confirms that where bridges identified as cultural heritage features within Chapter are not proposed to be crossed using HDD, detailed surveys of these bridges have indicated that they have sufficient road depth to accommodate underground cables without any potential for negative effects on the bridge structure. The Applicant also notes that reference to HDD occurring at WC10 and WC13 in Appendix 6-2 of the EIAR was also included in error and it is confirmed that watercourses WC3, WC5, WC6 and WC7 (CH4) will now be HDD crossings to ensure there is no potential for any impact on the existing bridge structure. Furthermore, WC11 has also been changed from a 'Crossing Using Standard Trefoil Formation' to a 'Flatbed Formation over Bridges/Culverts' crossing type and it is confirmed that there is sufficient road depth for it to be accommodated without the need to raise the road level. In response to the Commission's concerns regarding the potential impact of the proposed GCR on the Protected Structure and various bridge included on the NIAH, the Applicant confirmed

that HDD crossings will be employed at these locations. As the GCR will not directly interact with the bridge structures, the potential for any direct impacts on the bridges is therefore mitigated. I noted that additional Layout Plans for HDD at WC5 and WC6 have been included as part of the Applicant's FIR. On balance, I am satisfied that the Applicant's proposals are now acceptable and in accordance with the pertinent policy of the 2021-2027 DP. However, it is my recommendation that for all historic bridges where HDD is proposed, the Applicant shall submit details of the surveys to demonstrate that there is sufficient road depth to accommodate the underground cables. Subject to compliance with this condition and the Applicant's proposals to carry out HDD at a number of sensitive locations along the proposed GCR, I am satisfied that the proposed development is acceptable and the potential for significant impacts on heritage assets along the route will be successfully mitigated.

Conclusion: Direct and Indirect Effects

9.12.6.23. The submission of the planning authority, prescribed bodies, the observations received from Third Parties, has been considered, in addition to the relevant chapter of the EIAR and the Applicant's FIR. Having regard to my assessment of the proposed development on cultural heritage, I am satisfied that potential effects as a result of the proposed development would be avoided, managed and mitigated by the measures which form part of the proposed development, 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 the archaeological and architectural heritage of the site and surrounding area.

Landscape

9.12.7. Issues Raised

9.12.7.1. As detailed earlier within this report, concerns have been raised by Third Parties during the application and appeal regarding the accuracy and transparency of the Applicant's Landscape and Visual Impact Assessment (LVIA), the use of selective viewpoints which obscure the true scale and impact of the development, a fundamental alteration of the area's visual character as a result of the proposed development, a domination of views and the creation an industrial aesthetic that is deemed to be out of place in a rural area. Concerns have also been raised regarding the cumulative impact of the proposed development and the impact of the development on the local Gaelic football

grounds within the village of Kilmanagh. Furthermore, it is indicated that the community was left with no option but to independently commission alternative viewpoint images and it is their contention that these images provide a clearer, more accurate, and unobstructed representation of the potential visual impact of the proposed development.

Local Authority/Prescribed Bodies

- 9.12.7.2. Within their assessment of the application, the Planning Authority raised concerns regarding deficiencies in the Applicant's LVIA due a lack of rigour and objectivity in the matter of assessing the significance of landscape and visual impacts, the use of misleading classification of impact significance, the failure to illustrate the appearance of typical or worst-case visibility in the immediate vicinity of the largest concentration of affected residents and the cumulative effects of the proposed development which they consider would impose an unreasonable and disproportionate environmental loading on the character of a rural area with a locally concentrated population.

9.12.8. Examination, analysis and evaluation

Context

- 9.12.8.1. Chapter 13 (Landscape and Visual Assessment) of the EIAR seeks to assess the potential landscape and visual impacts of the proposed development, with an emphasis on the likely significant direct and indirect effects of the proposed development upon the landscape and visual amenity. The landscape of the site and the wider LVIA Study Area is described in terms of its existing character, which includes a description of landscape values and the landscape's sensitivity to change. The LVIA of the proposed development incorporates the use of theoretical visibility mapping, representative viewpoints, and photomontages. The potential impacts in both landscape and visual terms are then assessed, including the cumulative impacts. It is noted that the assessments in the chapter were informed by site visits, verified photomontages, ZTV mapping, a Route Screening Analysis, and an impact assessment methodology which they note follows best practice guidance for LVIA. Included as volumes and appendices to the Chapter are:
- Volume 2 - Photomontage Booklet, presenting existing and cumulative visualisations of the proposed turbines from 16 No. representative viewpoints in the LVIA Study Area,

- Volume 3 - Blue-Sky Photomontage Booklet, a duplicate photomontage booklet including graphic alterations of the sky,
- Appendix 13-1 - LVIA Methodology,
- Appendix 13-2 - LCA Assessment Tables,
- Appendix 13-3 - Photomontage Assessment,
- Appendix 13-4 - LVIA Baseline Map, and,
- Appendix 13-5 - Photowire Booklet.

9.12.8.2. Appendix 13-1 of the EIAR explains in detail the methodology adopted for the LVIA including the mapping of the zone of theoretical visibility, route screening methodology (to identify actual visibility in comparison to theoretical), identification of photomontage viewpoints and the methodology for the landscape and visual impact assessment. It is noted that there are five main sections to the Applicant's assessment, which include:

- Visibility of the proposed turbines (e.g. ZTV mapping),
- Landscape Baseline,
- Visual Baseline,
- Cumulative Context, and,
- Likely and Significant Effects – outlining the assessment of landscape, visual and cumulative effects.

9.12.8.3. Section 13.2.1 of the EIAR indicates that the assessment team determined that no significant effects on landscape character are likely to arise beyond distances of 15km from the proposed turbines. Therefore, a study area of 15km (referred to herein as the 'LCA Study Area') is deemed appropriate for effects on landscape character in relation to the assessment of effects upon designated Landscape Character Areas. However, I wish to point out now that the Applicant has confirmed in their FIR that a 20km Study Area has been adopted for the purposes of the LVIA.

9.12.8.4. A ZTV map of the proposed turbines is provided in Figure 13-1 of the EIAR. Separate colour bands are used on each ZTV map to indicate the number of proposed turbines of which the half blade will potentially be visible. It is indicated that full theoretical visibility within 5km of the proposed turbines is mostly limited to within the valley created by the surrounding peaks. However, given the lack of larger topographical features to the north-west of the proposed turbines, full theoretical visibility extends

out beyond 5km (to 7.7km) from the nearest proposed turbine in this direction. In terms of its theoretical visibility beyond 5km, it is noted that the Slieveardagh Hills provide substantial topographical screening of the proposed turbines, creating large areas of no theoretical visibility to the west and south-west as far as the extent of the LVIA Study Area. There is only one area of theoretical visibility beyond 5km of the proposed turbines in this direction, located on the eastern side of Knocknamuck and Warhouse Hill, beyond which the proposed turbines are fully screened from view, including the majority of the parts of the LVIA Study Area located within Co. Tipperary. In general, to the south and south-east, the landscape is relatively flat with large areas of full theoretical visibility. It is stated that some small localised undulations in the topography create small patches of partial and no theoretical visibility in this direction. To the north and north-east of the site, visual screening from the northern stretch of the Slieveardagh Hills create large patches of partial and no theoretical visibility. Beyond 11km, this visual screening effect reduces and a mixture of full, partial and no theoretical visibility emerges, with full theoretical visibility increasing to the east. To the north-west, the Slieveardagh Hills again provide substantial topographical screening with only limited areas primarily comprised of partial theoretical visibility arising where either the landform rises (i.e. Cullahill and Spahill) and where a small gap in the ridgelines created by the Slieveardagh Hills give rise to partial theoretical visibility. In summary, beyond 5km, theoretical visibility is primarily concentrated to the south-west, south, east and north-east.

- 9.12.8.5. To demonstrate the varying characteristics of the roads and to record the actual visibility in comparison to the theoretical visibility, a methodology was employed termed Route Screening Analysis (RSA), and this was undertaken from all roads within a 3km radius of the proposed turbines. It is noted that the results of the RSA are mapped in Figure 13-4 of the EIAR.

Baseline

- 9.12.8.6. Section 13.4 (Landscape Baseline) of the EIAR outlines pertinent policy that relevant to the LVIA, as well as a description of the receiving landscape of the site and its wider setting. The 2021-2027 DP was consulted to identify landscape designations existent in the LVIA Study Area and is the principal policy document consulted for landscape policy. However, two other counties, Tipperary (west) and Laois (north), were also

located in the LVIA Study Area and comprise areas with theoretical visibility of the proposed turbines and the CDPs for each county are therefore also considered in the chapter.

9.12.8.7. Table 13-2 of the EIAR identifies all Designated Views and Prospects within the LVIA Study Area (Co. Kilkenny). It is noted that a Landscape Character Assessment was prepared for County Kilkenny in 2008, a supporting document of the KCDP, titled Landscape Appraisal of County Kilkenny 2008-2016 (LACK). There is a total of 14 no. subdivided LCAs identified in the 2021 – 2027 DP that are located within the LCA Study Area (15km from the nearest proposed turbine, see Section 13.2.1). The proposed wind farm is located within LCA A – Slieveardagh Hills (South).

9.12.8.8. The proposed turbines are not located within any LCAs identified as being of special value. Therefore, it is noted that the proposed turbines will not directly alter the physical fabric of these LCAs. There is only one high value landscape within the LCA Study Area (LCAH - Nore Valley c. 9.6km from the nearest turbine). It is stated that the underground cable route forming part of the proposed GCR passes through this LCA briefly as it merges from the R694 Regional Road into the N77 National Road near the settlement of Ballyragget. In terms of landscape character sensitivity, the wind farm site is comprised primarily of pasture, and is therefore classified as Normal (i.e. Class 3 – Normal (A common character type with a potential to absorb a wide range of new developments)). Section 13.4.1.1.3 (Landscape Character Sensitivity) also highlights that there are no ‘Sensitive Landscape Features’ such as steep slopes or elevated ridgelines within the proposed wind farm site.

9.12.8.9. As indicated by the ZTV mapping, there is theoretical visibility of the proposed turbines in both Counties Tipperary and Laois which are partially located within the LVIA Study Area. Therefore, relevant designations pertinent to the LVIA conducted in the chapter are identified in the:

- Tipperary County Development Plan, 2022-2028, and,
- Laois County Development Plan, 2021-2027.

9.12.8.10. It is stated that the proposed wind farm site was visited multiple times during 2023 and

2024, where an assessment of topography, drainage, landcover and land use was conducted in conjunction with other LVIA surveys. The landcover of the proposed wind farm is described as predominantly of a working agricultural landscape with fields enclosed by hedgerows and treelines. The site is described in detail in Section 13.4.3 of the EIAR (Landscape Character of the Proposed Wind Farm site).

9.12.8.11. A map showing all LCAs within 15km of the proposed turbines and the distribution of theoretical visibility of the proposed turbines occurring in each LCA is shown in Figure 13-15 of the EIAR. It is stated that the potential visibility of the proposed turbines was appraised during the site surveys from all LCAs with very limited or partial theoretical visibility. Landscape Character Areas are labelled 'LCA,' and each is prefixed by the first letter of the county in which it is located e.g., 'T' for Tipperary. Following the pre-assessment exercise, the LCAs shown in the below table have been scoped in for assessment as some of the proposed turbines are likely to be visible from within these LCAs.

Table: LCAs scoped in for further assessment

Map Ref.	LCA
KK – LCA A1	Slieveardagh Hills (South)
KK – LCA A4	Slieveardagh Southern Transition Zone
KK – LCA F2	Kilkenny Western Basin
KK - LCA B	Castlecomer Plateaux
T – LCA 4	River Suir Central Plain
T – LCA 14	Slieveardagh Hills Farmland Mosaic

9.12.8.12. Apart from the LCAs identified above, a number of other landscape receptors have been identified in the EIAR and following a pre-assessment exercise, the landscape receptors listed in the below table have been scoped in for assessment given the likely visibility of the turbines and the potential landscape effects that may arise.

Table: Landscape Receptors Scoped in for Further Assessment

Map Ref.	LCA
County Tipperary	Secondary Amenity Area - Slieveardagh
County Tipperary	Secondary Amenity Area - Slievenamon

9.12.8.13. In terms of a visual baseline, the following visual receptors have been highlighted within the LVIA Study Area and are identified in the visual baseline map (Figure 13-16 of the EIAR):

- Designated Scenic Routes and Views,

- Viewing Areas (e.g., marked on OSI Maps),
- Settlements Recreational Routes (Waymarked Walking Routes; Cycle Routes; Scenic Drives; Tourist Routes),
- Recreational,
- Cultural Heritage and Tourist Destinations,
- Transport Routes, and,
- Residential Receptors.

9.12.8.14. After identifying the visual receptors within the LVIA Study Area, a preliminary analysis was carried out to scope out visual receptors that are likely to have very little or no visibility of the proposed wind farm. The visual receptors shown in the below table have been selected for assessment due to their significance within the LVIA Study Area and the potential visual effects they may experience due to the proposed development.

Table: Visual Receptors Scoped in for Further Assessment

Visual Receptor Category	Visual Receptor	Relevant Viewpoints (VP)/Photowire (PW)
Designated Scenic Routes and Views (as per Table 13-2 (Kilkenny) & 13-3 (Tipperary & Laois))	KK V-16	VP9, PWE
	T-SR27	PWK
	KK-V12	VP7, PW1
	KK-V13	PWN
	KK-V15	VP16
	L-V004	VP5
OSi Viewing Points	N/A	N/A
Settlements	Kilmanagh	VP11, VP12, VP13, PWF, PWS, PWT
	Tullaroan	VP1, PWB
	Ballycallan	VP9, PWE
	Callan	VP15, PWP
	Cuffesgrange	PWI
	Kilkenny City	VP10
	Kells	VP14, PWO
	Ballyragget	PWM
	Danesfort	VP10
	Windgap	VP16
Recreational Routes and Tourist Destinations	North Kilkenny Cycle Route	VP6, VP8, VP11, VP13, PWD, PWF, PWM, PWG
	South Kilkenny Cycle Route	VP10
	Famine Warehouse	PWK
Transport Routes	R695	VP11, VP12, PWR
	N76	VP15, VP15, PWH, PWP
	M9	VP10
	N10	VP10

9.12.8.15. In terms of the residential receptors, Section 13.5.3 of the EIAR notes that the site is located within a settled landscape and residential housing is organised along the local road network and small settlement clusters around local crossroads and junctions. It is stated that several viewpoint (VP) locations representing residential properties located in close proximity to the proposed wind farm were assessed, which resulted in 9 no. VP's being selected for inclusion in the photomontage booklet (Volume 2 of this EIAR) and the remaining VPs are presented in the Photowire Booklet (Appendix 13-5 of this EIAR).

Potential Effects

9.12.8.16. Potential significant effects of the development, as identified in the EIAR, are summarised in the below table.

Table: Summary of Potential Effects

<i>Do Nothing</i>	No changes would be made to the current land-use practice of low intensity agriculture and small-scale forestry. However, the opportunity to capture part of Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. In addition, it is stated that the opportunity to replant sections of the banks of the Tullaroan Stream by establishing a natural wooded riparian buffer would be lost. It is stated that the riparian planting would contribute to the landscape value by enhancing the natural green landscape.
<i>Construction Phase</i>	<u>Wind Farm</u> <i>Landscape Effects of the Proposed Turbines</i> Where excavation is required, existing landcover, vegetation and spoil will be removed during the construction phase. The construction activities may potentially cause temporary impacts on the landscape such as the creation of temporary structures. A Short-Term, Moderate, Negative effect in terms of direct landscape effects will arise. <i>Visual Effects of the Proposed Turbines</i> The most substantial visual effects will arise from requisite construction activities such as building tower sections and erection of the proposed turbines using cranes. The equipment and vehicles required to transport and erect the proposed wind farm components include large cranes and large haulage vehicles. These construction activities will cause 'Slight,' Short-Term, Negative, Visual Effects. <i>Site Access Roads and Hardstand Areas</i> Some tracks will be upgraded appropriately whilst several stretches of new internal roads will need to be constructed. The landscape and visual impact of the construction of these flat and hard surfaces will be very localised and the visual effects arising are considered to be highly localised, 'Short-

	Term,' and 'Slight.' Following rehabilitation, the landscape and visual effects will be 'Not Significant' during the operational phase. <i>Borrow Pit and Spoil Management Areas</i> The borrow pit will be visible from elevated vantage points within the wider landscape enclosing the proposed wind farm and will therefore have an effect on landscape character in combination with the proposed turbines and other infrastructure. The magnitude of change is deemed to be 'Slight' and therefore, a Short-term 'Negative' landscape effect will occur. The effects of spoil management areas will be very localised within the proposed wind farm and will have a Temporary, 'Slight' and localised effect on the landscape during the construction phase. Following regrading and reestablishment of vegetation of these areas following completion of the construction phase, effects will be 'Not- Significant' during the operational phase. <i>Meteorological (Met) Mast</i> The met mast will be a free-standing slender lattice structure 30m in height. The landscape and visual effects arising from the construction of the met mast is considered to be of highly localised Negative, Short-Term, Slight effects. <i>Temporary Construction Compound</i> The landscape and visual effects of the construction compounds will be highly localised, considering that construction activities related to them will be most visible within their immediate surroundings. Within the site and its immediate landscape setting, the landscape and visual effects arising from the construction compounds are considered to be of highly localised Negative, Short-Term, Slight effects. <u>Grid Connection</u> <i>Underground Cabling connection to Ballyragget Substation</i> The underground cabling will be laid predominantly beneath the surface of the existing farm access road to be upgraded and the public roads, with a short section across agricultural land adjacent to the Ballyragget Substation. The works will include roadside vegetation removal, soil/road surface stripping, excavation, and other associated construction activities. Changes will be localised to the immediate environment surrounding the cabling route and will not permanently affect the character of the landscape setting or visual amenity of the wider area. The works are likely to cause Slight, Temporary, Negative landscape and visual effects. <i>38kV Substation</i> In general, visibility of the proposed substation will be highly localised. The local road to the west, the L5023, and the residential receptors located along it, are surrounded by treelines and hedgerows, multiple layers of which will visually screen the proposed substation from view. The landscape and visual effects of the construction compound will be highly localised, considering that construction activities related to this will be most visible within its immediate surroundings. The landscape and visual effects

	arising from the construction are considered to localised, 'Negative', Short-Term 'Slight' effects.
Operational Phase	<u>Landscape Effects</u> <i>Wind Farm site</i> The site will undergo major changes in the landscape by the introduction of vertical man-made structures, ancillary infrastructure and hardstanding areas. There will be a substantial magnitude of change to the landscape in the localised areas within the site where the landscape is materially altered (infrastructure footprint). It is stated that 'Low' sensitivity (i.e. attributed to site) balanced with a substantial magnitude of change amounts to long-term landscape effects of Moderate significance upon the physical fabric of the landscape of the site. Effects on the perceptual and aesthetic character of the site are also deemed to be of Moderate significance. <i>Receptors of High Sensitivity</i> <u>Co. Kilkenny</u> The proposed wind Farm site is situated near contours, ridgelines, and gently steep landscape areas which are considered 'sensitive landscape features' in Kilkenny. The sensitivity of these receptors are considered 'High' given their designation in the 2021-2027 DP. However, it is stated that steep elevations and ridgelines are not unique landscape features in a regional or national context. While the proposed turbines are located in close proximity to these designated landscape features and there will be an effect on the setting and character of this landscape receptor, this effect is mitigated by the separation from the proposed turbines and the landscape features. Overall, a 'Slight' residual landscape effect is deemed to arise concerning the impact of the proposed wind farm on these sensitive designated landscape features. <u>Co. Tipperary</u> Tipperary Secondary Amenity Area – Slieveardagh Hills: At its closest point, the SAA is located c. 4km west from the nearest proposed turbine (T7) and extends in a south-west direction beyond 20km from the proposed turbines. However, patches of both full and partial theoretical visibility occur to the east of the SAA, from the elevated topographical features of the Slieveardagh Hills. The proposed turbines are not located within this SAA, they are seen from parts of this area, within an adjacent landscape area. Therefore, while there will be an effect on the setting and character of this landscape receptor, this effect is mitigated by separation from the proposed turbines themselves. Overall, a 'Slight' residual landscape effect is deemed to arise in relation the visual quality of the SAA. Tipperary Secondary Amenity Area – Slievenamon: This SAA is located c. 18.5km south of the nearest proposed turbine. There are small patches of full theoretical visibility located in the northern section of this SAA, with the majority of it located outside the LVIA Study Area. A 'Slight' magnitude of change is deemed to arise. While there will be some effect on the setting and character of this landscape receptor, the limited theoretical visibility within this SAA indicates that the proposed turbines will not be seen from the majority of this area. Where visible, the impact is mitigated by the distance from the proposed turbines. Overall, a 'Slight' residual landscape

effect is deemed to arise in relation its visual quality.

Landscape Character Areas

It is noted that the proposed windfarm is located in Kilkenny LCA A1 – Slieveardagh Hills (South). The individual assessments for each LCA are included in detail in Appendix 13-2 of the EIAR and are summarised in the below table.

Table: Landscape Character Area Assessment Table

LCA	LCA Sensitivity	Magnitude of Change	Residual Effect
KK-LCA A1	Low	Moderate	Slight
KK-LCA A4	Low	Slight	Not Significant
KK-LCA F2	Low	Slight	Not Significant
KK-LCA B	Low	Slight	Not Significant
T-LCA 4	Low	Slight	Not Significant
T-LCA 14	Medium	Slight	Not Significant

Visual Effects

Photomontages were used to assess the visual effects of the proposed development from 16 no. viewpoint locations. Photowires were also produced from 21 other viewpoint locations in the LVIA Study Area. The visual effect of the proposed development was assessed from each viewpoint in terms of the sensitivity of the visual receptors, along with the magnitude of change, as recommended in GLVIA3. It is noted that all predicted visual effects of the viewpoints below are Long-Term and Direct effects. The individual assessment from the 16 no. viewpoints are presented in Appendix 13-3 of the EIAR and are summarised in the below table.

VP No. & Location	Visual Sensitivity of Receptor	Magnitude of Change	Residual Effect
1 – c. 2.8km north of T3	Medium	Slight	Slight
2 – c. 820m south-west of T7	High	Moderate	Moderate
3 – c. 6.1km north-west of T3	Low	Slight	Not Significant
4 - c. 750m north of T2	High	Moderate	Moderate
5 - c. 18.5km north of T1	High	Negligible	Not Significant
6 - c. 870m west of T3	High	Substantial	Moderate
7 - c. 18.7km north-east of T1	High	Negligible	Not Significant
8 - c. 1.8km	High	Moderate	Moderate

	east of T4			
	9 – c. 1.6km south-east of T7	High	Moderate	Moderate
	10 - c. 10.6km east of T4	Medium	Negligible	Not Significant
	11 - c. 1.5km south of T7	High	Moderate	Moderate
	12 - c. 1.4km south of T7	High	Slight	Slight
	13 - c. 1.3km south of T7	High	Slight	Slight
	14 – c. 14.8km south-east of T7	High	Negligible	Not Significant
	15 – c. 11.2km south of T7	Medium	Negligible	Not Significant
	16 – c. 18.3km south of T7	High	Negligible	Slight
It is stated that the significance of the residual visual effect was not considered to be Profound, Very Significant, or Significant at any of the 16 viewpoint locations. The residual effects were found to be Moderate (6), Slight (4) and Not Significant (6). <i>Designated Scenic Routes and Views</i> Kilkenny Protected View 16 (Map. Ref KK-V16) - Closest protected view to the Proposed Project, located c. 1.6km southeast of the nearest proposed turbine. The focus of the scenic view (as per 2021-2027 DP) is not in the direction of the proposed development. Views from this scenic route directed north-west (as represented by VP9) are not of a particular high scenic quality and are typical of many other views of the agricultural valley within the surrounding area. VP9 has been assigned a 'High' sensitivity and a 'Moderate' magnitude of change is deemed to arise. Tipperary Protected View 27 (Map Ref. T-SR27) - Described as 'views east and west from War House Hill,' and is located c. 6.6km west of the nearest proposed turbine. The proposed turbines are viewed beyond an intervening rise in topography which screens the base off all turbines, meaning only the turbine hubs and blades are visible. This, along with the intervening distance, makes the proposed turbines appear set-back from this viewpoint. For this reason, the magnitude of change is deemed to be 'Slight.' The residual effects are deemed to be 'Slight.' Kilkenny Protected View 12 (Map Ref. KK-V12) - This protected view is located c. 18.7km to the northeast of the proposed turbines, has full theoretical visibility of the proposed turbines and is directed southwest, which is in in the direction of the proposed turbines. A 'Negligible' magnitude of change was deemed to arise. As detailed in Appendix 13-3, the residual visual effect is deemed to be 'Not Significant'.				

	Kilkenny Protected View 13 (Map Ref KK-V13) - This protected view is located c. 19.3km to the northeast of the proposed turbines in an area of full theoretical visibility. A 'Negligible' magnitude of change was deemed to arise, as the proposed turbines are seen as very small elements in the distant background of the view, within a limited horizontal extent. Overall, the residual visual effect is deemed to be 'Not Significant.' Kilkenny Protected View 15 (Map Ref. KK-V15) - This protected view is located c. 19.3km to the south of the proposed turbines in an area of full theoretical visibility. The proposed turbines are seen as very small features in the view. On account of this, the magnitude of change was deemed to be 'Negligible.' In addition, this protected view is located along the N76 which is a highly trafficked road and views towards the proposed turbines often be directed towards the general direction of travel. A 'Slight' residual effect was deemed to arise. Laois Protected View 4 (Map Ref. L-V004) - This protected view is located c. 18.5km to the north of the proposed turbines in an area of full theoretical visibility and is represented by VP5. The protected view is described as 'views towards Knockmannon Hill,' which is located between the protected view and the proposed turbines. For this reason, the proposed turbines will not interfere with views towards Knockmannon Hill themselves. The proposed turbines are partially visible from this view with only the hubs and blades of six of the seven proposed turbines visible, with the visible parts seen as very small in scale. This viewpoint was assigned a 'High' sensitivity on account of the designated protected view in the LCDP. The Magnitude of change was deemed to be 'Negligible.' The residual visual effect was deemed to be Not Significant. <i>Settlements</i> Of the 41 settlements identified in the LVIA Study Area, 33 were scoped out given there was no theoretical visibility and/or no visibility could be established on site, or the settlements were located at such a substantial distance from the proposed development that Significant visual effects were deemed not likely to arise. Kilmanagh - Kilmanagh is the closest settlement to the site and has primarily full theoretical visibility of the proposed turbines. VP11, VP12 and VP13 were captured to represent various views from the settlement of Kilmanagh. The visual effects of the proposed turbines on receptors at street level within the central areas of Kilmanagh is deemed to be 'Not Significant.' However, there will likely be greater visibility of the proposed turbines and a 'Slight' magnitude of change from other receptors in Kilmanagh, for example, from upper storey windows of the residential building lining the northern extent of Kilmanagh. Therefore, the residual visual effect arising from VP12 was deemed to be 'Slight'. The western extent of the settlement is represented by VP13 which is captured from the L1009 local road, located c. 1.3km south from the nearest proposed turbine, T7. VP13 was assigned a High sensitivity on account of the settlement of Kilmanagh and nearby sensitive receptors, and a 'Slight' magnitude of change was deemed to arise from this location,

	given the level of visual screening that occurs from the buildings and hedgerows/treelines, as well as intervening topography within and surrounding the settlement. The residual visual effect for this viewpoint was deemed to be 'Slight'. VP11 is located within the townland of Knockeenbaun, c. 1.5km south from the nearest proposed turbine. A 'High' sensitivity was assigned to this VP on account of the settlement of Kilmanagh and nearby sensitive receptors, and a 'Moderate' magnitude of change was deemed to arise. The residual visual effect was deemed to be 'Moderate.' Overall, a 'High' sensitivity was assigned to the settlement of Kilmanagh and nearby sensitive receptors, and a 'Moderate' magnitude of change was deemed to arise. The residual visual effect was deemed to be 'Moderate.' Tullaroan - The settlement of Tullaroan is located c. 2.5km north-west of the proposed turbines and has full theoretical visibility. VP1 was captured to represent open views to the south-east from this settlement towards the proposed turbines. This settlement was assigned a 'Medium' sensitivity, and a 'Slight' magnitude of change was deemed to arise. Overall, a 'Slight' residual visual effect is deemed to arise. Ballycallan - Ballycallan is located 3km to the south-east of the proposed turbines and has partial theoretical visibility of the proposed turbines due to visual screening provided by the intervening topography of the hill in Ballycuddihy. VP8 and VP09 are both located at a similar geographic orientation as Ballycallan and are located closer to the proposed turbines. A residual visual effect of 'Moderate' was deemed to arise at both of these viewpoints. It is stated that visibility of the proposed turbines from Ballycallan will be much reduced in comparison to these viewpoints. Callan -. VP15 and PWP were captured on the N76 to represent views in close proximity to the town. VP15 was assigned a Medium sensitivity on account of Callan town and a 'Slight' magnitude of change was deemed to arise. Overall, a Slight residual visual effect is deemed to arise. Cuffesgrange - PWH was captured to represent open views from this settlement towards the proposed turbines. This settlement was assigned a Medium sensitivity, and a 'Slight' magnitude of change was deemed to arise. Overall, a 'Not Significant' residual visual effect is deemed to arise. Kilkenny City - The city has primarily full theoretical visibility with patches of partial visibility and a stretch of no theoretical visibility along the River Nore. VP10 was captured along the N10 outside Kilkenny City and represents the most open view towards the proposed turbines from the area around the outskirts of Kilkenny City. This settlement was assigned a 'Medium' sensitivity and a 'Negligible' magnitude of change was deemed to arise. Overall, a 'Slight' residual visual effect is deemed to arise. Kells - VP14 and PWO were captured from locations near Kells Priory which represent very open views in close proximity to the settlement. This

	settlement was assigned a 'High' sensitivity, and a 'Negligible' magnitude of change was deemed to arise. Overall, the residual visual effect deemed to arise is 'Not Significant'. Ballyragget - PWM was captured from an elevated location outside the settlement. This settlement was assigned a 'Low' sensitivity, and a 'Negligible' magnitude of change was deemed to arise. Overall, an 'Imperceptible' residual visual effect is deemed to arise. The proposed GCR passes through this settlement. However, there will be no visual effects during the operational phase. Danesfort - VP10 captured, 4.4km north of Danesport, on the outskirts of the settlement and represents the residential receptors of this settlement. This settlement was assigned a 'Low' sensitivity, and a 'Negligible' magnitude of change was deemed to arise. Overall, an 'Imperceptible' residual visual effect is deemed to arise. Windgap - VP16 was captured c. 4km to the outskirts of this settlement and is representative of views towards the proposed turbines from this settlement. This viewpoint settlement was assigned a 'Low' sensitivity, and a 'Negligible' magnitude of change was deemed to arise. Overall, a 'Not Significant' residual visual effect is deemed to arise. <i>Other Visual Receptors, Recreational Routes and Destinations, Cultural Heritage, and Tourist Destinations</i> North Kilkenny Cycle Route - The North Kilkenny Cycle Route passes just 765m from the nearest proposed turbine at its closest point (T03). The route enters the LVIA Study Area to the north-east and travels towards the proposed turbines before travelling within 5km of the proposed turbines, the route then travels around the site along local roads. VP2, VP6, VP8, VP11, VP12, VP13 as well as PWF, PWJ, PWG and PWM were all captured along the route and are representative of the most open views within the LVIA Study area. PWM was captured outside the 5km buffer (located c. 17.5km north of the nearest proposed turbines). These images represent the most open views along the route and it is stated that the proposed turbines appear as moderately scaled elements within the landscape, occupying a moderate horizontal extent in most of the images. This recreational route was assigned a 'Medium' sensitivity on account of cyclists using the route for recreational purposes. The magnitude of change was deemed to be 'Moderate.' Overall, a 'Slight' residual visual effect is deemed to arise. South Kilkenny Cycle Route - VP10 was captured along this recreational route along the N10 to the south of Kilkenny City, at the closest point of this route to the proposed turbines. The proposed turbines occupy a very small horizontal extent within this image. This recreational route was assigned a 'Medium' sensitivity and a 'Negligible' magnitude of change is deemed to arise. Overall, the residual visual effect is deemed to be 'Not Significant.' Famine Warhouse - PWK represents views towards the proposed turbines from this location (located in front of the gate entrance to the Famine

	Warehouse site). Due to the distance and the siting of the proposed turbines beyond the intervening topography, the proposed turbines appear well set-back from this viewpoint location, and are seen at a lower elevation, reducing their prominence in the view. In addition, views from the Famine Warehouse itself are primarily screened by mature trees which surround the site of the building. Overall, a 'Not Significant' residual visual effect is deemed to arise. <i>Other Visual Receptors – Major Transport Routes</i> R695 Regional Road - The R695 regional road is the closest regional road to the proposed turbines and connects Kilmanagh with Kilkenny City and Callan. VP11 and VP12 as well as PWR were captured along the R695 regional road. In VP11 and VP12, the proposed turbines appear as moderately scaled vertical features located beyond residential buildings and the intervening vegetation. Both viewpoints were deemed to be 'High' sensitivity and a 'Slight' magnitude of change was deemed to arise. A residual visual effect of 'Moderate' was deemed to arise at VP11 and a residual visual effect of 'Slight' was deemed to arise at VP12, although the effects primarily relate to the relatively higher sensitivity of the residential receptors in close proximity to the proposed turbines, represented by these viewpoints. PWR was captured along the R695 in Graigue Hartford, c. 3.2km from the nearest proposed turbine. In PWR, the proposed turbines are partially visible beyond the intervening vegetation in the form of a treeline. PWR also demonstrates that visibility will substantially decrease along the road with greater distance from the proposed turbines. A 'Low' sensitivity was assigned to this viewpoint and a 'Slight' magnitude of change was deemed to arise. Overall, the residual visual effect was deemed to be 'Not Significant.' N76 National Road - The N76 national road connects Kilkenny City to the village of Ninemilehouse before exiting the LVIA Study Area in the south. VP15 and VP16 as well as PWH and PWQ were captured at different locations along the route. PWH was captured as it represents the views along the N76 that are closest in proximity to the proposed turbines. 'Not Significant' residual visual effect is deemed to arise at this viewpoint. VP15 is an example of an open view of the proposed turbines from along this route. It is assigned a Medium sensitivity on account of the residents in close proximity to Callan. A 'Negligible' magnitude of change was deemed to arise and no Significant effects were recorded. VP16 represents longer distance views along this route towards the site, located c. 18km from the nearest proposed turbine. From this view the proposed turbines are seen as small distant elements within the landscape and show that distance greatly mitigates visibility along this route. This route was assigned a 'High' sensitivity on account of the protected view in the KCDP and a 'Negligible' magnitude of change was deemed to arise. Overall, a 'Slight' residual visual effect was deemed to arise. N10 National Road - The N10 national road extends south from Kilkenny City and joins the M9 motorway near Danesfort. VP10 was captured along the N10 as it represents the most open views from this route and is the

	closest section of the route in proximity to the proposed turbines. This route was assigned a 'Medium' sensitivity and a 'Negligible' magnitude of change. Overall, a 'Not Significant' residual effect was deemed to arise at this viewpoint. M9 Motorway - The M9 motorway enters the LVIA Study Area in the east and travels south of Kilkenny City towards Kells and Stoneyford before exiting the LVIA Study Area in the southeast. VP10 is located at a similar geographic orientation and a closer proximity to the proposed turbines than the M9. A 'Not Significant' residual effect was deemed to arise at that viewpoint. <i>Residential Amenity</i> It is noted that there are 82 sensitive receptors located within 1km of the proposed turbine locations. The closest involved sensitive receptor, belonging to the involved landowners, is located greater than 500m from the nearest proposed turbine (T4) i.e. over the minimum recommended setback for properties involved in the project (500m). The closest non-involved sensitive receptors are located greater than 750m from the nearest proposed turbine i.e., over 4x tip height set back (740m). As per Figure 13-21 of the EIAR, the closest cluster of residential receptors to the proposed turbines are located in Kilmanagh to the south. Figure 13-21 also illustrates locations where photomontage and photowire imagery was captured to inform the impact assessment of the various groups of sensitive receptors surrounding the site. Sensitive Receptors within 1.5km of the proposed turbines - VP4 is located c. 810m northwest of the nearest proposed turbine and is representative of the sensitive receptors located along the L5204 to the north. The sensitivity of this viewpoint was deemed to be High on account of the sensitive receptors in close proximity to the proposed turbines, and the magnitude of change was deemed to be Moderate. A residual visual effect of 'Moderate' was deemed to arise in relation to the receptors located adjacent to the viewpoint, which comprise a limited number of sensitive receptors. PWC and PWQ were captured to the east of VP4, representing a cluster of residences located between 800-1000m from the nearest proposed turbines. From this location, while the proposed turbines do constitute a 'Moderate' change in one area of residential visual amenity, they do not comprise a large horizontal extent of views. For VP4, PWC and PWQ, it is stated that the baseline views are generally unremarkable and are typical of many other views of agricultural fields and forestry within the surrounding area. VP9 (1.4km from T5) is representative of the sensitive receptors located to the south-east of the proposed turbines, along a stretch of the road with Full Screening and Intermittent/Partial Screening, which can be seen in PWE. The sensitivity of this viewpoint is deemed to be 'High' on account of the sensitive receptors in close proximity to the proposed turbines, and the magnitude of change is deemed to be 'Moderate.' A residual visual effect

	of 'Moderate' is deemed to arise in relation to these receptors. A number of sensitive receptors are positioned within 1.5km to the west of the proposed turbines. VP2 and VP6 both show views from this area from within 900m of the proposed turbines. In both instances the viewpoints were classified as 'High' sensitivity viewpoints on account of the nearby residential receptors. In terms of VP2, a residual visual effect of 'Moderate' was deemed to arise. VP6 is located at a cluster of sensitive receptors located between 800-1000m of the nearest proposed turbines. A 'Substantial' magnitude of change was deemed to arise. However, high levels of vegetation provide substantial screening in the direction of the proposed turbines from other locations, where views are substantially more screened than the VP6. Overall, a 'Moderate' residual visual effect was deemed to arise. The settlement of Kilmanagh is partially located within 1.5km of the proposed turbines, with the closest sensitive receptors located c. 1.2km from the nearest proposed turbines. It is stated that there is substantial levels of screening present in Kilmanagh and surrounding the sensitive receptors, the proposed turbines are viewed in a narrow horizontal extent of the view, and the proposed turbines have been designed to ensure that a substantial setback distance is in place between the proposed turbines and the closest sensitive receptors and in this case the proposed turbines are set back at a minimum of 1.2km from the settlement. It is stated that there will be no Significant residual visual effects on sensitive receptors located within Kilmanagh. <i>Sensitive Receptors beyond 1.5km of the proposed turbines</i> VP1 is located c. 2.8km to the north of the nearest proposed turbine (T3). It was given a Medium sensitivity on account of the residential receptors which are located in Tullaroan with views towards the proposed turbines in medium proximity. The magnitude of change was deemed to be 'Slight.' It is stated that views from within the settlement will have limited visibility due to visual screening provided by other buildings. The proposed turbines are likely to be partially obscured from other sensitive receptors and views in the area. At VP1, a 'Slight' residual visual effect was deemed to arise. A linear pattern of residential dwellings are located to the east of Tullaroan. PWB was captured to represent this cluster of residential receptors. This photowire viewpoint represents one of the most open views towards the proposed turbines from this area. The proposed turbines are likely to be partially obscured from other residential receptors located to the east of Tullaroan due to either Full Screening or Intermittent/Partial. VP8 is located along a local road to the north-east of the proposed turbines, along a stretch of road primarily classed as Little/No Screening in the Route Screening Analysis. This viewpoint was assigned a 'High' sensitivity on account of nearby sensitive receptors, and a 'Moderate' magnitude of change was deemed to arise. A 'Moderate' residual visual effect was deemed to arise.

	Visual Effects Relating to the Proposed Grid Connection The proposed grid connection route will be located underground and there will be no visible elements during the operational phase. Therefore, no visual effects will arise in relation to the underground cabling route. The proposed 38kV onsite substation is partially screened by existing hedgerow vegetation surrounding the proposed substation location and in the intervening fields between it and the nearest sensitive receptors. Visibility of the substation will not occur from this sensitive receptor nor others nearby, due to the screening effect from the vegetation enclosing the boundary of the properties and in the intervening space. The only visual receptors likely to have potential intermittent visibility of the proposed substation during the operational phase are users of the L5023 located to the west of the proposed substation, primarily through gaps within the roadside vegetation. These receptors are deemed to be of 'Low' sensitivity. Therefore, visual effects are likely to be highly localised, 'Negative,' and will be 'Not Significant.'
<i>Decommissioning Phase</i>	The landscape and visual effects during decommissioning are anticipated to be of a similar nature as those occurring during the construction phase. Upon decommissioning, the proposed turbines will be disassembled in reverse order to how they were erected. Proposed turbine foundations would remain in place underground and would be covered with earth and reseeded as appropriate. This naturalisation process would revert the landscape of the site to a condition similar to the current landscape baseline, albeit that certain elements of the infrastructure will remain in place. Removal of the proposed turbines and ancillary infrastructure from the site will result in a Short-term, 'Slight,' 'Negative' visual effect.
<i>Cumulative Effects</i>	In line with guidance for assessment of cumulative effects of onshore wind farms (SNH, 2012) & (NatureScot, 2021), a primary focus is given to the cumulative effects likely to occur as a result of other wind turbines identified in the LVIA Study Area. It is noted that there are 15 no. other existing, permitted, and proposed wind farms within 20km of the proposed turbines. These wind farms are located in separate clusters to the north (Lisdowney), northwest (Lisheen II), west (Ballybay, Foyle, Kyleballyoughter, An Cnoc, Gurteen, Littleton, Ballincurry) and east (Freneystown) of the proposed wind farm. The cumulative comparative ZTV of all cumulative turbines with the proposed turbines is shown in Figure 13-22 of the EIAR. Across the entire LVIA study area, the majority of the theoretical visibility consists of either cumulative turbine theoretical visibility or cumulative theoretical visibility, with very limited instances of visibility where only the proposed turbines have theoretical visibility. <i>Windfarms to the West</i> Several existing wind farms (and single turbines) are located to the west of the proposed wind farm including the existing Ballybay, Foyle, Kyleballyoughter, An Cnoc, Farranrory windfarms as well as the Gurteen, Ballincurry 2 and Ballinacurry 1 wind turbines. The proposed Littleton Wind Farm (Pre-Planning SID stage) is located at the western foothills of the Slieveardagh Hills, c. 15km to the east of the nearest proposed turbine. The permitted Knockroe turbines are located to the south-west of the proposed turbines.

	The most notable views where the proposed turbines are viewed in combination with the existing turbines occurs primarily in close proximity to the proposed turbines (i.e. within 5km). It is stated that the Foyle and Kyleballyougher turbines are viewed within a peak in elevation, whereas the proposed turbines are viewed within a depression, surrounded by adjacent hills. In terms of the Knockroe turbines (c. 17.1km south-west), some of the cumulative turbines are indicated to have theoretical visibility in combination with the proposed turbines (VP8). However, due to the considerable separation distance between the cumulative and proposed turbines, it is contended that visibility of both turbine clusters will be limited. In views from within close proximity to the proposed turbines such as VP8 and VP9, the proposed turbines are seen to add to the cumulative number of turbines within this cluster of wind energy developments in the northern part of the Slieveardagh Hills (in this with the Foyle turbines). However, it is noted that this does not extend the cluster of cumulative turbines beyond the boundaries of the Slieveardagh Hills landscape, and from locations such as VP3, the proposed turbines are still viewed within the same landscape area as these cumulative turbines. In general, it is stated that views of the existing, permitted and proposed cumulative turbines in this area are intermittent throughout the landscape and this will similarly be the case for the proposed turbines. Cumulative visual effects have been incorporated into the visual impact assessments (Appendix 13-3) and cumulative visual effects from specific viewpoints are discussed. It is contended that there were no Significant cumulative visual effects determined to arise as a result of the addition of the proposed turbines and overall, the addition of the proposed development will not give rise to Significant cumulative visual effects. <i>Windfarms to the North-West</i> Lisheen II is located 19.2km to the north-west of the nearest proposed turbine. Given the separation distances involved between the wind farms, it is contended that the addition of the proposed development will not give rise to Significant cumulative visual effects. <i>Windfarms to the North</i> The Lisdowney Windfarm is located 15.4km to the north of the nearest proposed turbine. These turbines have tip height of 99.5m and considering their distance from the proposed turbine, there will be limited locations where the proposed turbines will be seen in combination with the existing Lisdowney turbines (see VP5 and VP7.) No Significant cumulative visual effects are therefore deemed to arise. <i>Windfarms to the East Only</i> The proposed Freneystown Wind Farm (Pre-planning SID stage) is located to the far east of the LVIA Study Area, c. 18km east of the nearest proposed turbine. There will potentially be occasional scenarios within Kilkenny City where in combination visual effects will occur in a future receiving environment. These scenarios are only likely to occur from the most elevated vantage points where there is potential for both long-ranging views to the west of the proposed turbines with the other cumulative wind

	energy developments of the Slieveardagh Hills, and then also long ranging views to the east in the other direction, towards the proposed Freneystown turbines. It is stated that the large separation distances between the proposed wind farm and the proposed Freneystown Wind Farm and receptors (including Kilkenny City) will result in no significant cumulative visual effects to arise.

Mitigation

9.12.8.17. Mitigation measures are summarised in the below table.

Table: Summary of Mitigation

Construction & Operational Phase	<i>Mitigation by Design</i> - The proposed turbines are strategically sited within a modified working landscape with limited visibility from large areas of the LVIA Study Area and designated high-sensitivity landscape and visual receptors. - The characteristics of the elevated landforms and terrain surrounding the proposed turbines provide visual enclosure, obscuring visibility and reducing the visual envelope of the proposed development from vast areas of the wider landscape and LVIA Study Area. - The turbine layout has been designed to create a coherent arrangement of turbines, contiguous and connected to each other visually and with consistent spacing in line with the siting of wind farms within Hilly and Flat Farmland Landscape Types in the WEDG 2006. - Siting of proposed turbines adheres to the minimum 500m set back distance from residential receptors in the Guidelines and also the recommended 4 times tip height set back distance to third party properties, explicitly set out for residential visual amenity in the draft WEDG 2019. - As a result of the community consultation process, and through engagement with statutory consultees, the layout evolved culminating with the final layout iteration where it was decided to omit a turbine, which was the closest turbine to the settlement of Kilmanagh, resulting in a 7-turbine final layout. - The proposed turbines are sited within a landscape characterised by agricultural fields bordered by mature hedgerows and treelines which provide visual screening of the proposed wind farm, limiting its visibility from receptors in a large proportion of the wider landscape setting. The layout of the proposed development ensures minimal loss of valuable landscape receptors and biodiversity corridors. In addition, as part of the proposed development, it is proposed to plant, a 5m riparian buffer in the form of hedgerows along both sides of a 1.1km segment of the Tullaroan Stream within the site. The proposed riparian buffer comprises an area of 17,115m² of planting.

	<i>Landscape Effects within the Proposed Wind Farm site</i> - The internal site road layout makes use of the existing roads wherever possible, to minimise the requirement for new tracks within the site. - To minimise cut and fill activities required to construct the proposed development, the proposed access roads, and other infrastructure such as hardstands have been designed to align with the existing terrain within the landscape of the site. - In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. - During initial vegetation stripping, all topsoil material will be temporarily stored on the site and used for 'landscaping' the edges of the development infrastructure during reinstatement/regrading, including that of the spoil management areas and borrow pit. - The layout has been designed to ensure minimal loss of valuable landscape receptors and biodiversity corridors such as woodland and hedgerows along field boundaries.

Residual Effects

9.12.8.18. In terms of residual landscape effects, once the proposed development is operational and the construction is complete, it is stated that the landscape will naturally re-vegetate around the proposed development's footprint with the aid of mitigation measures (e.g., retention of natural seedbank during soil stripping). Considering the mitigation measures above, it is contended that the residual effects upon the landscape of the proposed wind farm site will be Slight. The residual effects of the proposed development on the various visual receptors identified through the Chapter can be summarised in the below table.

Table: Summary of Residual Effects

Visual Receptor	Description	Residual Effect
Local Character Areas	Slieveardagh Hills (South)	Slight
	Slieveardagh Southern Transition Zone	Not Significant
	Kilkenny Western Basin	Not Significant
	Castlecomer Plateaux	Not Significant
	River Suir Central Plain	Not Significant
	Slieveardagh Hills Farmland Mosaic	Not Significant
Secondary Amenity Area	Slieveardagh	Slight
	Slievenamon	Slight
View Points	1	Slight
	2	Moderate
	3	Not Significant
	4	Moderate
	5	Not Significant
	6	Moderate
	7	Not Significant
	8	Moderate

	9	Moderate
	10	Not Significant
	11	Moderate
	12	Slight
	13	Slight
	14	Not Significant
	15	Not Significant
	16	Slight
Designated Scenic Routes and Views (as per Table 13-2 (Kilkenny) & 13-3 (Tipperary & Laois))	KK V-16	Moderate
	T-SR27	Slight
	KK-V12	Not Significant
	KK-V13	Not Significant
	KK-V15	Slight
	L-V004	Not Significant
Settlements	Kilmanagh	Moderate
	Tullaroan	Slight
	Ballycallan	Moderate
	Callan	Slight
	Cuffesgrange	Not Significant
	Kilkenny City	Slight
	Kells	Not Significant
	Ballyragget	Imperceptible
	Danesfort	Imperceptible
	Windgap	Not Significant
Recreational Routes and Tourist Destinations	North Kilkenny Cycle Route	Slight
	South Kilkenny Cycle Route	Not Significant
	Famine Warehouse	Not Significant
Transport Routes	R695	Slight to Moderate
	N76	Slight
	M9	Not Significant
	N10	Not Significant
Residential Amenity	Within 1.5km of the proposed turbines	Moderate
	Beyond 1.5km of the proposed turbines	Slight to Moderate

Assessment

9.12.8.19. I have examined, analysed and evaluated Chapter 13 of the EIAR and all of the associated documentation and submissions on file in respect of landscape and visual impacts. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation and advertisement.

9.12.8.20. As I have discussed in Section 8 of this Report, it is evident that the Planning Authority's first reason for refusal largely derives from their assessment of landscape and visual effects. In summary, it was their view that the cumulative effects of the proposed development would impose an unreasonable and disproportionate environmental loading on the character of a rural area with a locally concentrated

population, due principally to the combined effect of potential visibility, noise, flicker and disturbance of access, during a prolonged period. Furthermore, potential landscape and visual impacts have been highlighted as a key concern that has been consistently raised by Third Party observers. As I have noted, KBT Responsible Energy were of the view that the images provided by the Applicant were misleading, and it is their contention that the alternative images that they commissioned provide a clearer, more accurate, and unobstructed representation of the potential visual impact of the proposed development. Whilst I have reviewed these images, there is a lack of transparency regarding the authorship, equipment, and qualifications of the person used to produce the community group's photomontages. In this regard, I cannot verify their accuracy, and I would therefore advise caution in the Commission relying upon them.

9.12.8.21. The visual impact assessments included within Appendix 13-3 (Photomontage Assessment Tables) of the EIAR follows the 'Assessing Visual Effects' methodology set out in Section 1.6.2 of Appendix 13-1 (LVIA Methodology). These detailed tables include a description of the viewpoint, the existing view, the proposed photomontage, the cumulative effect, the sensitivity of the visual receptor, the magnitude of change, the significance of effect, the mitigating factors and the residual effect when mitigation is considered. Notwithstanding the Planning Authority's concerns, I am satisfied that the Applicant's methodology is acceptable and the significance of effects has been clearly derived. Whilst it is the Planning Authority's view that the Applicant's classification of impact significance is misleading and underreported, I note that landscape and visual impact assessments inherently involve a degree of subjectivity. This can also be said for the Planning Authority's independent report, where a table has been created to illustrate the contrast between the Applicant's classification of impact significance and that prepared by an independent expert. It is contented within the Planning Authority's report that this demonstrates that for those Viewing Points closest to the proposed development, there is a significant understatement of the Applicant's impact classification compared to that of an independent expert. However, I must stress that the expert's impact classification lacks a legible rationale as to how the impacts are derived, distinguishing it from the Applicant's, which I have detailed above. An assessment of visual effects from each of the Applicant's viewpoints is

provided in the below table. This assessment is based on my consideration of the Applicant's LVIA (including Appendix 13-3), the commentary of the Planning Authority, the concerns raised by Third Party observers and from my observations on site, including the selected viewpoint locations.

Table: Assessment of VPs

VP No.	Visual Sensitivity	Magnitude of Change	Effect	Residual Effect (following mitigating factors)	Assessment
1	Medium	Slight	Slight	Slight	This image is taken from a local road between the village of Tullaroan and the local GAA grounds. I would agree that this is a representative worst-case view from the village given the openness of the view across a flat agricultural field and the visibility of all 7 no. turbines. No other turbines are visible from this viewpoint, and I would concur that no cumulative visual effects will arise. As the turbines are viewed as small scaled vertical features and noting the separation distances and the medium sensitivity attributed to the village of Tullaroan, I am satisfied that a 'slight' effect will arise and the Applicant's assessment is therefore acceptable. Concur with Applicant's Assessment: Yes
2	High	Moderate	Significant	Moderate	This view is taken from an elevated local road to the south-west of T7. The proposed turbines are laid out over the valley below and the topography gently rises again in the background of the image. I note that the Applicant has attributed a high sensitivity to this viewpoint on account of the existing residential receptors living along the local road. In this case, I would not agree with the magnitude of change that has been attributed by the Applicant. In my view, this is a substantial magnitude as the proposal would result in a large-scale, prominent or very prominent change, leading to substantial obstruction of the existing view. On the basis of the Applicant's 'Visual Effects

					Assessment Matrix' this would result in a potential 'very significant' effect. However, I acknowledge the mitigation factors outlined by the Applicant which include the guideline compliant separation distances (WEDG 2006 & draft WEDG 2019), their siting within a relatively lower elevation which reduces visual prominence and the characteristics of the baseline view which I would concur is generally unremarkable. It is therefore my view that a 'significant' residual effect will arise for residential receptors living along this local road in close proximity to the development. No cumulative effects are considered to arise at this location. Concur with Applicant's Assessment: No
3	Low	Slight	Not Significant	Not Significant	This viewpoint is taken from an elevated section of a local road c. 6km to the north-west of the wind farm. All 7 no. turbines are visible within this view and primarily sited within a valley created by the surrounding topography. A degree of visual overlap between the turbine components T1 and T2 is legible from this location. I would concur with the Applicant that the slight magnitude of change will be experienced from this location on account of the separation distances and as the turbines will be seen as small vertical features over a limited horizontal extent. From this location, the proposed turbines are viewed in combination with the existing Foyle turbines and the permitted Foyle and Kyleballyoughter wind turbines. Due to the generous spacing, the turbines appear well-separated and do not dominate the entire view. Overall, I would concur with the Applicant that the residual effect is 'not significant' and I am satisfied that no significant cumulative effects would arise. Concur with Applicant's Assessment: Yes
4	High	Moderate	Significant	Moderate	This viewpoint is taken from the L5024 to the north of the site and proximate to the proposed site entrance. This

					viewpoint was attributed a high sensitivity given the presence of residential receptors along the local road and its proximity to the wind farm. The topography of the wind farm site slopes upwards to form a large ridgeline and 2 no. turbines with partial towers and hubs are visible, with blades of 4 no. further turbines partially discernible above ridgeline. In my view, this is reflective of a substantial magnitude of change given the prominence of the structures and the change to the existing view. I also note that the permanent site access and connecting road is proposed at this general location which will alter the immediate landscape character. On the basis of the Applicant's 'Visual Effects Assessment Matrix' this would result in a potential 'very significant' effect. It is therefore considered that a 'significant' residual effect will arise for residential receptors living along this local road when the mitigating factors are taken into account, such as the compliant separation distances and the isolated nature of the view. Whilst the Foyle turbines are viewed in the background of the view, no significant cumulative effects are considered to arise given the separation distances (c. 3.5 – 4.5km away) and as they are viewed in a different direction. Concur with Applicant's Assessment: No
5	High	Negligible	Slight	Not Significant	This VP is taken from an elevated section of local road in the townland of Aharney, Co. Laois, c. 18.5km to the north of the proposed wind farm. Six of the seven proposed turbines are visible within this view and are sited beyond the intervening landform within an undulating landscape. This VP was given a High sensitivity on account of the protected view in the LCDP. I note that there is a substantial separation between the existing Lisdowney turbines which are visible in the right of the image at this location. I would concur with the Applicant that a negligible

					magnitude of change would arise on account of the intervening distance and the fact that the turbines are substantially screened from view. I would therefore agree that a 'not significant' residual effect would arise. Furthermore, there are no significant cumulative visual effects at this location. In the Planning Authority's independent assessment, they have attributed the magnitude of change as 'discernible'. It is unclear why they have used this description when considering the Matrix Classification Significance and the EPA, 2022 Significance Classification. Concur with Applicant's Assessment: Yes
6	High	Substantial	Very Significant	Moderate	VP is taken from the L5023 in the townland of Oldtown, located c. 870m west of T3. The topography is flat in close proximity to the viewpoint and rises in the right background of the image and all 7 no. proposed turbines are visible from this viewpoint. There is also some overlap between the turbine components of T2 and T3. The VP has been classified as a High sensitivity on account of the existing residential receptors living along the local road and a substantial magnitude of change has been identified. When considering the mitigating factors, the Applicant has determined that a 'moderate' residual effect would arise (i.e. reduced from a 'very significant' effect). Whilst there are mitigating factors that are relevant, I am still of the view that a 'significant' effect will arise in this instance given the visibility of the turbines at this location, the proximity to existing residences and the effectiveness of the roadside hedgerows/treelines to screen the development, particularly during the winter months. Whilst the existing Foyle Wind Farm is visible from this location in the opposite direction (c. 2.2km away), I am satisfied that significant cumulative effects will not arise given their siting relative to the existing residences. Concur with Applicant's Assessment:

					No
7	High	Negligible	Slight	Not Significant	VP taken from an elevated section of a local road in the townland of Finnan, c. 18.7km to the north-east of the proposed turbine wind farm. All 7 no. proposed turbines are visible in the centre background of the image and visible beyond a ridgeline along the horizon. The existing Foyle, An Cnoc and Ballybay turbines, and the Gurteen Lower turbine are visible in the right background of the image. Furthermore, the permitted Kyleballyoughter, Farranrory windfarms, the proposed Littleton Wind Farm (Pre-App SID), as well as the permitted Foyle turbine and permitted Ballybay turbine are also visible in the background of this image. This VP was given a high sensitivity on account of protected view in the 2021-2027 DP. I would concur with the Applicant that the residual effect from this VP is 'not significant' given the substantial separation distances and having regard to the extent of visibility of existing and permitted wind turbines at this point. I am also satisfied that significant cumulative effects will not arise given the separation distances between the existing and permitted wind turbines as viewed from this VP. Concur with Applicant's Assessment: Yes
8	High	Moderate	Significant	Moderate	View from an elevated section of the L1010, located c. 1.8km to the east of T4. All 7 no. turbines are visible within this view above the landform and vegetation. T1, T2 and T4 are the closest in proximity and are fully visible. The proposed turbines are viewed in combination with the existing Foyle, Ballinacurry 1, Ballinacurry 2, An Cnoc and Ballybay windfarms, as well as the permitted Farranrory, Kyleballyoughter, Foyle and Ballybay turbines, which are all viewed in in a similar direction. This VP was given a High sensitivity on account of its proximity to residences and was attributed a moderate magnitude of change. When considering the mitigating factors, a

					'moderate' residual effect was considered to arise (reduced from 'significant'). Whilst this VP is reflective of the residential receptors along the L1010, there is a local road further to the west of the VP, where there are a number of residences that are sited significantly closer to the proposed turbines. From my observations on site, I have no doubt that a substantial magnitude of change will arise at this location. There is also the potential for significant cumulative visual effects given the extent of existing and permitted turbines that will be visible in the same direction at a higher elevation. After considering the mitigating factors (including compliant separation distances), it is my view that a 'significant' residual effect will arise for those dwellings located to the east of the proposed wind farm. Concur with Applicant's Assessment: No
9	High	Moderate	Significant	Moderate	View from a local road to the east of Kilmanagh in the townland of Knockeenglass and 1.6km south-east of T7. Five (5) of the 7 no. turbines are visible from this view which are sited in a small depression of land within the surrounding undulating landscape. This VP has been classified as a High sensitivity viewpoint on account of the existing residential receptors and the designation of the road as a protected view in the 2021-2027 DP. The proposed turbines are viewed in combination with the existing Foyle and Ballybay windfarms and the proposed Kyleballyoughter and Ballybay turbines. I would agree with the Applicant that a moderate magnitude of change will arise given the proposed turbines in view are seen as moderately scaled vertical features over a relatively small horizontal extent. When considering the mitigating factors, I am also satisfied that a 'moderate' residual effect is anticipated. In terms of the Protected View, I note that the 2021-2027 DP description of the view indicates that the

					focus of the protected view is not in the direction of the proposed turbines. Concur with Applicant's Assessment: Yes
10	Medium	Negligible	Not Significant	Not Significant	View from the N10 outside Kilkenny City and c. 10.6km to the east of T4. The view overlooks low-lying agricultural fields and all 7 no. turbines are visible in the background of the view, although there is substantial screening of two of the proposed turbines. All 7 no. turbines are visible beyond a ridgeline along the horizon and above the skyline. The existing Foyle, An Cnoc, Ballybay, and Ballincurya and the permitted Foyle, Kyleballyougher, Farranrory and Ballybay turbines are all visible in this image. Whilst the Applicant has attributed a 'not significant' residual effect, it is my view that a 'slight' effect will arise given the prominence of the turbines above the ridgeline. I am satisfied that significant cumulative effects will not arise at this location. Concur with Applicant's Assessment: No
11	High	Moderate	Significant	Moderate	View is taken the R695 on the approach to Kilmanagh and c. 1.6km south of T7, beyond a gentle slope. Six (6) of the 7 no. turbines are visible in the background of this view, with varying levels of screening provided by the intervening vegetation. The existing playing pitches are visible in the left side of this image. I note that other permitted or proposed turbines are visible in this image. This VP was given a High sensitivity on account of its proximity to Kilmanagh and a moderate magnitude of change was considered to arise. I would concur with the Applicant that a 'moderate' residual effect would arise when considering the mitigating factors (i.e. reduced from 'significant'). Whilst Third Party observers were of the view that the VP should have been taken at a location to the west within the existing field, I am satisfied that the location along the public road as chosen by the Applicant is appropriate. I am also

					satisfied that significant cumulative effects will not arise. Concur with Applicant's Assessment: Yes
12	High	Slight	Moderate	Slight	This view is taken from the R695 within Kilmanagh and to the east of St. Aidan's National School. Five (5) of the 7 no. turbines are visible in the background of the view, with the blades of the turbines visible above the properties along the northern side of the village street. Overall, I would agree with the Applicant that the residual effect is 'slight' from this particular vantage point. No cumulative effects will occur as there are no existing, permitted or other proposed wind turbines visible from this location. Notwithstanding this, I would agree with the commentary of the Planning Authority and the Third Party observers regarding the location of this VP. This VP downplays the impact of the development on the village and it is evident from my observations on site that the turbines will be more visibly prominent when viewed from locations further to the south, adjacent the GAA grounds and the various residential receptors. I note that the community group has also provided a photomontage from this general location. Although the turbines will be visible from this approach, the existing streetscape does not possess a distinct architectural character of value that would be negatively impacted by the proposed development in my view. Given the separation distances provided, I am satisfied that a 'moderate' residual effect on the village and the various residential receptors would arise. Concur with Applicant's Assessment: Yes (included VP)
13	High	Slight	Moderate	Slight	View from L1009 in Kilmanagh, located c. 1.2km from T7. This view looks through a gap between buildings on the northern side of the local road, where 3 no. turbines are visible. This has been

					classified as a high sensitivity VP on account of the existing residential receptors and its location within the village. In this instance, I would not concur with the Applicant's assessment given the visibility of the development from the rear of the various residences that have an outlook towards the subject site. I would also concur with the Planning Authority that the location of the VP is suboptimal and serves to downplay the true impact of the development from within the village setting. In terms of residential receptors, particularly those on the northern side of the L1009, it is considered that a 'significant' residual effect would arise. A 'moderate' residual effect would arise for the settlement given the varying degrees of screening afforded by the streetscape. Concur with Applicant's Assessment: No
14	High	Negligible	Minor	Not Significant	View from Kells Priory, c. 14.5km to the south-east of the proposed wind farm. The proposed turbines are partially visible in the background of the view, with the hub and blades of three (T1, T2, T4) visible above the skyline in this image. This VP was given a high sensitivity on account of visitors to the Kells Priory and the nearby protected view in the 2021-2027 DP. It is evident that there are several other existing and permitted wind farms visible from this viewpoint which will be seen in combination with the proposed turbines. However, all are seen as small features in the background of the image. Overall, I would concur with the Applicant that the residual effect is 'not significant' and significant cumulative effects will not arise. Concur with Applicant's Assessment: Yes
15	Medium	Negligible	Not Significant	Not Significant	View taken from the N76, close to Callan and located c. 11.2km south of the proposed wind farm. All 7 no. turbines are partially visible in the background of this view. The existing An Cnoc, Foyle

					and Ballybay turbines, the permitted Farranrory, Kyleballyoughter, Foyle and Ballybay turbines proposed Freneystown Wind Farm (Pre-App SID) are visible in this image. A Medium sensitivity was attributed to this VP on account of its proximity to Callan. Given the separation distances and their height relative to the background terrain, I would concur that a 'not-significant' residual effect would arise. I am also satisfied that there are no significant cumulative visual effects at this location and I would concur that the landscape in view has the capacity to absorb a wind energy development of this scale. Concur with Applicant's Assessment: Yes
16	High	Negligible	Not Significant	Slight	View taken from the N76 in the townland of Killamery, c. 18.3km to the south of the proposed wind farm. All 7 no. turbines are visible in the background of this along with several other existing and permitted wind farms. This viewpoint was given a High sensitivity on account of the Protected View no. 15 in the 2021-2027 DP. I would concur with the Applicant that a 'slight' residual effect would arise given separation distances and the undulating topography within which the development sits which mitigates the visual impact. It is also considered that significant cumulative visual effects will not arise and I would concur with the Applicant's assessment of same. Concur with Applicant's Assessment: Yes

9.12.8.22. As I have discussed in the above table, the concerns of the Planning Authority and the various Third Party observers are acknowledged, and I have identified instances above where I share the concerns that some of the selected viewpoints may inadvertently serve to downplay the true visual impact of the proposed development. However, I note that the chosen viewpoints are intended to reflect a range of different receptor types, distances and angles and I am satisfied that the Applicant has provided comprehensive selection, which are generally reflective of the key receptors in the

site's hinterland. I have also undertaken a comprehensive inspection of the site and surrounding area, including those areas where Third Parties have contended that impacts would be more pronounced. As discussed in the above table, there a number of residences within the immediate area, many of which are located on elevated sections of the surrounding local road network, which will have open views and clear and unobstructed visibility of the turbines that will be positioned across the lower lying valley. Notwithstanding the mitigating factors as set out by the Applicant, it is clear to me that significant visual impacts will arise for a number of the nearest residences. Significant cumulative effects are also anticipated for residences to the east of the site, particularly those nearest receptors to T2 and T4. However, I note that these impacts are localised and are generally confined to the immediate vicinity of the site. Whilst I recognise the inherent value the community places on this landscape, it is predominantly characterised by worked agricultural land and commercial forestry, which I contend is not unique or afforded specific protection under the policies of the 2021-2027 DP. Furthermore, the Applicant's assessment indicates no significant adverse effects on tourism or cultural heritage resources within the site or surrounding area, a finding that I accept (see further discussion above). Whilst the Planning Authority have contended that previous guidelines and policy do not provide sufficient guidance given the scale and height of the proposed turbines, the Applicant has demonstrated that the separation distances provided are compliant with the draft WEGD 2019, the tenet of which requires greater separation distances for taller turbines (i.e. 4 times the tip height). It is also worth noting that turbines of this magnitude have become commonplace in onshore wind farms across the country. When these localised effects are considered in the context of the State's need to rapidly accelerate the delivery of projects of this nature, it is considered that a refusal of permission is unjustified in this instance. For these reasons, I conclude that the proposal is acceptable, as are its associated impacts. Whilst observers have noted that applications for single one-off dwelling houses have been refused for reasons relating to visual impact, 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 which I have discussed at length. I note that the development of a permanent one-off houses in rural areas has no wider benefit than to the individual/s involved.

9.12.8.23. In terms of landscape impacts, these are likely to arise within the wind farm site itself and along the proposed GCR during the construction phase as identified by the Applicant. However, noting the temporary nature of the works, no significant effects are anticipated during this phase of the development. It is acknowledged within the EIAR that the landscape character of the wind farm site will undergo major changes through the introduction of the 7 no. turbines, ancillary infrastructure and the hardstanding areas. As a result, the operational phase of the development will result in a substantial magnitude of change to the landscape in the localised areas of the site where the landscape is materially altered (infrastructure footprint). As noted, the wind farm site is located in a modified landscape, where agricultural grassland and commercial forestry are the dominant landcover of a relatively low-lying landscape. Based on the characteristics of the site, I would concur with the Applicant that the landscape value and sensitivity of the site is 'Low' and a long term 'moderate' effect on the physical fabric of the site would arise. An assessment of the effects on landscape character was also undertaken for the LCAs within the LCA Study Area (i.e. 15km from the proposed turbines). It is evident that the largest magnitude of change (Moderate) will occur within Kilkenny LCA A1 – Slieveardagh Hills (South), given the turbines will materially alter the landscape of this LCA. The proposed turbines are likely to be most visible within 5km and from elevated vantage points within this LCA. Beyond 5km, the proposed turbines constitute only a minor element of the wider, varied landscape and I would concur with the Applicant that the residual effect on the other LCAs would be deemed to be 'not significant'. Given the characteristics of the site, the pattern of development in the wider area, including the presence of existing, permitted and proposed windfarms, and the reduced visibility of the development beyond 5km, I am satisfied that significant effects on the receiving landscape will not arise and that sufficient capacity exists for a development of this nature. The proposed development is therefore acceptable in my view.

Conclusion: Direct and Indirect Effects

9.12.8.24. The submission of the Planning Authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapter of the EIAR and the Applicant's FIR. Having regard to my assessment of the proposed development on landscape and visual effects, it is considered that the

proposed development will give rise to significant visual effects in respect of a number of local residential receptors in the immediate vicinity of the site including those within the village of Kilmanagh and dwellings located along the wind farm site's surrounding local road network. These residential receptors are represented by Viewpoint Nos. 2, 4, 6, 8 and 13. Significant cumulative visual effects are also deemed to arise for the cluster of properties to the east of T2 and T4, when considered in combination with the existing and permitted turbines that are visible to the west. Whilst the effects on these residential receptors will be mitigated to a degree by a combination of design, screening, separation distances etc., significant residual effects will remain in my view. Notwithstanding this, having regard to the characteristics and value of the receiving landscape, the localised nature of these impacts, the absence of significant effects on tourism and cultural heritage assets and the State's need to transition to renewable energy sources and rapidly accelerate the delivery of projects of this nature, it is considered that these effects are not sufficient to warrant a refusal of permission for the proposed development and are therefore acceptable in this instance.

9.13. Interactions

9.13.1. Issues Raised

- 9.13.1.1. No issues have been raised in the course of the planning application in respect of significant environmental effects arising from interactions of impacts.

9.13.2. Examination, analysis and evaluation

Context

- 9.13.2.1. Chapter 17 (Interaction of Effects) of the EIAR addresses potential interactions and inter-relationships between the environmental factors discussed in the preceding chapters during both the construction and operational phase of the proposed development. It is noted that for any development with the potential for significant environmental effects there is also the potential for interaction between these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect. A matrix is presented in Table 17-1 of the EIAR to identify potential interactions between the various aspects of the environment already assessed in the EIAR.

Potential Effects

- 9.13.2.2. I noted that no potential effects are identified as a result of interactions between effects, over and above those already identified in the individual chapters of the EIAR.

Mitigation

- 9.13.2.3. The EIAR refers to the mitigation measures which are set out for each environmental parameter and set out in detail within the relevant chapters of the EIAR and specifically Chapter 18 (Schedule of Mitigation and Monitoring Measures).

Residual Effects

- 9.13.2.4. Any potential interactive negative impacts have been identified and are addressed by the mitigation measures included in the relevant sections of the EIAR, with residual effects as presented in each relevant chapter.

Assessment

- 9.13.2.5. I have examined, analysed and evaluated Chapter 17 of the EIAR and all of the associated documentation and submissions on file in respect of interactions of effects. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. I have also had regard to the Applicant's FIR and the additional submissions received from parties following its circulation and advertisement. Overall, I am satisfied that the main interactions have been identified and assessed and that there is no potential for any significant direct, indirect or cumulative effects arising from the interaction of impacts, effects or environmental factors as a result of the proposed development and which have not already been addressed within the EIAR.

Conclusion: Direct and Indirect Effects

- 9.13.2.6. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. Having considered the mitigation measures contained in the EIAR, I am satisfied that no significant adverse direct, indirect or cumulative environmental effects will arise from the interaction of impacts, that have not already been addressed in the EIAR.

9.14. Major Accidents and Natural Disasters

9.14.1. Issues Raised

- 9.14.1.1. No issues have been raised in the course of the planning application in respect of the vulnerability of the proposed development to risks of major accidents and/or disasters.

9.14.2. Examination, analysis and evaluation

Context

- 9.14.2.1. Chapter 16 (Major Accidents and Natural Disasters) of the EIAR seeks to assess the expected effects of the project to risk of major accidents and disasters relevant to the project. In terms of methodology, a site-specific risk assessment identifies and quantifies risks focusing on unplanned, but possible and plausible events occurring during the construction, operation and decommissioning of the proposed development. The approach to identifying and quantifying risks associated with the proposed development by means of a site-specific risk assessment is derived from the EPA 'Guidance on Assessing and Costing Environmental Liabilities' document and includes the following steps.

- Risk Identification Risk Classification,
- likelihood and consequence, and
- Risk Evaluation.

- 9.14.2.2. The functional areas of Kilkenny County Councils fall under the South-East Major Emergency Region (MEM). The HSE South East (Area 5) Emergency Plan: Covering Geographical Areas of Counties Carlow, Kilkenny, South Tipperary, Waterford and Wexford, November 2019) outlines potential major emergency scenarios in the region and the risks which are most relevant to this assessment include transport, technological, civil and natural.

Table: Summary of Potential Effects

Do Nothing	No change to land use. However, the opportunity to harness part of Co. Kilkenny's valuable wind energy resource would be lost together with the opportunity to contribute to national and international renewable energy and GHG emissions reduction targets.
Construction Phase	- Critical Infrastructure Emergency (Consequence Rating (1) x Likelihood Rating (1)) = Risk Score of (1) – Minor. - Severe Weather (Consequence Rating (2) x Likelihood Rating (1)) = Risk Score of (2) - Limited - Flooding (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited.

	- Utility Emergencies (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. - Traffic Incident (Consequence Rating (1) x Likelihood Rating (3)) = Risk Score of (3) – Serious. - Contamination - Fuel Storage & Handling, General Construction (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. - Fire/Gas Explosion (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. - Collapse/Damage to Structures (Consequence Rating (2) x Likelihood Rating (1)) = Risk Score of (2) – Limited.
Operational Phase	- Sever Weather (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. - Contamination (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. - Fire/Gas Explosion (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. - Collapse/Damage to Structures (Consequence Rating (1) x Likelihood Rating (1)) = Risk Score of (2) – Low. - Traffic Incident (Consequence Rating (1) x Likelihood Rating (3)) = Risk Score of (3) – Serious.
Decommissioning Phase	- Sever Weather (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. - Flooding (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. - Traffic Incident (Consequence Rating (1) x Likelihood Rating (3)) = Risk Score of (3) – Serious. - Contamination (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. - Collapse/Damage to Structures (Consequence Rating (2) x Likelihood Rating (1)) = Risk Score of (2) – Limited.
Cumulative Effect	No potential for significant in-combination or cumulative effects associated with the potential for the project to be impacted by major accidents or natural disasters. Cumulative residual effect is not significant.

9.14.2.3. The scenarios with the highest risk score are identified and discussed below:

- *Contamination During Construction, Operation and Decommissioning*

There is a potential risk of contamination from site activities from potential release of hydrocarbons. It is noted that the risk was given a risk score of 4 on a very precautionary basis. However, measures will be put in place to reduce the risk of accidental spillage and contamination of pollution risk to soils, groundwater, surface water and associated ecosystems, and to terrestrial ecology as outlined in Chapter 8 and Chapter 9 of the EIAR. It is noted that the risk of contamination is 'very unlikely' to occur and will have 'limited' consequences should it do so, representing a 'low-risk scenario' during the construction and decommissioning phases.

- *Fire/Explosion During Construction, Operation and Decommissioning*

There is a potential risk of fire/explosion at the site. However, the scope of this

assessment has been based on the understanding that the proposed development will be designed, built and operated in line with current best practice. Further, in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, the proposed project shall be subject to a fire safety risk assessment which will assist in the identification of any major risks of fire on the site, and mitigation of the same during operation.

Mitigation Measures

- 9.14.2.4. It is noted that the proposed development will also be subject to a fire safety risk assessment in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, which will assist in the identification of any major risks of fire on site, and mitigation of the same during operation. It is also noted that the CEMP will be reviewed and updated prior to the commencement of any works. The CEMP will be a live document maintained by the contractor that will work to ensure that potential risks of major accident and/or disaster are identified, avoided and mitigated, as necessary.

Residual Effects

- 9.14.2.5. It is stated that when the above mitigation is implemented, and all mitigation detailed in the EIAR is implemented, there will not be significant residual effect(s) associated with the construction, operation and decommissioning of the proposed development.

Assessment

- 9.14.2.6. I have examined, analysed and evaluated Chapter 16 of the EIAR and all of the associated documentation and submissions on file in respect of major accidents and natural disasters. I have inspected the application site and the surrounding area, and I have had regard to the relevant policy outlined in the 2021-2027 DP. Overall, I am satisfied that the subject development does not give rise to the risk of significant environmental effects because of its vulnerability to major accidents or natural disasters. It is considered that the potential risks to the proposed development should a major accident or natural disaster occur have been clearly identified, and I consider based on the risk assessment undertaken and the mitigation proposed that the proposed development has a low potential to cause natural or major accidents.

Conclusion: Direct and Indirect Effects

9.14.2.7. The submission of the planning authority, prescribed bodies, the observations received from members of the public, has been considered, in addition to the relevant chapters of the EIAR and the Applicant's FIR. Having regard to the foregoing, I am satisfied that no significant adverse direct, indirect or cumulative environmental effects will arise from the proposed development or its vulnerability to risks of major accidents and/or natural disaster

9.15. Reasoned Conclusion

9.15.1. Having regard to the examination of environmental information set out above, to the EIAR submitted with the application, the supplementary information on the EIAR received by the 28th October 2025, and to the submissions from the Planning Authority, Prescribed Bodies and Third Parties in the course of the application and appeal, it is considered that the main significant direct and indirect effects of the proposed development on the environment are as follows:

Population and Human Health

9.15.2. Specific enhanced mitigation is required to be secured by condition during the operational phase to ensure the shutdown of turbines to prevent shadow flicker at the surrounding receptors. No significant negative effects and population and human health are envisaged during all phases of the proposed development, once mitigation is applied.

Biodiversity

9.15.3. The proposed development will result in the permanent loss of habitats within the site, and the operational phase generates the potential for risk of collision / injury to bats and birds. Mitigation includes hedgerow planting and enhancement, protection of watercourses, pre-clearance and pre-construction surveys, monitoring and the measures which form part of the Biodiversity Management and Enhancement Plan. Once mitigation is applied, no significant negative residual effects upon biodiversity will arise.

Land, Soil, Water, Air and Climate

9.15.4. Mitigation comprises measures to reduce and manage adverse impacts upon land, soils,

water, air quality and climate and includes the implementation of a Construction and Environmental Management Plan. Negative effects on surface water and groundwater, aquatic species, downstream receptors which are likely to arise from potential release of sediments and other pollutants into watercourses can be adequately mitigated by the measures outlined in the application documentation. With the implementation of mitigation, no significant residual negative effects will arise. During the operational phase, the proposed development will have a long-term, moderate, positive effect on Air Quality and Climate as a result of reduced greenhouse gas emissions.

Noise and Vibration

- 9.15.5. Negative noise impacts that may arise during the construction phase of the proposed development will be short-term, temporary, transient and mitigated through the implementation of measures outlined in the planning application documentation and through adherence with suitable conditions. Operational noise levels can be controlled through adherence with a noise limit condition, such that no significant residual effects would arise.

Material Assets, Cultural Heritage, and the Landscape

- 9.15.6. Given the rural nature of the environment and the increase in traffic during the construction phase, including HGV traffic, significant effects on the road network surrounding the proposed wind farm site and GCR will arise from the perspective of the local population. However, these are likely to be short-term, temporary negative impacts and are of a type that can be successfully mitigated through adherence with a comprehensive Construction Traffic Management Plan (CTMP) and through compliance with suitable conditions.
- 9.15.7. Potential direct impacts on unknown features of sub-surface archaeology may arise during the construction phase. However, these impacts will be mitigated by archaeological monitoring of groundworks and compliance with the various mitigation measures and suitable conditions.
- 9.15.7.1. In the context of landscape and visual effects, it is considered that the proposed development will give rise to significant visual effects in respect of a number of local residential receptors in the immediate vicinity of the site, including those within the village of Kilmanagh and dwellings located along the wind farm site's surrounding local

road network. These residential receptors are represented by Viewpoint Nos. 2, 4, 6, 8 and 13. When considered in combination with the existing and permitted turbines that are visible to the west, significant cumulative visual effects are also deemed to arise for the cluster of properties to the east of T2 and T4. Whilst the effects on all these residential receptors will be mitigated to a degree by a combination of layout, design, screening, separation distances etc., significant residual effects will remain. Notwithstanding this, having regard to the characteristics and value of the receiving landscape, the localised nature of these impacts, the absence of significant effects on tourism and cultural heritage assets and the State's need to transition to renewable energy sources and rapidly accelerate the delivery of projects of this nature, it is considered that these effects are not sufficient to warrant a refusal of permission for the proposed development and are therefore acceptable.

- 9.15.7.2. Having regard to the above, the likely significant environmental effects arising as a consequence of the proposed development have been satisfactorily identified, described and assessed in this EIA. I also consider that the EIAR is compliant with Article 94 of the Planning and Development Regulations, 2001, as amended.

10. Appropriate Assessment

10.1. Screening Determination

- 10.1.1. My Appropriate Assessment Stage 1 Screening Determination is set out in Appendix 1 of this Report, where I conclude as follows:
- 10.1.2. The proposed development was considered in light of the requirements of Section 177U of the Planning and Development Act 2000, as amended. Having carried out Screening for Appropriate Assessment, and on the basis of the information considered in this AA screening, it is not possible to exclude the possibility that the proposed development alone would result significant effects on European sites, River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233) in view of the site's conservation objectives. It is therefore determined that Appropriate Assessment of the proposed development is required.
- 10.1.3. An Appropriate Assessment is required on the basis of the possible effects of the project 'alone'. Further assessment in combination with other plans and projects is not

required at screening stage.

10.2. Appropriate Assessment Conclusion: Integrity Test

10.2.1. My Appropriate Assessment Stage 2 is set out in Appendix 2 of this Report, where I conclude as follows:

10.2.2. In screening the need for Appropriate Assessment, it was determined that the proposed development could result in significant effects on the River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233) in view of the conservation objectives of those sites and that Appropriate Assessment under the provisions of S177U was required.

10.2.3. Following an examination, analysis and evaluation of the NIS, the revised NIS, all associated material submitted with application and appeal, and taking into account submissions on nature conservation, I consider that adverse effects on site integrity of the River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233) can be excluded in view of the conservation objectives of these sites and that no reasonable scientific doubt remains as to the absence of such effects.

10.2.4. My conclusion is based on the following:

- A full and detailed assessment of the proposed development, including the information presented in the NIS, Environmental Impact Assessment Report, and the supplementary information submitted by the Applicant by way of further information on the 28th October 2025, including the revised NIS, including the proposed mitigation measures and water quality monitoring in relation to the conservation objectives of the River Barrow and River Nore SAC and the River Nore SPA.
- Effectiveness of mitigation measures proposed including supervision and monitoring and integration into CEMP ensuring smooth transition of obligations to eventual contractor.
- Application of planning conditions to ensure application of these measures.
- The proposed development will not affect the attainment of conservation objectives for the River Barrow and River Nore SAC or the River Nore SPA.

11. Recommendation

- 11.1.** It is recommended that the Commission grant planning permission for the proposed development for the following reasons and considerations and subject to the conditions set out below.

12. Reasons and Considerations

- 12.1.1. The Commission reached its decision in accordance with its duties under Section 15(1) of the Climate Action and Low Carbon Development Act 2015, as amended, and the requirement to, in so far as practicable, perform its functions in a manner consistent with inter alia the Climate Action Plan 2025 and the furtherance of the national climate objective.
- 12.1.2. The Commission performed its functions in relation to the making of its decision, in a manner consistent with Section 15(1) of the Climate Action and Low Carbon Act 2015, as amended by Section 17 of the Climate Action and Low Carbon Development (Amendment) Act 2021, (consistent with Climate Action Plan 2024 and Climate Action Plan 2025 and the national long term climate action strategy, national adaptation framework and approved sectoral adaptation plans set out in those Plans and in furtherance of the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State).
- 12.1.3. In coming to its decision, the Commission 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 Directive) 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 and amending Directive EU/2023/2413 which aims to speed up the EU's clean energy transition as implemented by European Union (Planning and Development) (Renewable Energy) Regulations 2025 (S.I. 274 of 2025)

- Directive 2011/92/EU (The EIA Directive) as amended by Directive 2014/52/EU as implemented by Article 94 and Schedule 6 (paragraphs 1 and 2) of the Planning Regulations as amended.
- Directive 2000/60/EC, the Water Framework Directive and the requirement to exercise its functions in a manner which is consistent with the provisions of the Directive and which achieves or promotes compliance with the requirements of the Directive.
- National and regional planning and related policy, including:
 - National policy with regard to the development of alternative and indigenous energy sources and minimisation of emissions from greenhouse gases, particularly the NPF First Revision 2025 and National Policy Objective 70.
 - Wind Energy Guidelines: Guidelines for Planning Authorities 2006 and the draft guidelines published in 2019.
 - The objectives and targets of the National Biodiversity Action Plan 2023-2030.
- Regional and local planning policy, including:
 - Regional Spatial Economic Strategy for the Southern Region, 2020-2032; and,
 - Kilkenny City and County Development Plan, 2021-2027.
- Other relevant national policy and 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 of the site.
- 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 reports of the Planning Authority and the further information received from the Applicant on 28th October 2025.
- The submissions made on the planning application to the Planning Authority, to the Commission in connection with the First Party appeal and the further information received from the Applicant on 28th October 2025.
- The report and the recommendation of the Inspector, including the examination,

analysis and evaluation undertaken in relation to Appropriate Assessment and Environmental Impact Assessment, as well as the specialist ecologist and environmental scientist reports for the Commission relating to the same.

12.2. Appropriate Assessment: Stage 1:

- 12.2.1. The Commission noted that the proposed wind farm development is not directly connected with or necessary for the management of a European Site. The Commission completed an Appropriate Assessment screening exercise in relation to the potential effects of the proposed development on designated European Sites, taking into account the Screening Report for Appropriate Assessment submitted, and the report and screening assessment completed by the Inspector. The Commission agreed with the inspector's assessment and conclusion that the European Sites for which there is potential for significant effects are the River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233). The Commission concluded, in agreement with the Inspector, that Appropriate Assessment is required for those European Sites.

12.3. Appropriate Assessment: Stage 2:

- 12.3.1. The Commission considered the Natura Impact Statement, the revised Natura Impact Statement dated 28th October 2025 and associated documentation submitted with the application and appeal, the mitigation measures contained therein and the submissions and observations on file, and carried out an Appropriate Assessment of the implications of the proposed wind farm development for European Sites in view of the conservation objectives for the River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233). The Commission considered that the information before it was adequate to allow the carrying out of an Appropriate Assessment and to allow it to reach complete, precise and definitive conclusions for Appropriate Assessment.
- 12.3.2. In completing the assessment, the Commission considered, in particular, the likely direct and indirect impacts arising from the proposed development, both individually and in combination with the other plans and projects (including all aspects of the entire wind farm project, including the substation and grid connection) and taking into

account any mitigation measures which are included as part of the current proposal, in view of the conservation objectives for the European Site

- 12.3.3. The Commission accepted and adopted the Appropriate Assessment carried out in the Inspector's report with respect to the potential effects of the proposed development on the integrity of the aforementioned European Sites, having regard to the Site's conservation objectives.
- 12.3.4. In overall conclusion, the Commission was satisfied that the proposed development, by itself or in combination with other plans or projects, (including all aspects of the entire windfarm project as addressed in the inspector's assessment) would not adversely affect the integrity of any European Site, in view of the Sites' conservation objectives and there is no reasonable scientific doubt as to the absence of such effects.
- 12.3.5. This conclusion is based on a complete assessment of all aspects of the proposed project, both alone and in combination with other plans and projects of relevance, (including all aspects of the entire windfarm project as addressed in the Inspector's assessment) and took into account all submissions received during the course of the application.

12.4. Environmental Impact Assessment

- 12.4.1. The Commission completed an Environmental Impact Assessment of the proposed development, taking into account:
- (a) The nature, scale, location and extent of the proposed development;
 - (b) The Environmental Impact Assessment Report and associated documentation submitted;
 - (c) The submissions received during the course of the application and appeal;
 - (d) The further information response received from the Applicant on the 28th October 2025, and,
 - (e) The Inspector's report and the report of the Commission's Ecologist and Environmental Scientist.

12.4.2. The Commission considered that the Environmental Impact Assessment Report supported by the documentation submitted by the Applicant during the course of the application and appeal, adequately considers alternatives to the proposed development and identifies and describes adequately the direct, indirect, secondary and cumulative effects of the proposed development on the environment. The Commission agreed with the examination, set out in the Inspector's report, of the information contained in the Environmental Impact Assessment Report, and associated documentation submitted by the Applicant and submissions made in the course of the planning application and appeal.

Reasoned Conclusion of the Significant Effects:

12.4.3. The Commission considered that the Environmental Impact Assessment Report and supporting documentation submitted by the Applicant during the course of the application and appeal (including the further information received on 28th October 2025), provided information which is reasonable and sufficient to allow the Commission 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 Commission is satisfied that the information contained in the Environmental Impact Assessment Report is up to date and complies with the provisions of Directive 2011/92/EU as amended by EU Directive 2014/52/EU amending. The Commission considered that the main significant direct and indirect effects of the proposed development (including the wind farm and grid connection) on the environment are those arising from the impacts listed below.

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

Population and Human Health - Specific enhanced mitigation is required to be secured by condition during the operational phase to ensure the shutdown of turbines to prevent shadow flicker at the surrounding receptors. No significant negative effects on population and human health are envisaged during all phases of the proposed development, once mitigation is applied.

Biodiversity - The proposed development will result in the permanent loss of habitats within the site, and the operational phase generates the potential for risk of collision /

injury to bats and birds. Mitigation includes hedgerow planting and enhancement, protection of watercourses, pre-clearance and pre-construction surveys, monitoring and the measures which form part of the Biodiversity Management and Enhancement Plan. Once mitigation is applied, no significant negative residual effects upon biodiversity will arise.

Land, Soil, Water, Air and Climate - Mitigation comprises measures to reduce and manage adverse impacts upon land, soils, water, air quality and climate and includes the implementation of a Construction and Environmental Management Plan. Negative effects on surface water and groundwater, aquatic species, downstream receptors which are likely to arise from potential release of sediments and other pollutants into watercourses can be adequately mitigated by the measures outlined in the application documentation. With the implementation of mitigation, no significant residual negative effects will arise. During the operational phase, the proposed development will have a long-term, moderate, positive effect on Air Quality and Climate as a result of reduced greenhouse gas emissions.

Noise and Vibration - Negative noise impacts that may arise during the construction phase of the proposed development will be short-term, temporary, transient and mitigated through the implementation of measures outlined in the planning application documentation and through compliance with suitable conditions. Operational noise levels can be controlled through adherence with a noise limit condition, such that no significant residual effects would arise.

Material Assets, Cultural Heritage, and the Landscape - Given the rural nature of the environment and the increase in traffic during the construction phase, including HGV traffic, significant effects on the road network surrounding the proposed wind farm site and along the proposed grid connection route will arise from the perspective of the local population. However, these are likely to be short-term, temporary negative impacts and are of a type that can be successfully mitigated through adherence with a comprehensive Construction Traffic Management Plan (CTMP) and through compliance with suitable conditions.

Potential direct impacts on unknown features of sub-surface archaeology within the

wind farm site and along the proposed grid connection route may arise during the construction phase. However, these impacts will be mitigated by archaeological monitoring of groundworks, application of mitigation measures and through compliance with suitable conditions.

In the context of landscape and visual effects, it is considered that the proposed development will give rise to significant visual effects in respect of a number of local residential receptors in the immediate vicinity of the site, including those within the village of Kilmanagh and dwellings located along the wind farm site's surrounding local road network. These residential receptors are represented by Viewpoint Nos. 2, 4, 6, 8 and 13. When considered in combination with the existing and permitted turbines that are visible to the west, significant cumulative visual effects are also deemed to arise for the cluster of properties to the east of T2 and T4. Whilst the effects on all these residential receptors will be mitigated to a degree by a combination of layout, design, screening, separation distances etc., significant residual effects will remain. Notwithstanding this, having regard to the characteristics and value of the receiving landscape, the localised nature of these impacts, the absence of significant effects on tourism and cultural heritage assets and the State's need to transition to renewable energy sources and rapidly accelerate the delivery of projects of this nature, it is considered that these effects are not sufficient to warrant a refusal of permission for the proposed development and are therefore acceptable.

12.4.5. Having regard to the above, the Commission is satisfied that the proposed development would not have any unacceptable direct or indirect effects on the environment. The Commission is satisfied that the reasoned conclusion is up to date at the time of making the decision. The Commission completed an environmental impact assessment in relation to the proposed development and concluded that, subject to the implementation of the mitigation measures proposed and subject to compliance with the conditions set out herein, the effects on the environment of the proposed development by itself, and, cumulatively with other development in the vicinity, would be acceptable. In doing so, the Commission adopted the report and conclusions of the reporting Inspector.

12.5. Proper Planning and Sustainable Development

12.5.1. It is considered that the proposed development would accord with European, national, regional and local planning policy provision. The Commission was satisfied that an approval for the proposed development would be consistent with the national climate ambitions and with the relevant provisions of the Climate Action Plan 2025. Furthermore, the Commission has performed its functions in relation to the making of its decision, in a manner consistent with Section 15(1) of the Climate Action and Low Carbon Act 2015. The Commission considered that by reason of scale, form and extent, that, subject to compliance with the following conditions, the proposed renewable energy development would not seriously injure the visual or residential amenities of the area or otherwise of property in the vicinity, would not have an unacceptable impact on the character of the landscape or the cultural or archaeological heritage resources of the site and surrounding area, would not have a significant adverse impact on ecology, would be acceptable in terms of traffic impacts and safety and would make a positive contribution to Ireland's renewable energy and security of energy supply requirements. The proposed development is in accordance with the relevant provisions of the Kilkenny City and County Development Plan, 2021-2027 and it is therefore concluded that the proposed renewable energy development is in accordance with the proper planning and sustainable development of the area.

13. Conditions

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, and as amended by the further plans and particulars submitted with the appeal on the 28th October 2025, 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 may be carried out

shall be ten years from the date of this Order.

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

3.

- a. The permission shall be for a period of 35 years from the date of the commissioning of the wind turbines, save for the substation and the grid connection to the National Grid.
- b. Prior to the commencement of development, a detailed Site Restoration Plan providing for the removal of the turbines and all ancillary structures, and a timescale for its implementation, shall be submitted to and agreed in writing with the planning authority.

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

4. The mitigation measures contained in the submitted Environmental Impact Assessment Report (EIAR), shall be implemented. Details of a time schedule for implementation of mitigation measures and associated monitoring shall be submitted to the Planning Authority. In addition to the mitigation measures contained in the EIAR, the following shall apply:

Shadow Flicker

- a. Appropriate software shall be employed on each of the turbines to ensure that there will be no shadow flicker at existing nearby habitable dwellings (excluding participating properties). Turbine shutdown shall be undertaken by the wind energy developer or operator in order to eliminate the potential for shadow flicker.
- b. A report shall be prepared by a suitably qualified person in accordance with the requirements of the planning authority indicating compliance with the above shadow flicker requirements at dwellings. Within 12 months of the commissioning of the wind farm, this report shall be prepared and submitted to, and agreed in writing with, the planning

authority. The developer shall outline proposed measures to address any recorded non-compliances, controlling turbine rotation if necessary. A similar report may be requested by the planning authority at reasonable intervals thereafter.

Hydrology & Hydrogeology

- c. Finalised drainage drawings for the proposed wind farm site shall be submitted to the Planning Authority prior to the commencement. The finalised drawings shall clarify the discrepancy which identifies both treated (via settlement pond) and untreated water via overland flow being discharged directly into the front garden of Receptor ID H003 along the southern access road.
- d. The Applicant shall confirm and submit the final, as-built details of all turbine foundations following the confirmatory site investigations. Such details should include the type of foundation used, the dimensions and any depth of the foundation and any associated excavation details. The information shall be submitted to the Planning Authority, with a record of same being placed on the public file. The finalised drawings shall have regard to the mitigation set out in the submitted FRA which requires sections of the access road within the modelled flood zones to have the track surface raised at least 500mm above the 100-year fluvial flood level.
- e. Prior to the commencement of development, the Applicant shall submit an updated drawing for the watercourse crossing of the Tullaroan Stream between T6 and T7. These updated drawings are to be prepared in conjunction with and signed off by the project ecologist and clearly identify the mitigation measures that are to be installed and maintained throughout the construction phase.
- f. A section diagram shall be submitted to the Planning Authority which illustrates the relationship between the spoil management area to the north-west of T5, the associated mitigation (i.e. silt fencing) and the nearby surface water feature. The submitted drawings shall be prepared in conjunction and signed off by the project ecologist.

- g. For the spoil management area to the west of T4, the silt fencing along its southern boundary shall be extended along the full extent of its eastern boundary given its siting relative to the adjacent surface water feature.

Ecology

- h. Prior to the commencement of development, the Applicant shall submit a tree survey to the Planning Authority for written agreement, quantifying the full extent of tree loss across the wind farm site. Commensurate replacement native tree planting shall be provided and a revised BMEP shall be submitted which provides finalised details of the replacement planting within the wind farm site. The revised BMEP shall:
 - i. Clearly identify the finalised extent and locations of all enhancement planting, including new hedgerow and tree planting proposals.
 - ii. Specify the party responsible, on behalf of the Applicant, for appointing and liaising with a suitably qualified ecologist to undertake the required monitoring. Each phase of monitoring and associated reporting shall be undertaken in consultation with the Local Authority.
- i. The provision of the enhancement planting, including the riparian planting along the Tullaroan Stream, to be provided at the earliest stage in the construction process, the details of which shall be confirmed in the revised BMEP.
- j. Dusk emergence surveys shall be included in the programme of confirmatory pre-construction bat inspections/surveys at the watercourse crossings.
- k. Where lighting is required to facilitate the grid connection construction works at watercourse crossings, lighting restrictions shall be implemented as set out in Section 6.1.2 of revised Bat survey report, dated 16th October 2025.
- l. For badgers, pre-commencement surveys should be undertaken within 150m of all work areas on the site prior to the commencement of development to identify if there are any new setts on site in the

intervening period.

- m. All vegetation removal works shall be carried out outside of the bird nesting season, which is between 1st March and 31st August.

Transport

- n. Prior to the commencement of development, the Applicant shall submit a series of site layout plans at an appropriate scale to clearly demonstrate the precise location of the proposed underground cable along the N77. These layout plans shall clearly identify the existing carriageway surface, road margins on both sides, and the exact alignment of the GCR, including the location of any associated infrastructure such as joint bays, which shall be agreed with the Planning Authority prior to the commencement of development.
- o. The Applicant shall submit to the Planning Authority for written agreement, an engineering assessment and construction methodology which demonstrates that the proposed installation of the underground cable and associated works will not compromise or undermine the structural integrity of the N77.

Noise

- p. In discussion with the relevant property owners along the proposed grid connection route, the Applicant shall install mobile screens to reduce noise levels during these works where the noise-sensitive locations are within 25m of the cable route.

Reason: To protect the environment.

- 5. The mitigation measures contained in the submitted Natura Impact Statement (NIS) and the revised NIS received on the 28th October 2025, shall be implemented. Details of a time schedule for implementation of mitigation measures and associated monitoring shall be submitted to the planning authority. In addition to the mitigation measures contained in the NIS, the following shall apply
 - a. HDD works beneath the River Nore shall be undertaken outside the

bird nesting season i.e. outside 1st March to 31st August inclusive.

Reason: To protect the integrity of European Sites.

6. The operation of the proposed development, by itself or in combination with any other permitted wind energy development, shall not result in noise levels, when measured externally at nearby noise sensitive locations, which exceed:
- a) For the daytime period of 0700 to 2300, in quiet environments, where background noise is less than 30dB(A)L90 T10, a maximum noise level of 40dB(A)L90 T10.
 - b) For daytime periods of 0700 to 2300 where background noise level exceeds 30dB(A)L90 T10, the greater of 5 dB(A) above background noise levels, or 45 dB(A)L90 T10.
 - c) 43 dB(A)L90 T10 at all other times.

Reason: In order to protect the amenities of noise sensitive properties in the vicinity of the development.

7. Prior to the commissioning of the wind farm, the developer shall submit to and agree in writing with the planning authority a Noise Compliance Monitoring Programme (NCMP). The NCMP shall include a detailed methodology for all sound measurements, including Amplitude Modulation (AM) and tonal noises, frequency of monitoring (initially six months, with confirmatory monitoring in the third-year post commissioning) and recording of results, which shall be made publicly available. The NCMP shall also include any mitigation measures such as the de-rating of particular turbines if required and shall be fully implemented during the operation of the windfarm. In addition, this shall include the mitigation measures required to achieve compliance with the noise limits, including turbine curtailment in the context of the 3 no. NSLs (i.e. H008, H012 and H048), where exceedances may occur.

Reason: In order to protect the amenities of noise sensitive properties in the vicinity of the development.

8. Prior to the commencement of development, details of external finishes to the substation building and all associated structures, including security fencing,

CCTV and interface mast, shall be submitted to the planning authority for written agreement

Reason: In the interest of clarity and visual amenity.

9. Prior to the commencement of any works associated with the development hereby permitted, the developer shall submit a detailed final Construction and Environmental Management Plan (CEMP) for the written agreement of the planning authority. The final CEMP shall provide an implementation tool for the schedule of mitigations (as conditioned) and as applicable to the construction phase and the contractor(s). The CEMP shall provide details of intended construction practice for the development, including, but not limited to, and in line with the methodology and mitigation and monitoring measures detailed within the EIAR and the NIS:
 - a. Details of the construction methodology for all the components of the development;
 - b. Details of all services and utilities along the grid connection route and methodology for crossing/diversions;
 - c. Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network;
 - d. Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels;
 - e. Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater;
 - f. Details of marking of hydrological buffer zones and silt fencing. Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains;
 - g. A surface water management plan including details of water quality monitoring;
 - h. Works to be carried out in accordance with Inland Fisheries Ireland 'Guidelines on protection of fisheries during construction works in and adjacent to waters';
 - i. Location and specifications of any temporary storage requirements;

- j. A waste management plan for construction waste;
- k. Location of all archaeological constraints and cultural heritage constraints relevant to the development;
- l. A record of daily checks that the works are being undertaken in accordance with the CEMP shall be available for inspection by the planning authority, with monitoring on a daily basis of all watercourses in or adjacent to works areas;
- m. Details of a local community feedback mechanism, where feedback including complaints are received and acted upon by a designated Community Liaison Officer.

Reason: In the interest of environmental protection, residential amenities, public health and safety.

10. Prior to the commencement of development, the Applicant shall submit a detailed Construction Traffic Management Plan (CTMP) prepared by a suitably qualified transport engineer. The CTMP shall be consistent with the mitigation measures outlined in Chapter 15 of the EIAR and shall provide details for the management of construction traffic for the duration of the construction phase for both the wind farm and grid connection route. The CTMP shall provide:

- a. Details of on-site car parking and access arrangements for site workers and deliveries, abnormal load road routes and management of the abnormal load delivery process, construction haul routes, road closures and diversions, local property access arrangements, and alternative arrangements to be put in place for pedestrians/motorists in the case of the closure of any public road or footpath during the course of site development works.
- b. Details of pre and post construction condition survey of proposed haul routes, bridges/structures along the route, weight of abnormal loads, and arrangements for maintenance of routes/structures during construction and repair of any damage.

Any proposed works to the national road network to facilitate turbine delivery shall comply with the requirements of TII.

Reason: In the interest of traffic safety and residential amenity.

11. The developer shall retain the services of a suitably qualified and experienced Ecologist (to perform the role of Ecological Clerk of Works) to undertake pre-construction surveys at the various project elements, immediately prior to commencing work to check for the presence of protected species in the vicinity, and to oversee and ensure the implementation of all environmental mitigation and monitoring measures during construction and operation of the wind farm.

Reason: To protect biodiversity.

12. Commissioning and general construction works shall be limited to the hours of between 0700 hours and 1900 hours Monday to Friday and 0800 hours and 1400 hours on Saturday and shall not be permitted on Sundays or public holidays. Deviation from these times shall only be allowed in exceptional circumstances where prior written agreement has been received from the planning authority.

Reason: To protect the amenities of nearby residential properties.

13. In the event that the developer does not utilise the government's Renewable Energy Support Scheme (RESS), prior to the commencement of development, a community gain proposal shall be submitted to the planning authority for written agreement. In default of agreement, the matter shall be referred to An Coimisiún Pleanála for determination.

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

14. In the event that the proposed development causes interference with telecommunication signals, effective measures shall be introduced to minimise interference with telecommunication 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 the commissioning of the turbines and following consultation with relevant authorities.

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

- 15.(a) Prior to commencement of development and following consultation with the Department of Defence and Irish Aviation Authority, the developer shall submit for written agreement of the planning authority, details of an aeronautical obstacle warning light scheme.
- (b) 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 WGS-84 format co-ordinates of the turbines and wind monitoring mast together with ground and tip height elevations at each turbine location.
- (c) The developer shall notify the Irish Aviation Authority of the intention to commence crane operations at least 30 days prior to their erection in accordance with S.I. 215 of 2005 Irish Aviation Authority (Obstacles to Aircraft in Flight) Order.

Reason: In the interest of aviation safety.

16.All mitigation measures in relation to Archaeology as set out in Chapter 14 (Cultural Heritage) of the Environmental Impact Assessment Report (EIAR) shall be implemented in full, except as maybe otherwise required in order to comply with the archaeological conditions of this permission. The applicant shall retain/engage a suitably qualified Archaeologist (licensed under the National Monuments Acts) to:

- a. In advance of any site preparation works or groundworks, carry out a geophysical survey and test excavations (under Licence from the National Monuments Service) in areas of proposed ground disturbance, including but not limited to, turbine base locations, hardstands, roads, compounds, onsite 38kV substation compound and all other ground disturbance required for the development. This shall also include a location in the vicinity of the Recorded Monument KK013-023002- Graveyard, Freshford Lots. No groundworks may take place in the absence of the Archaeologist without his/her express consent.
- b. Submit an archaeological impact assessment report for the written agreement of the Planning Authority, following consultation with the National

Monuments Service of the Department, which includes the results of the geophysical survey and test excavations. The report shall include an archaeologist impact statement and mitigation strategy. Where archaeological material is shown to be present, avoidance, preservation *in situ*, preservation by record (archaeological excavation) and/or monitoring may be required.

- c. Exclusion zones shall be established around elements of vulnerable heritage within the site as identified in Chapter 14 of the EIAR or during subsequent site investigations. Exclusions zones shall be fenced and demarcated, with no groundworks of any kind permitted within the zone. Any further archaeological mitigation requirements specified by the planning authority, following consultation with the National Monuments Service, shall be complied with by the developer.
- d. No site preparation and/or construction works shall be carried out on site until the Archaeologists report has been submitted to and approval to process is agreed in writing with the Planning Authority. All resulting and associated archaeological costs shall be borne by the developer.

Reason: To ensure the continued preservation (either in situ or by record) of places, caves, sites, features or other objects of archaeological interest.

- 17. The developer shall comply with the requirements of Uisce Éireann with regard to the diversion of infrastructure within the site (wind farm and grid connection route) and connections to the public network.

Reason: In the interest of public health.

- 18. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of public roads which may be damaged by the transport of materials to the site or through works associated with the construction of the grid connection route, coupled with an agreement empowering the local 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 Coimisiún Pleanála for determination.

Reason: To ensure the satisfactory completion of the development.

19. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of the site upon cessation of the project, coupled with an agreement empowering the local authority to apply such security or part thereof to secure 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 Coimisiún Pleanála for determination.

Reason: To ensure the satisfactory completion of the development.

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

I confirm that this report represents my professional planning assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought

to influence, directly or indirectly, the exercise of my professional judgement in an improper or inappropriate way.

Enda Duignan

Senior Planning Inspector

30th June 2026

Appendix 1: AA Screening Determination

Test for likely significant effects

Screening for Appropriate Assessment Test for likely significant effects	
Step 1: Description of the project and local site characteristics	
Case File: ABP-322154-25	
Brief description of project	Normal Planning Appeal Permission is sought for the construction of 7 no. wind turbines, a permanent 38kV substation compound and a grid connection comprising permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation. This cabling route is primarily located within the public road corridor which includes Protected Structures (Kilkenny RPS Ref. C886) See section 2.0 of Inspectors Report.
Brief description of development site characteristics and potential impact mechanisms	It is proposed to construct a wind farm development on land that is currently primarily agricultural pastoral lands and an area of commercial forestry. A detailed description of the site and subject proposal is provided in Sections 1 and 2 of the Inspector's report and detailed specifications of the proposal are provided in the AA screening report, NIS, EIAR and other planning documents provided by the Applicant. In summary, the wind farm development and the associated GCR has a total development footprint of c. 1,000ha and includes 7 no. wind turbines with an overall blade tip height of 185 metres and associated works, a 38 kV substation and associated works, including underground 38kV cabling (c. 23km) to connect to the national grid at Ballyragget 110kV substation, 1 no. meteorological mast, underground cabling, access tracks and entrances (new and upgraded), 6 no. water crossings within the wind farm site, construction and storage compounds, spoil management areas, an on-site borrow pit, tree felling and Biodiversity Management and Enhancement Plan measures. The launch pit for proposed HDD as part of the proposed GCR (i.e. crossing of the River Nore) is located within the boundary of the River Barrow and River Nore SAC [002162]. The proposed development is also hydrologically linked to the SAC. The Tullaroan Stream flows south through the centre of the proposed wind farm site and joins the SAC c. 5.9km downstream. Four (4) no. additional EPA mapped watercourses within the proposed WF site are linked with the Tullaroan Stream. There are also lower order streams and drainage ditches on site that discharge into the Tullaroan Stream. The proposed GCR crosses 13 no. watercourses which are also hydrologically linked to the SAC. Furthermore, the proposed wind farm site and parts of the proposed GCR are underlain by the same groundwater body (Kilmanagh Gravels) as the River Barrow and River Nore SAC. The proposed GCR crosses the River Nore SPA [004233] c. 1km

	north-west of Ballyragget. However, it is noted that the crossing will be via HDD and has been designed to pass cabling beneath the River Nore, thus avoiding works within the SPA boundary. A potential for indirect effect to the SPA (and associated SCI species) was identified via a direct surface water pathway between the SPA and the proposed development as both the proposed wind farm site and GCR are hydrologically linked to the SPA.			
Screening report	Yes. Prepared by MKO Consultants			
Natura Impact Statement	Yes. Prepared by MKO Consultants			
Relevant submissions	The Planning Authority formed the view that there was a significant lack of supporting information for certain ecological receptors (such as birds) in both the Stage 1 Screening and Stage 2 Natura impact Statement, and certain elements of the mitigation measures. As a result, the Planning Authority was not satisfied that there was no risk of adverse effects on the integrity of the associated European Sites (either directly or indirectly), along or in-combination with other plans or projects. A refusal of permission was therefore recommended (i.e. Refusal Reason No. 3). Third Party Observations to the appeal raised concerns regarding surface water impacts, that the NIS failed to comply with EU Law (Habitats Directive), that only Kingfisher were assessed in the NIS and no other SCI species considered, that no reasonable alternatives have been provided to avoid crossing the River Nore, that there was lacunae in various reports and that the proposal was not considered to be compliant with the CJEU C-258/11 case. A detailed summary of the issues raised in Third Party submissions is included within Appendix 4 & 5 of the Inspector's Report. A submission was received from the DHLGH in respect of Appropriate Assessment, including matters relating to Otter, Kingfisher and surface water protection measures. A report is also on file from IFI which has included recommendations regarding the protection of surface water quality. The issues raised by the Prescribed Bodies have been summarised in Section 3 of the Inspector's report.			
Additional Information: Further information was submitted by the Applicant on the 28 th October 2025. As part of the Applicant's FIR, a revised NIS was submitted which considered the changes to the SSCOs for the River Barrow and River Nore SAC. Additional information was also provided with respect to Otter and Kingfisher which have been described in Section 7 of the Inspector's Report.				
Step 2. Identification of relevant European sites using the Source-pathway-receptor model Five (5) no. European sites were identified as being located within a potential zone of influence of the proposed development as detailed in the below table.				
European Site (code)	Qualifying interests ¹ Link to conservation objectives (NPWS, date)	Distance from proposed development (km)	Ecological connections ²	Consider further in screening ³ Y/N
River Barrow and River Nore SAC [002162]	Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Reefs [1170], Salicornia and other annuals colonising mud and sand [1310], Atlantic salt meadows [1330],	0m from proposed grid connection route (partly located within the SAC) Hydrological distance of c. 5.9km from the proposed wind	Yes, the launch pit for HDD is located within the SAC. The wind farm site is hydrologically linked to the SAC via the Tullaroan Stream and the additional watercourses within	Yes

	Mediterranean salt meadows [1410], Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260], European dry heaths [4030], Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430], Petrifying springs with tufa formation [7220], Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0], Alluvial forests with Alnus glutinosa and Fraxinus excelsior [91E0], Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016] Freshwater Pearl Mussel [1029], White-clawed Crayfish [1092], Sea Lamprey [1095], Brook Lamprey [1096], River Lamprey [1099], Twaite Shad [1103], Salmon [1106], Otter [1355] and Killarney Fern [6985] River Barrow and River Nore SAC National Parks & Wildlife Service	farm site	the site. The proposed GCR crosses 13 no. watercourses which are also hydrologically linked to the SAC. The proposed wind farm site and parts of the proposed grid connection route are underlain by the same groundwater body (Kilmanagh Gravels) as the SAC.	
The Loughans SAC [000407]	Turloughs The Loughans SAC National Parks & Wildlife Service	8.4km from the proposed GCR 11.2km from proposed wind farm site	No surface water hydrological connectivity between the proposed development and this SAC. The proposed development is also located in a separate sub-catchment and groundwater body. No complete source-pathway-receptor chain exists between the proposed development and this	No

			SAC and therefore no potential for direct or indirect effects were identified	
Spahill and Clomantagh Hill SAC [000849]	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) Spahill and Clomantagh Hill SAC National Parks & Wildlife Service	6.9km from the proposed GCR 11.4km from proposed wind farm site	No surface water hydrological connectivity between the proposed development and this SAC. Due to the distance from the SAC, no complete source-pathway-receptor chain has been identified between the proposed development and this SAC and therefore no potential for direct or indirect effects were identified	No
Cullahill Mountain SAC [000831]	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) Cullahill Mountain SAC National Parks & Wildlife Service	8.9km from the proposed GCR 15.8km from proposed wind farm site	No surface water hydrological connectivity between the proposed development and this SAC. Due to the distance from the SAC, no complete source-pathway-receptor chain has been identified between the proposed development and this SAC and therefore no potential for direct or indirect effects were identified	No
River Nore SPA [004233]	Kingfisher (breeding) River Nore SPA National Parks & Wildlife Service	0m from proposed GCR (partly located within the SPA) 9km from proposed wind farm site	A surface water pathway between the SPA and the proposed development as both the proposed wind farm site and grid connection route are hydrologically linked to the SPA. The proposed GCR also crosses the SPA using HDD.	Yes.

Step 3. Describe the likely effects of the project (if any, alone or in combination) on European Sites

While the launch pit for the HDD proposed as part of the GCR is located within the boundary of the SAC, the location of the launch pit is within the existing road corridor and Improved agricultural grassland (GA1) and located outside of any QI designated habitat or species for this SAC. No instream works are proposed as part of the proposed GCR. In terms of the SPA, the proposed wind farm site is located c. 9km (overland) from the SPA. Therefore, direct effects on kingfisher (SCI population) associated with development of the site have been ruled out by the Applicant. In my view, this is considered to be reasonable given the results from the 2010 national kingfisher survey which estimated individual kingfisher territories on the River Nore as spanning from <1km up to a maximum of 5km of channel length (Cummins et al., 2010). In terms of the proposed GCR which crosses the SPA using HDD underneath the River Nore, it is acknowledged in the NIS that foraging along the River Nore at the location of the proposed HDD cannot be ruled out locally. Whilst it is noted that the predicted noise levels associated with the HDD, which are estimated to be similar to ambient noise levels, are unlikely to give rise to likely significant effects on foraging kingfisher, it is acknowledged that there is a possibility of disturbance from vibration at the high end of the predicted range (5mm/s). In the absence of mitigation, likely significant effects cannot be ruled out for the foraging kingfisher of the SPA at the HDD crossing point. Potential pathways for indirect effects on kingfisher are also identified via a deterioration in water quality, potentially resulting in habitat degradation and reduced prey availability.

Sources of impact and likely significant effects are detailed in the Table below.

AA Screening matrix

Site name Qualifying interests	Possibility of significant effects (alone) in view of the conservation objectives of the site*	
	Impacts	Effects
River Barrow and River Nore SAC [002162]	Direct: None. There will be no direct impacts or effects as the proposed development is located within the existing road corridor and Improved agricultural grassland (GA1) and located outside of any QI designated habitat or species for this SAC. Indirect: There are multiple hydrological connections between this SAC and both the proposed wind farm site and GCR. A pathway for indirect effects on the aquatic qualifying interest (QIs) species and habitats of the SAC exist in the form of water quality deterioration and habitat degradation via surface and ground water pathways during construction, operation and decommissioning of the proposed development. The terrestrial ranges for Otter can also extend outside of SAC boundaries. The construction phase of the proposal has the potential for some localised disturbance to otter resulting from noise and increased anthropogenic activities adjacent to the Tullaroan stream within the proposed wind farm site (given that a new clear span bridge is proposed to cross the Tullaroan Stream), at watercourse crossings along the proposed GCR, including the crossing of the River Nore.	Potential for indirect effects on SCI species and habitats via a deterioration in water quality and habitat degradation. There is potential for indirect effects on Otter associated with this SAC via disturbance.

	Likelihood of significant effects from proposed development (alone): Yes.	
	If No, is there likelihood of significant effects occurring in combination with other plans or projects? N/a.	
	Impacts	Effects
River Nore SPA [004233] Kingfisher	Direct: None. Indirect: Deterioration to water quality via pollutants to surface water run off to the Tullaroan Stream and other watercourse on the wind farm site resulting from works associated with the construction, operational and decommissioning phases of the proposed project. Deterioration to water quality via pollutants entering the River Nore during the construction of the proposed GCR. There is a possibility of disturbance from vibration at the high end of the predicted range (5mm/s). In the absence of mitigation, likely significant effects cannot be ruled out for the foraging kingfisher of the SPA at the HDD crossing point.	Potential for indirect effects on this SCI species via a deterioration in water quality and habitat degradation. Potential for indirect effects to Kingfisher through disturbance.
	Likelihood of significant effects from proposed development (alone): Yes.	
	If No, is there likelihood of significant effects occurring in combination with other plans or projects? N/A.	
Step 4 Conclude if the proposed development could result in likely significant effects on a European site		
Based on the information provided in the screening report, my visit to the wind farm site and the GCR and a review of the conservation objectives and supporting documents, I consider that in the absence of mitigation measures beyond best practice construction methods, the proposed development has the potential to result significant effects on the River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233).		
I concur with the applicants' findings that such impacts could be significant in terms of the stated conservation objectives of the SAC and SPA when considered on their own and in combination with other projects and plans in relation to pollution related pressures and disturbance on qualifying interest habitats and species.		
An appropriate assessment is required on the basis of the possible effects of the project alone.		
Screening Determination		
Finding of likely significant effects		
In accordance with Section 177U of the Planning and Development Act 2000 (as amended) and on the basis of objective information provided by the Applicant, I conclude that the proposed development could result in significant effects on the River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233) in view of the conservation objectives of a number of qualifying interest features of those sites.		
It is therefore determined that Appropriate Assessment (stage 2) [under Section 177V of the Planning and Development Act 2000] of the proposed development is required.		

Appendix 2: Appropriate Assessment

Appendix 2: Appropriate Assessment (ACP-322154-25)

The requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, sections 177V [or S 177AE] of the Planning and Development Act 2000 (as amended) are considered fully in this section.

Taking account of the preceding screening determination, the following is an appropriate assessment of the implications of the proposed wind farm development and associated grid connection in view of the relevant conservation objectives of River Barrow and River Nore SAC [002162] and the River Nore SPA [004233] based on scientific information provided by the applicant.

The information relied upon includes the following:

- Natura Impact Statement (NIS) and associated appendices prepared by MKO Consultants,
- EIAR and associated appendices prepared by MKO Consultants,
- The Applicant's Further Information response received 28th October 2025 which included a revised NIS and supporting documentation.

I am satisfied that the information provided is adequate to allow for Appropriate Assessment. I am satisfied that all aspects of the project which could result in significant effects are considered and assessed in the NIS and mitigation measures designed to avoid or reduce any adverse effects on site integrity are included and assessed for effectiveness.

Submissions/observations

Department of Housing, Heritage and Local Government

- Impacts on otter, a qualifying interest species of the River Barrow and River Nore SAC and species granted strict protection under Annex IV of the Habitats Directive outside of SAC sites.
- Impacts on Kingfisher.
- Monitoring of mitigation measures.

Inland Fisheries Ireland

IFI included recommendations regarding the protection of surface water quality.

Public Observations

Issues raised in the course of the application and appeal by third parties, including concerns regarding surface water impacts, that the NIS failed to comply with EU Law (Habitats Directive), that only Kingfisher were assessed in the NIS and no other SCI species considered, that no reasonable alternatives have been provided to avoid crossing the River Nore, that there was lacunae in various reports and that the proposal was not considered to be compliant with the CJEU C-258/11 case. A detailed summary of the issues raised in Third Party submissions is included within Appendix 4 & 5 of the Inspector's Report.

Decision of Planning Authority.

The Planning Authority formed the view that there was a significant lack of supporting information for certain ecological receptors (such as birds) in both the Stage 1 Screening and Stage 2 Natura impact Statement, and certain elements of the mitigation measures. As a result, the Planning Authority was not satisfied that there was no risk of adverse effects on the integrity of the associated European Sites (either directly or indirectly), along or in-combination with other plans or projects. A refusal of permission was therefore recommended (i.e. Refusal Reason No. 3).

Discussion

In relation to the surveys undertaken to inform the findings of the submitted NIS (and EIAR) and the concerns regarding their deficiencies raised by the Planning Authority, the Department and the various Third Party

observers, I refer to the report of the Commission's Senior Ecologist (Appendix 6) who is of the view that the extent of evidence provided by the Applicant generally provides sufficient details of biodiversity baseline on the site in the context of this type of proposed development. It is indicated that the surveys and reporting have been carried out with regard to best practice guidance and that there is sufficient detail on the biodiversity baseline within the zone of influence of the proposed development such that a robust impact assessment can be carried out for both EIA and AA. Furthermore, it is noted that the documentation provided by the Applicant has been prepared in accordance with relevant legislation and best-practice guidance and that sufficient ecological data (obtained via scoping, desktop study and various ecological surveys) has been provided in order to assess the potential for likely significant effects to arise from the proposed development on biodiversity and birds. Overall, I would concur with the view of the Commission's Senior Ecologist, and I am satisfied that the surveys are acceptable, including the revised NIS received by way of further information as received by the Commission on 28th October 2025, and can be relied upon for the assessment set out in this AA.

In response to the concerns raised that there was an inadequate consideration assessment of SPAs, I would again concur with the commentary of the Commission's Senior Ecologist who is of the view that the methodology used for screening for AA is in accordance with best practice guidance. Aside from the River Nore SPA, there are no other SPAs located close enough to the proposed development site such that it would be within the core foraging range (foraging range from nest site during breeding season and/or from night roost during winter season) for any other SCI species connected to an SPA. Foraging ranges differ for individual species, for example, the core foraging range for breeding hen harrier is 2km, with a maximum range of 10km. After the River Nore SPA, the next closest SPA is Slieve Bloom (hen harrier), located c. 28km north of the GCR). Therefore, the reasoning provided by the Applicant as to why just the River Nore SPA was screened in for AA is accepted by the Commission's Senior Ecologist. Whilst other SCI species were recorded close to the development site, impacts on these SCI bird species are addressed under the EIA process, not under AA (Refer to Chapter 7 of the EIAR).

The ecologist's submission, commissioned by KBT Responsible energy, was of the view that there was an adequate assessment of impacts on diurnally active species (lapwing, golden plover, whooper swan). In summary, the Commission's Senior Ecologist is of the view that the potential for significant effects on lapwing is very limited, that the is of *no ecological importance* to whooper swan and that the potential for significant effects on this species and golden plover is very limited.

It is noted that a commissioned opinion on behalf of KBT Responsible energy has raised concerns regarding the adequacy of the assessment of impacts on the conservation objectives of white-clawed crayfish. Furthermore, it is noted that the risk of spread of crayfish plague by proposed development during flood events have not been taken into account in the AA. I note that this matter has been addressed by the Commission's Senior Ecologist who is of the view that it can be assumed that crayfish plague is likely present in the overall river catchment of the wind farm site and that white-clawed crayfish is at present at least downstream of the wind farm site and the overall Nore river catchment given the results of the Applicant eDNA analysis and the data from biodiversitymaps.ie. Given that crayfish plague is already within the catchment, that instream works are not proposed and that the construction works have been designed not to be undertaken during flood events (primarily to minimise water quality impacts), it is the Commission's Senior Ecologist's view that the proposed development will not increase the risk of spread of crayfish plague, thereby resulting in a likely significant impact on white clawed crayfish. Overall, taking into consideration the implementation of mitigation measures (water quality) provided in the EIAR and NIS, likely significant impacts on white clawed crayfish from the proposed development will not arise.

River Barrow and River Nore SAC (002162):

Summary of Key issues that could give rise to adverse effects (from screening stage):

- (i) Water quality deterioration and habitat degradation, and,
- (ii) Disturbance of mobile species

See Table 5-1 of the NIS

Qualifying Interest features likely to be affected	Conservation Objectives Targets and attributes (summary)	Potential adverse effects	Mitigation measures (summary)
			See Section 6.2.1 and 6.2.2 of NIS and section 9.5.2 of the EIAR Chapter

			9: Hydrology and Hydrogeology.
[1029] Freshwater pearl mussel (Margaritifera margaritifera)	To restore the Favourable conservation condition of the Freshwater pearl mussel (Margaritifera margaritifera) in River Barrow and River Nore SAC. Restore Ballymurphy, Mountain and Nore distribution, restore Ballymurphy, Mountain and Nore population size, restore population structure for recruitment, no more than 5% decline for population structure in terms of adult mortality (Ballymurphy, Mountain and Nore), restore suitable habitat in terms of extent and condition, restore water quality in terms of macroinvertebrates and phytobenthos (diatoms), restore substratum quality in terms of filamentous algae, sediment and oxygen availability, restore appropriate hydrological regime, maintain sufficient juvenile salmonids to host glochidial larvae and restore the area and condition of fringing habitats.	Although this species was not recorded at the site during the surveys, the proposed wind farm site and the GCR is hydrologically connected to the Nore Lower Margaritifera catchment. Deterioration in water quality within the SAC, which could occur during the excavation of the HDD launch and reception pits at the crossing of the River Nore, at other watercourse crossings along the proposed GCR or from pollution entering the Tullaroan Stream or the other watercourses and ditches within the wind farm site, would undermine the conservation objectives, and prevent the freshwater pearl mussel from regaining favourable conservation status within the SAC.	Measures included to address potential hydrological impacts include mitigation for the: <i>Construction Phase</i> - Tree felling, - Earthworks Resulting in Suspended Solids Entrainment in Surface Waters, - Works Within the Hydrological Buffer Zones within the WF site, - Groundwater Levels During Excavation Works, - Cement Based Products, - Morphological Changes to Surface Watercourses within the WF site, - Morphological Changes to Surface Watercourses along the proposed grid connection, - Directional Drilling along the proposed GCR, - Release of Hydrocarbons During Construction and Storage, - Release of Cement-Based Products, and, - Potential Effects to Groundwater. <i>Operational Phase</i> - Progressive Replacement of Natural Surface with Lower Permeability Surfaces, - Runoff Resulting in Contamination of Surface Waters, and, - Release of Hydrocarbons. <i>Decommissioning Phase</i> No significant effects on the hydrological and hydrogeological

			environment will occur during the decommissioning stage. Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures.
[1092] White-clawed crayfish (Austropotamobius pallipes)	To maintain the favourable conservation condition of White-clawed crayfish in the River Barrow and River Nore SAC. No reduction in distribution, Juveniles and/or females with eggs in at least 50% of positive samples, no alien crayfish species, no instances of disease, At least Q3-4 at all sites sampled by EPA and no decline in heterogeneity or habitat quality.	There are multiple hydrological connections between this SAC and both the proposed wind farm site and grid connection route as discussed above. Therefore, there is a potential pathway for indirect effects on this QI species via the deterioration of water quality resulting from pollution entering these watercourses. This QI species is located in the same hydrological sub-catchment and groundwater bodies to the site, as per Map 7 of the SSCO document (NPWS 2011). Pollution of surface water may result in adverse impacts on this species in the absence of mitigation.	As above.
[1095] Sea lamprey (Petromyzon marinus)	To restore the favourable conservation condition of Sea lamprey in the River Barrow and River Nore SAC. Greater than 75% distribution, at least three age/size groups present, juvenile density at least 1/m², no decline in extent and distribution of spawning beds and more than 50% of sample sites positive for juvenile habitat.	Surveys undertaken as part of the proposed development only identified Lamprey ammocoetes (Lampetra sp.) from a single site during targeted electro-fishing across the 19 no. survey sites in the vicinity of the proposed development. There are multiple hydrological connections between this SAC and both the proposed wind farm site and GCR as discussed above. Therefore, there is a potential pathway for indirect effects on these QI species via the deterioration of water quality resulting from pollution entering these watercourses. Pollution of surface water may result in adverse impacts on these downstream QI aquatic species in the absence of mitigation.	As above.
1096] Brook lamprey (Lampetra planeri)	To restore the favourable conservation condition of River lamprey in the River Barrow and River Nore SAC. Access to all watercourses for distribution, at least		

	three age/size groups of brook/river lamprey present, mean catchment juvenile density of brook/river lamprey at least 2/m ² , no decline in extent and distribution of spawning beds and more than 50% of sample sites positive for juvenile habitat.		
[1099] River lamprey (<i>Lampetra fluviatilis</i>)	To restore the favourable conservation condition of River lamprey in the River Barrow and River Nore SAC. Greater than 75% for distribution, at least three age/size groups of river/brook lamprey present, mean catchment juvenile density of brook/river lamprey at least 2/m², no decline in extent and distribution of spawning beds and more than 50% of sample sites positive for juvenile habitat.		
[1103] Twaite shad (<i>Alosa fallax</i>)	To restore the favourable conservation condition of Twaite shad in the River Barrow and River Nore SAC. Greater than 75% for distribution, more than one age class present, no decline in extent and distribution of spawning habitats, water quality no lower than 5mg/l and maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth.	According to the Site Synopsis document for the River Barrow and River Nore SAC (NPWS, 2016), this site is one of only a handful of spawning grounds in the country for Twaite Shad. There are multiple hydrological connections between this SAC and both the proposed wind farm site and grid connection route. Therefore, there is a potential pathway for indirect effects on this QI species via the deterioration of water quality resulting from pollution entering these watercourse. Pollution of surface water may result in adverse impacts on this downstream QI aquatic species in the absence of mitigation.	As above.
[1106] Atlantic salmon (<i>Salmo salar</i>) (only in fresh	To restore the favourable conservation condition	There are multiple hydrological connections between this SAC and both the proposed wind farm site	As above.

water)	of Salmon in the River Barrow and River Nore SAC. 100% of river channels for distribution, conservation limit (CL) for each system consistently exceeded, maintain or exceed 0+ fry mean catchment-wide abundance threshold value, no significant decline in out-migrating smolt abundance, no decline in number and distribution of spawning redds due to anthropogenic causes and for water quality, at least q4 at all sites.	and GCR as discussed above. Therefore, there is a potential pathway for indirect effects on this QI species via the deterioration of water quality resulting from pollution entering watercourses. As per the Aquatic Baseline Report (Appendix 5 of NIS), 'Salmonid habitat was predominantly poor and moderate across the proposed wind farm site with one location displaying good habitat for salmonid spawning, nursery and holding. Atlantic salmon was found within surveys on the Tullaroan stream which flows through the proposed wind farm site. Salmonid habitat ranged from poor to moderate to good along the proposed GCR. A number of locations (e.g. GR-1, GR-9, GR-12) displaying moderate to good habitat for salmonid spawning, nursery and holding. A dead salmonid parr was found at sample location GR-2, salmonid alevins were recorded at sample site GR-8' Pollution of surface water may result in adverse impacts on this downstream QI aquatic species in the absence of mitigation.	
[1355] Otter (Lutra lutra)	To restore the favourable conservation condition of Otter in the River Barrow and River Nore SAC. No significant decline in distribution, extent of terrestrial habitat, extent of marine habitat, extent of freshwater (river) habitat, extent of freshwater (lake) habitat, couching sites and holts and fish biomass available.	While it is stated that no signs of otter were recorded within the proposed project infrastructure footprint, signs of otter were identified in the wider study area within the proposed wind farm site and along the proposed GCR. This includes along Tullaroan Stream and the River Nore which forms part of the River Barrow and River Nore SAC to which the proposed development is hydrologically linked. HDD will take place underneath the River Nore, north of Ballyragget Bridge. Given the proposed works and the findings of the baseline surveys for otter as detailed in the revised NIS, no potential for habitat destruction, loss of breeding or resting places and no direct mortality related impacts on otter are anticipated to local populations of otter along the River Nore, as a result of the HDD works. The potential couch site,	As above. See Section 6.2.2 of NIS for Otter specific mitigation. A pre-commencement otter survey will be carried out to determine if otters are utilizing this area prior to construction and the various mitigation measures will be implemented limit the potential for disturbance from noise associated with the construction phase.

		identified on the banks of the River Nore, will not be affected by disturbance given the distance between it and the proposed HDD location (approximately 240m from the proposed HDD receptor pit location). Likewise, as no otter holts were confirmed to occur within 150m of any proposed infrastructure within the proposed wind farm site, there is no potential for loss of breeding or resting sites, or disturbance/ displacement effects on such important sites, to occur. However, Otter are considered to be within the ZOI of the proposed development. There is potential for construction works to result in the run-off of silt and other pollutants such as hydrocarbons and cementitious material into watercourses downstream of the proposed wind farm site and GCR. This has the potential to impact on the conservation objectives for this species in particular in relation to fish biomass availability, for example a degradation in water quality could impact on prey resource for otter. In addition to the above, there is potential for noise and visual disturbance associated with the construction of the proposed development to result in disturbance effects on local foraging and commuting populations of otter, associated with the SAC, where these works occur in close proximity to watercourses in the surrounding area.	
[3260] Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation	To maintain the favourable conservation condition of Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation in the River Barrow and River Nore SAC. No decline in habitat distribution, habitat	The full distribution of this habitat and its sub-types within the SAC is currently unknown. There are multiple hydrological connections between this SAC and both the proposed wind farm site and grid connection route. Therefore, there is the potential for significant effect on this QI habitat cannot be excluded. A deterioration in water quality, in particular from silt laden runoff, could have the potential to undermine the conservation objectives for this QI habitat which requires the substratum to be free	As above for potential hydrological impacts.

	area stable or increasing, maintain appropriate hydrological regimes, the groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits, the concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments and the concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition, typical species of the relevant habitat sub-type should be present and in good condition and the area of active floodplain at and upstream of the habitat should be maintained.	from fine sediment.	
[7220] Petrifying springs with tufa formation (Cratoneurion)	To maintain the favourable conservation condition of Petrifying springs with tufa formation (Cratoneurion) in the River Barrow and River Nore SAC. Habitat area stable, No decline in habitat distribution, Maintain appropriate hydrological regimes, oligotrophic and calcareous conditions and typical species.	The full extent of this QI habitat within the SAC is currently unknown. However, as per Map 6 of the SSCOs, the nearest known record for this QI habitat is located in excess of 25km from the site. No groundwater level impacts are predicted from the construction of the proposed grid connection underground cabling, access roads, substation compound, turbine delivery route works or met mast due to the shallow nature of the excavations proposed (i.e. 0 - c. 1.2m). As per guidance (SEPA, 20177) a buffer of 250m is required from sensitive ground water dependant habitats where excavations will exceed 1m, and 100m where excavations will not exceed 1m. Based on best available data for this habitat within the SAC and the separation distance from the works associated with the proposed	As above for potential hydrological impacts.

		development (well in excess of 250m), direct impacts to this QI habitat as a result of the proposed development can be excluded. The northern section of the proposed grid connection route, between Freshford and Ballyragget, is underlain by a Regionally Important Aquifer – karstified (diffuse). The proposed wind farm site is located within the same hydrological sub-catchment (Munster_SC_010) and groundwater catchment (Kilmanagh Gravels) as the SAC. Significant impacts on groundwater are not predicted to occur given the low permeability nature of the underlying bedrock aquifers within the site and the low potential for groundwater dispersion and movement within the underlying aquifer (as per Appendix 4- Hydrology). However, taking a precautionary approach the potential for indirect impacts as a result of deterioration in ground water quality was considered to have the potential to undermine the conservation objectives for this QI should a significant pollution event occur.	
Other QI's	Not at Risk	Rationale for Exclusion:	
[1016] Desmoulin's whorl snail (Vertigo moulinsiana)	To maintain the favourable conservation condition of Desmoulin's whorl snail in the River Barrow and River Nore SAC.	Vertigo moulinsiana is a terrestrial species associated with vegetation of wetland habitats often bordering waterbodies such as canals, ditches lakes and rivers (Long and Brophy, 2019). T As per Map 7 of the NPWS Conservation Objectives document, two known sites include Borris Bridge, Co. Carlow and Boston Bridge, Kilnaseer, Co. Laois. It is noted that the proposed drilling pits associated with the HDD are located outside the riparian habitat, where this species might occur. As such, no direct impacts will occur on this species.	
[1130] Estuaries	To maintain the favourable conservation condition of Estuaries in the River Barrow and River Nore SAC.	The site has a weak hydrological connection to the SAC. However, this QI habitat which is located greater than 40km downstream of the site and I concur with the Applicant that any changes in water quality as a result of the proposed development would not have the potential to undermine any of the conservation objectives for this QI habitat given nature, scale and location of the proposed development (separation distance of >40km) along with the attenuating and diluting property of the intervening waterbody.	
[1140] Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the River Barrow and	As per Map 5 of the NPWS Conservation Objectives document, the nearest known location of this QI habitat is located c. 65km from the site. Although a weak hydrological connection to the SAC exists, any changes in water quality as a result of the proposed development would not have the potential to undermine any of the conservation objectives for this QI habitat given nature, scale and location of the Proposed Project	

	River Nore SAC.	(separation distance of >60km) along with the attenuating and diluting property of the intervening waterbody.
[1170] Reefs	To maintain the Favourable conservation condition of Reefs in River Barrow and River Nore SAC.	As above (for Mudflats and sandflats not covered by seawater at low tide) - >80km downstream of the site.
[1330] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	To restore the favourable conservation condition of Atlantic salt meadows in the River Barrow and River Nore SAC.	As above (for Mudflats and sandflats not covered by seawater at low tide) - >60km downstream of the site.
1410] Mediterranean salt meadows (<i>Juncetalia maritima</i>)	To restore the favourable conservation condition of Mediterranean salt meadows in the River Barrow and River Nore SAC.	As above (Mudflats and sandflats not covered by seawater at low tide). - >70km downstream of the site.
[1421] Killarney fern (<i>Trichomanes speciosum</i>)	To maintain the favourable conservation condition of Killarney Fern in the River Barrow and River Nore SAC.	As per Map 7 of the SSCO document (NPWS 2011), the nearest known location of this QI species is located approx. 45km downstream of the Site. Given this QI species is terrestrial in nature, potential indirect impacts associated with deterioration of water quality within the SAC as a result of the proposed development would not have an effect on this QI species.
[4030] European dry heaths	To maintain the favourable conservation condition of European dry heaths in the River Barrow and River Nore SAC.	Works are proposed within this SAC as part of the construction of the proposed grid connection route. However, no instream works are proposed and this habitat was not recorded at the launch pit location within the SAC. Therefore, there is no potential to impact on this terrestrial QI habitat. Works located within the SAC are located in improved agricultural grassland.
[6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	To maintain the favourable conservation condition of European dry heaths in the River Barrow and River Nore SAC.	The proposed wind farm site is located outside of the SAC and therefore there is no potential to impact on this terrestrial QI habitat. Although works are proposed within this SAC as part of the construction of the proposed grid connection route, no instream works are proposed, and this habitat was not recorded at the launch pit location within the SAC. Therefore, there is no potential to impact on this terrestrial QI habitat.
[91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	To restore the favourable conservation condition of Old oak woodland with <i>Ilex</i> and <i>Blechnum</i> in the River Barrow and River Nore SAC.	Works are proposed within this SAC as part of the construction of the proposed grid connection route. However, no instream works are proposed and this habitat was not recorded at the launch pit location adjacent to this SAC. Therefore, there is no potential to impact on this terrestrial QI habitat
[91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>)	To restore the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>) in the River	Works are proposed within this SAC as part of the construction of the proposed GCR. No instream works are proposed and this habitat was not recorded at the launch pit location adjacent to this SAC along the and therefore there is no potential to impact on this terrestrial QI habitat. Having regard to the conservation objectives for this QI habitat and based on the potential effects from the proposed development (deterioration of water quality within the SAC), there is no potential to undermine the conservation objectives for this QI habitat.

	Barrow and River Nore SAC	
No other QIs were excluded.		
Assessment of issues that could give rise to adverse effects in view of conservation objectives:		
(i) Deterioration in water quality and habitat degradation The proposed wind farm is hydrologically connected to the SAC via the Tullaroan Stream which bisects the wind farm site. There are also a number of second order streams and drainage ditches which are located within the site, and which ultimately discharge into this EPA mapped watercourse. Notwithstanding the Planning Authority's concerns, I am satisfied that the various watercourses within the site have been clearly identified. The proposal includes a number of watercourse crossings within the wind farm site, the most significant of which is the installation of the clear span bridge between T6 and T7. I have discussed the various watercourse crossings in my assessment of Chapter 9 (Hydrology and Hydrogeology) of the EIAR, and I have recommended suitable conditions as a further measure to protect surface water quality. In terms of the proposed GCR, there a total 13 no. water course crossings along the proposed route. This includes the crossing of the SAC, where HDD is proposed for the River Nore crossing. It is acknowledged that a deterioration in water quality within the SAC as a result of silt laden run-off and other pollutants entering the various watercourses both within the wind farm and along the GCR, could affect the SCI habitats and species of this SAC as listed above and undermine the respective SSCO attribute targets. Mitigation measures are proposed to minimise the potential for these effects and are set out in detail in section 6.2.1 of the NIS, as well as summarised in this table above. I have also outlined this measures in my assessment of Chapter 9 of the EIAR, and includes detailed mitigation for the various works during the construction and decommissioning phases, including tree felling, earthworks resulting in suspended solids entrainment in surface waters, works within the hydrological buffer zones within the wind farm site, groundwater levels during excavation works, cement based products, morphological changes to surface watercourses within the wind farm site, morphological changes to surface watercourses along the proposed grid connection, HDD along the proposed GCR, release of hydrocarbons during construction and storage, release of cement-based products, and potential effects to groundwater. For the operational phase, mitigation also includes the progressive replacement of natural surface with lower permeability surfaces, mitigation to treat runoff resulting in contamination of surface waters and the release of hydrocarbons. With the implementation of mitigation, including supervision of works by an Ecological Clerk of Works, with support from the project ecologist and project hydrologist, and the implementation of measures through a Construction and Environmental Management Plan (CEMP) (Appendix 4-2 of EIAR), (alongside specific mitigation measures with respect to identified effects), it can be reasonably concluded that no adverse effect upon the integrity of the SAC will result. Overall, I am satisfied that the preventative measures which are aimed at interrupting the source-pathway-receptor are targeted at the key threats to SCI habitats and species and that by arresting these pathways or reducing possible effects to a non-significant level, adverse effects can be prevented. Mitigation Measures related to water quality are captured in Condition No's. 4, 5, 9 and 11 of the Inspector's Report (ii) Disturbance of Mobile Species As noted, signs of otter were identified in the wider study area within the proposed wind farm site and proposed GCR, including along Tullaroan Stream and the River Nore. However, given the scale and nature of the proposed works and the findings of the baseline surveys for otter, there is no potential for habitat destruction, loss of breeding or resting places or direct mortality related impacts to local populations of otter along the River Nore, as a result of the HDD works. The potential couch site, identified on the banks of the River Nore, will not be affected by disturbance given the distance between it and the proposed HDD location (approximately 240m from the proposed HDD receptor pit location). Furthermore, there is no potential for loss of breeding or resting sites, or disturbance/ displacement effects on such important sites to occur as no other holts were identified within 150m of any proposed infrastructure within the wind farm site. In relation to disturbance, there is potential for noise and visual disturbance associated with the construction of the proposed wind farm and associated GCR to result in disturbance effects on local foraging and commuting populations of otter, associated with the SAC, where these works occur in close proximity to watercourses in the surrounding area. Furthermore, a deterioration in water quality could result in a reduced prey availability and undermine the distribution and available fish biomass targets for this species. The focus of mitigation measures proposed are on pre-commencement surveys and prior to the		

commencement of construction works associated with the installation of watercourse crossings, the following measures will be undertaken for the avoidance of disturbance/displacement and direct mortality and to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (NRA, 2008):

- Should the surveys identify the presence of an otter holt, the following measures will be undertaken. A National Parks and Wildlife Service and a derogation licence will be applied for (although compliance with such a licence has not been relied on in this assessment).
- No works will be undertaken within 150m of any holts at which breeding females or cubs are present.
- No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance will also not take place within 15m of such holts, except under licence (NRA, 2008).

Various measures have been outlined with respect the operation of machinery and equipment to reduce noise impacts. The Applicant has also confirmed that the proposed riparian planting and associated root systems, once established, have the potential to provide additional potentially suitable habitat for otter holts, couches and burrows along the banks of the Tullaroan stream within the proposed wind farm site.

I also refer to the report of the Commission's Senior Ecologist who is of the view that direct and indirect effects on otter have been appropriately identified by the Applicant, except for potential disturbance from artificial lighting, if it were required, in the vicinity of the watercourse crossing works during construction. They note that otter is crepuscular in nature and are unlikely to be significantly impacted by the proposed works, given that works will be undertaken during daylight hours (7am-7pm) and given that the works will be of short duration. However, as noted in section 4.7.1 of Chapter 4 of EIAR, it may be necessary on occasion to work outside of these hours. It is stated that artificial lighting could be required during some of the above daytime hours if the crossings were to take place during the autumn/winter months. Nevertheless, the lighting mitigation measures proposed for bats at the wind farm site (see Section 6.1.2 of Revised bat survey report (Appendix 4 of further information response document)), if also applied at the watercourse crossings, would be adequate to rule out potential effects of artificial lighting on otter also. Subject to compliance with a condition recommending same, I am satisfied that the measures proposed are adequate and will be effective in ensuring that the attributes required to restore the favourable condition for Otter will not be adversely affected and that the proposed development will not prevent or delay the attainment of the conservation objective. Mitigation measures are captured in Planning Condition No. 5, 9 & 11 of the Inspectors Report.

In-combination effects

An assessment of cumulative effects with other plans and projects has been carried out in Section 8 of the NIS. It is noted that the main likelihood for cumulative effect on the QIs of River Barrow and River Nore SAC and the River Nore SPA associated with the proposed development and other developments is assessed to be associated with the hydrological/hydrogeological environment. The hydrological cumulative study area has been fully described in Chapter 9: Hydrology and Hydrogeology (appendix 3) and is summarised in the NIS and an assessment of cumulative effects is provided with other wind farms in Section 8.1.1.3 and other grid connections in Section 8.1.1.4. I have reviewed the details of these projects, plans and policies which were identified in Section 8 and of note, there is a c. 300m overlap with the grid connection underground cabling route associated with the permitted Farranrory Wind Farm. The overlap occurs along the N77 and it is noted that both grid connections are proposed to cross the Nore via HDD at different locations. Cumulative effects are also considered with agriculture, forestry and EPA Licensed Wastewater Treatment Facilities, of which there are five. Overall, the NIS concludes that, subject to implementation of mitigation measures, no potential for in combination effects are identified. I am satisfied that in-combination effects have been assessed adequately in the NIS. The proposed development has been assessed as part of the overall Proposed Project, and no other plans and projects could combine to generate significant effects when mitigation measures are considered. The applicant has demonstrated satisfactorily that no significant residual effects will remain post the application of mitigation measures and there is therefore no potential for in-combination effects.

Findings and conclusions

The applicant determined that following the implementation of mitigation measures that the proposed development alone, or in combination with the overall Proposed Project and other plans and projects, will not adversely affect the integrity of the River Barrow and River Nore SAC.

Based on the information provided, I am satisfied that adverse effects arising from aspects of the proposed development can be excluded for the River Barrow and River Nore SAC. No direct impacts are predicted. Indirect impacts would be temporary in nature and mitigation measures are described to prevent ingress of silt

laden surface water and other construction related pollutants. Monitoring measures are also proposed to ensure compliance and effective management of measures. I am satisfied that the mitigation measures proposed to prevent such effects have been assessed as effective and can be implemented. Furthermore, it is recommended that a condition be attached which restricts the use of artificial lighting at the proposed watercourse crossings. No significant in combination effects are predicted.

Reasonable scientific doubt

I am satisfied that no reasonable scientific doubt remains as to the absence of adverse effects.

Site integrity

The proposed development will not affect the attainment of Conservation objectives of the River Barrow and River Nore SAC. Adverse effects on site integrity can be excluded, and no reasonable scientific doubt remains as to the absence of such effects.

River Nore SPA (004233):

Summary of Key issues that could give rise to adverse effects (from screening stage):

- (i) Water quality deterioration and habitat degradation.
- (ii) Disturbance.

See Table 5-1 of the NIS

Qualifying Interest features likely to be affected	Conservation Objectives Targets and attributes (summary)	Potential adverse effects	Mitigation measures (summary)
[A229] Kingfisher (Alcedo atthis)	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. No significant decline in population, sufficient productivity to maintain the population trend, no significant loss of distribution in the long term, sufficient area of high quality nesting habitat to support the population target, both biotic (i.e. q-value) and abiotic indices reflect overall good-high quality status, no significant increase in barriers to connectivity and disturbance	As per the River Nore SPA SSCO document (NPWS 2011), the SPA is of high ornithological importance as it supports a nationally important population of Kingfisher. It is noted that Kingfisher were recorded along the Tullaroan Stream within the proposed wind farm site during surveys. However, it is stated that these birds are considered to be separate from the SPA population given the distance between the SPA and the wind farm site – i.e. over 9km overland and over 15km channel distance. As noted, results from the 2010 national kingfisher survey estimated individual kingfisher territories on the River Nore as spanning from <1km up to a maximum of 5km of channel length (Cummins et al., 2010). It is noted that the proposed GCR works will be largely confined to the existing road network and	See Section 6.2.1 and 6.2.3 of the NIS and section 9.5.2 of the EIAR Chapter 9: Hydrology and Hydrogeology. Measures included to address potential hydrological impacts include mitigation for the: Construction Phase - Tree felling, - Earthworks Resulting in Suspended Solids Entrainment in Surface Waters, - Works Within the Hydrological Buffer Zones within the WF site, - Groundwater Levels During Excavation Works, - Cement Based Products, - Morphological Changes to Surface Watercourses within the WF site, - Morphological Changes to Surface

	occurs at levels that do not significantly impact upon breeding Kingfisher.	involve minor works over a short period. The proposed grid connection crosses the SPA c. 1km north-west of Ballyragget via HDD and has been designed to pass cabling beneath the River Nore. Therefore, the proposed works shall avoid the SPA boundary. The noise levels associated with the HDD, which are predicted to be similar to ambient noise levels, are unlikely to give rise to an adverse effect on foraging kingfisher. However, there is a possibility of disturbance from vibration at the high end of the predicted range (5mm/s). Without intervention, following the precautionary principle, adverse effects cannot therefore be ruled out for the foraging kingfisher of the SPA at the HDD crossing point. As the proposed development is hydrologically connected to the SPA, potential adverse effects also include: - Deterioration to water quality via pollutants to surface water run off to the Tullaroan Stream and other watercourses on the wind farm site resulting from works associated with the construction, operational and decommissioning phases. - Deterioration to water quality via pollutants entering watercourses, including the River Nore during the construction of the proposed GCR.	Watercourses along the proposed grid connection, - Directional Drilling along the Proposed Grid Connection route, - Release of Hydrocarbons During Construction and Storage, - Release of Cement-Based Products, and, - Potential Effects to Groundwater. <i>Operational Phase</i> - Progressive Replacement of Natural Surface with Lower Permeability Surfaces, - Runoff Resulting in Contamination of Surface Waters, and, - Release of Hydrocarbons. <i>Decommissioning Phase</i> No significant effects on the hydrological and hydrogeological environment will occur during the decommissioning stage. Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures. See Section 6.2.3 of NIS for Kingfisher specific mitigation. It is noted that the HDD works proposed beneath the River Nore will be undertaken outside the bird nesting season (i.e. outside March and July inclusive). Furthermore, a pre-commencement kingfisher survey will be undertaken prior to any HDD works to confirm the absence of kingfisher nest sites within 100m (i.e. the upper end

			of the predicted zone of influence for noise and vibration effects) of the proposed crossing point.
No other QIs were excluded.			
Assessment of issues that could give rise to adverse effects in view of conservation objectives: (i) Water quality deterioration and habitat degradation. As above for the River Barrow and River Nore SAC. Maintenance of good water quality is an attribute required to maintain favourable conservation condition for Kingfisher. Mitigation measures and conditions As above for the River Barrow and River Nore SAC. (ii) Disturbance. No kingfisher nesting sites were recorded within or in proximity to the location of the proposed crossing of the proposed GCR beneath the River Nore by HDD. Therefore, there will be no significant effects on breeding kingfisher due to disturbance. However, the river at this location provides suitable habitat for commuting and foraging Kingfisher. Noise and vibration surveys carried out by AWN (as submitted to the Commission on 28th October 2025), have revealed that the ambient noise levels at the proposed HDD location were measured in the range of 57 to 69 dB. Background noise levels were in the range 41 to 51 dB. Vibration levels were assessed to be imperceptible. Regarding the predicted noise levels associated with the proposed HDD works, noise levels vary with, among other things, the site conditions, but are predicted to be similar to ambient noise levels, i.e. approx. 62 dB at the riverbank, which is 30m distant. The noise levels associated with construction machinery are predicted to be similar but slightly above ambient noise levels at 30m, i.e. the cumulative construction noise level is predicted to be 71 dB. This is a moderate to low noise stimulus as per Cutts criteria (2013). At the higher end of the predicted vibration range, i.e. at 5mm/s there is the potential for disturbance. Disturbance (visual and noise) has been observed in this species within 50-100m (Goodship & Furness, 2022). There is, therefore, a noise/vibration stimulus within this potential zone of disturbance, i.e. within 50-100m. Without intervention, following the precautionary principle, adverse effects cannot therefore be ruled out for the foraging kingfisher of the SPA at the HDD crossing point. To avoid potential adverse effects with regard to potential disturbance effects on this SCI species, the HDD works proposed beneath the River Nore will be undertaken outside the bird nesting season (i.e. outside March and July inclusive). Furthermore, a pre-commencement kingfisher survey will be undertaken prior to any HDD works to confirm the absence of kingfisher nest sites within 100m (i.e. the upper end of the predicted zone of influence for noise and vibration effects) of the proposed crossing point. If breeding sites are identified and occupancy confirmed, all construction works within 100m will be suspended until the nest is no longer occupied. I also refer to the report of the Commission's Senior Ecologist who has noted the temporary nature of the proposed HDD works ((noted in first party appeal document as approximately 5 days). Taking the mitigation measures into consideration, I would concur with the view of the Commission's Senior Ecologist that likely significant residual effects on kingfisher will not arise. I note that mitigation measures are captured in Planning Condition No's. 4, 5, 9 and 11 of the Inspectors Report and the Commission's Senior Ecologist has recommended the inclusion of a specific condition which states that the 'HDD works beneath the River Nore will be undertaken outside the bird nesting season i.e. outside 1st March to 31st August inclusive'.			
In-combination effects I am satisfied that in-combination effects have been assessed adequately in the NIS. The proposed grid connection has been assessed as part of the overall project and no other plans and projects could combine to generate significant effects when mitigation measures are considered. I am satisfied that the applicant has demonstrated that no significant residual effects will remain post application of mitigation measures.			
Findings and conclusions The applicant determined that following the implementation of mitigation measures that the proposed development alone, or in combination with other plans and projects, will not adversely affect the integrity of the			

River Nore SPA.

Based on the information provided, I am satisfied that adverse effects arising from aspects of the proposed development can be excluded for the River Nore SPA considered in the Appropriate Assessment. No direct impacts are predicted. Indirect impacts would be temporary in nature and mitigation measures are described to prevent ingress of silt laden surface water and other construction related pollutants. Monitoring measures are also proposed to ensure compliance and effective management of measures. For disturbance, taking into consideration the temporary duration of the HDD works and the proposed mitigation measures, it is considered that likely significant residual effects on kingfisher will not arise. Overall, I am satisfied that the mitigation measures proposed to prevent such effects have been assessed as effective and can be implemented and conditioned if permission is granted. No significant in combination effects are predicted.

Reasonable scientific doubt

I am satisfied that no reasonable scientific doubt remains as to the absence of adverse effects.

Site Integrity

The proposed development will not affect the attainment of the Conservation objectives of the River Nore SPA. Adverse effects on site integrity can be excluded, and no reasonable scientific doubt remains as to the absence of such effects.

Appropriate Assessment Conclusion: Integrity Test

In screening the need for Appropriate Assessment, it was determined that the proposed development could result in significant effects on the River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233) in view of the conservation objectives of those sites and that Appropriate Assessment under the provisions of S177U was required.

Following an examination, analysis and evaluation of the NIS, the revised NIS, all associated material submitted with application and appeal, and taking into account submissions on nature conservation, I consider that adverse effects on site integrity of the River Barrow and River Nore SAC (Site code: 002162) and River Nore SPA (Site code: 004233) can be excluded in view of the conservation objectives of these sites and that no reasonable scientific doubt remains as to the absence of such effects.

My conclusion is based on the following:

- A full and detailed assessment of the proposed development, including the information presented in the NIS, Environmental Impact Assessment Report, and the supplementary information submitted by the Applicant by way of further information on the 28th October 2025, including the revised NIS, including the proposed mitigation measures and water quality monitoring in relation to the conservation objectives of the River Barrow and River Nore SAC and the River Nore SPA.
- Effectiveness of mitigation measures proposed including supervision and monitoring and integration into CEMP ensuring smooth transition of obligations to eventual contractor.
- Application of planning conditions to ensure application of these measures.
- The proposed development will not affect the attainment of conservation objectives for the River Barrow and River Nore SAC or the River Nore SPA.

Appendix 3: Summary of Applicant's Response to Application Observations

Table: Response to Submissions

Third Party Submissions & Response	
Issue	Applicant Response
<i>Visual Impact (Third-Party and the submission from CASS Ltd. who were engaged by KCC to review the EIAR)</i>	<i>Response to CASS Ltd. Submission</i> It is reiterated that the methods and processes followed during the LVIA and preparation of the materials and documents were produced in accordance with the frameworks, specifications and standards set out by best practice guidance for the LVIA of Wind Energy Developments in Ireland. With regard to the validity of the LVIA methodology, the Methodology used (Appendix 13-1) comprises several pages detailing the classification criteria and definitions used for determination of landscape and visual effects. The final outcome of this process includes a landscape or visual effect aligned with the classifications of significance set out in the 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' Environmental Protection Agency of Ireland [EPA], 2022). The LVIA Chapter is supported by as many objective and rigorous LVIA tools as is possible, which include GIS constraints mapping (22 no. A3 Maps in the Chapter), ZTV mapping, a Route Screening Analysis, 16 No Photomontages, 21 No. Photowires. All of the impact assessments are clearly set out with clear logical narrative, particularly the impact assessment tables for LCAs in Appendix 13-2 and the impact assessment tables for the 16 photomontages detailed in Appendix 13-3. A focal point in the Planner's Report addresses viewpoint selection, claiming that the selected viewpoints "do little to illustrate the worst-case exposure and are not typical of the views from many, if not most, of the dwellings likely to be affected" and further asserts that a significant number of dwellings with potential key viewpoints have not been assessed. While it is not feasible to create photomontages from every location within the LVIA Study Area, the viewpoints selected are consistent with best practice guidance, ensuring a balanced and representative assessment of the visibility and impact of the proposal on residential visual amenity. All viewpoints were chosen in accordance with SNH Guidance v.2.2 (2017), which recommends capturing a variety of perspectives from different distances, orientations, and elevations. The assessment of cumulative landscape and visual effects of the proposal in combination with other wind farms is comprehensively addressed in the LVIA Chapter and accompanying appendices, including cumulative assessment of landscape character (Appendix 13-2). Where possible, all cumulative effects have been addressed using objective tools such as cumulative ZTV mapping and inclusion of all cumulative turbines within verified photomontages. All assessments and analysis have been appropriately supported by written descriptions of cumulative interactions in the visual impact assessment tables in Appendix 13-3 and within the Chapter itself. <i>Residential Visual Amenity</i> The LVIA Chapter identified local residential receptors as being the receptors with the greatest potential to be impacted by the proposal. It is stated that the analysis and assessment in Section 13.7.3.8 considered the spread, layout and orientation of houses throughout the

	surrounding landscape and the nature of views in the direction of the turbines from residences. As per best practice guidance, it is not in the remit of an LVIA to conduct an impact assessment for every single residence, as this is not feasible and would be disproportionate, in mind of all other visual receptors requiring assessment. As reported in response to Refusal Reason 1, assessment of overall visual effects on local visual amenity accounted for many factors, not just 'visibility'. A common topic raised in third-party submissions also stated that the site's lower elevation relative to surrounding residences is a negative factor contributing to visual effects. It is stated that this is advantageous with regard to overall visibility of the proposed wind farm, as the landform, in which the proposed turbines are sited within serves to contain visibility, limiting visibility in the wider landscape beyond the immediate setting. Whilst this is positive for reducing visibility from a large number of visual receptors in the wider landscape, these landform characteristics have the potential to increase the likelihood of turbines being visible from the small number of residential receptors located upon elevated vantage points surrounding the site where there is the potential for clear and open views towards the proposed turbines due to the elevated location of the receptors relative to the base elevation of the turbines. It is noted that a rational and logical interpretation of this scenario is that these characteristics contribute to the proposed turbines appearing less visually prominent and less overbearing than if they were situated at higher elevation relative to residential receptors. <i>Visual Impact on Local Settlements and Local Rural Landscape</i> The change within the local valley introduced by the proposed turbines will be contained within the valley's natural landform, ensuring that visibility is largely confined to this area, enclosed by the surrounding topography and thereby limiting its visual exposure beyond the localised setting. However, this results in potential visibility from local receptors such as residential receptors and the settlements of Kilmanagh, Tullaroan and Ballycallan. This is acknowledged in the impact assessments within the LVIA Chapter. Residual visual impacts are considered to be of 'Moderate' or 'Slight' significance, accounting the design refinements, mitigation measures and other factors relating to actual visibility on the ground. The LVIA Chapter reports that the 'Substantial' magnitude of change is balanced with the 'Low' sensitivity to arrive at effects of 'Moderate' significance (EPA, 2022). Ultimately, it is stated that the Proposed Wind Farm was strategically sited in this local landscape which is of Low sensitivity and is in accordance with the siting and design guidance of the WEDG 2006 which directs the siting of wind energy developments towards landscapes of 'Low' Sensitivity. The site investigations undertaken as part of the EIAR and the LVIA Chapter determined that the land area of the proposed wind farm site itself is suitable for absorbing and accommodating the infrastructure of the Proposed Project whilst also being a viable area for wind energy development in mind of all the other constraints including the multiple disciplines in the EIAR. It is acknowledged that the proposed wind farm will cause an impact on the character of the local landscape setting, the local residential receptors and local settlements. However, these effects are deemed to be acceptable considering all the factors, design refinements and mitigation measures set out in the 'Mitigation by Good Design' in Section 13.1.3 of the LVIA Chapter, 'Likely Landscape and Visual Effects' Section in Section 13.7 of the LVIA Chapter, associated Appendices (Appendix 13-2 and 13-3), the ELAR, as well as the requirement to facilitate onshore renewable energy developments in

	line with National targets. <i>Other Landscape and Visual Receptors</i> Issues raised that some visual receptors, such as St. Canice's Tower and Freestone Hill have not been assessed in terms of visual impact. While the ZTV map indicates some partial theoretical visibility from the grounds of St. Canice's Cathedral, in reality, no direct visibility is expected to occur due to the screening effect of surrounding buildings in Kilkenny City. Photomontage 10, captured from a similar distance (10.6km) and geographical orientation is comprehensively assessed in Appendix 13-3 and has no residual significant effects arising at this viewpoint. Freestone Hill is similarly unlikely to experience any significant visual effects given the distance from the proposed turbines. Any visibility that occurs will be minimal, with the turbines appearing as distant background features. In terms of impacts the local sportsground of Tom Ryall Park, key guidance for LVIA (GLVIA3) states that sports grounds and associated receptors are classified as low-sensitivity receptors. In the case of Tom Ryall Park, the attention of players and spectators is primarily directed towards the activity on the field, rather than the surrounding landscape. Additionally, as part of the iterative design process undertaken during the project design, the turbine closest to the settlement of Kilmanagh was removed, effectively reducing visual effects on this local sportsground, and the local amenity. Third-party submissions indicate that the foothills to the east of County Tipperary encompass scenic areas, with the Slieveardagh Hills designated as an area of Secondary Amenity Area in the local planning policy (note - not an area of Primary Amenity Area in County Tipperary). Given the separation between the turbines and the designated area, along with existing cumulative wind farms in the region, the LVIA concludes that the overall residual landscape effect is 'Slight,' with the Proposed Wind Farm contributing no significant impact on the character of the Slieveardagh Hills. <i>Visual Screening from Vegetation</i> The Route Screening Analysis categorised and mapped the nature of visual screening along the local road network surrounding the site to objectively establish the reality of visibility towards the site compared with ZTV mapping and also inform selection of viewpoints. This Route Screening Analysis was conducted in November 2023 which ensured the analysis reflected real-world conditions in a worst-case scenario during periods of reduced vegetation cover where less foliage on roadside vegetation is present which would show greater potential for visibility. The reality is that the landscape of the local area does comprise a lot of mature boundary vegetation, and this boundary vegetation restricts the general visibility towards the proposed turbines from many receptors in the surrounding area. Whilst the LVIA Chapter did not account for natural cycles of vegetation change over a 35-year period (seasonal hedgerow maintenance, dieback, disease, storm damage, and climate change), it would be a very disproportionate and unfeasible measure to include a nuanced analysis of every potential possibility for potential changes to vegetation characteristics in this large area. It is stated that the Route Screening Analysis and nature of vegetation screening is just one element factored into the overall analysis of visibility which then contributes to the overall assessment of landscape and visual effects.

	<i>Selection of Photomontages</i> Third-party submissions raised the topic of photomontage viewpoint selection, suggesting that the views presented are unrepresentative of receptors. One submission included photomontages produced by an independent contractor. It is stated that all viewpoints were selected in accordance with best-practice guidance, SNH Guidance v.2.2 (2017) and GLVIA3 (2013), which recommend capturing a diverse range of perspectives from various distances, orientations, and elevations, for which the selection of locations is informed by a comprehensive desk study, site-surveys and site walkovers. In LVIA, photomontages are typically captured from public areas and locations representative of residential receptors. Producing visualisations for every individual receptor with a potential view of the proposed turbines is both unfeasible and disproportionate. For the EIAR, a total of 37 visualisations were prepared, comprising 16 photomontages and 21 photowires. Of these, 9 photomontage and 11 photowire locations were within a 5km radius of the proposed turbines, specifically selected to illustrate potential effects on residential receptors. <i>Accuracy of Photomontages in the EIAR</i> It is stated that the methods used for viewpoint selection, field surveying, data collection, data processing, graphics production and final presentation of photomontages within the booklet follow a rigorous approach utilising best practice guidance for LVIA, photomontage production and benchmark guidance for the production of wind energy photomontages. The photomontages are printed on A1 banner sheets of paper which present the proposed turbines enlarged to fit within a 53.5° horizontal field of view. It is acknowledged that photomontages can be subject to a range of limitations (Appendix 13.1). However, it is stated that every attempt has been made to adhere to benchmark best practice standards and specifications for photomontage production and presentation for the EIAR. Third-Party submissions queried the base elevations used for the proposed turbines within the photomontages relative to the surrounding landform. It is stated that WindPro software, a leading industry tool for wind turbine photomontage analysis was utilised that incorporates an accurate Digital Terrain Model (DTM) which allows for precise topographical evaluations, ensuring that turbines are placed in full accordance with the actual landscape as is reasonably possible. Overall, the modelling and data collection procedures used were thorough, precise, and fully aligned with industry standards. Third-party submissions questioned the accuracy of using panoramic photos, the lens and the guidance utilised in the methodology of the LVIA Chapter. It is contended that capture, modelling, rendering and presentation of the photomontages adheres to the professional standards set out by the LI TGN 06/19 (2019) in their guidance on photomontages and visualisation, as well as SNH Guidance v.2.2 (2017) - which is specific guidance for the presentation of photomontages of wind energy developments and is considered the industry standard and benchmark. The Applicant explains the methodology employed for the photomontages in detail. <i>Third-Party Unverified Photomontages</i> It is noted that 1 no. third-party submission included photomontages produced by an independent contractor. While these third-party produced photomontages show the general direction and visibility of the

	proposed turbines from the selected viewpoint locations, it is stated that the photomontages themselves are deficient as no methodology is provided for how these photomontages were produced, how data was captured, or how the images are presented. In addition, the images feature technical irregularities, resulting in unverified, inaccurate visualisations that cannot be relied upon to support discussion in relation to landscape and visual impacts. Examples of technical deficiencies of the submitted third-party photomontages relate to deficient methodology and inconsistency in Third Party photomontages, warping and distortion of panoramic imagery, incorrect wireline views, lens specification not detailed and absence of a reference to any guidance documents. <i>Assessment of Photomontage Viewpoints and Cumulative Visual Effects</i> A response is provided to specific commentary made by Third Party submissions in relation to specific photomontage viewpoints and the cumulative visual impact assessments arising in these viewpoints. Commentary is provided in relation to Viewpoint Nos. 8, 9, 10, 13 and 15. <i>Conclusions</i> It is stated that the LVIA Chapter reports that the greatest landscape and visual effects are localised to receptors in the immediate vicinity of the Proposed Wind Farm with acceptable levels of impact on local residential visual amenity, including cumulative effects with other wind energy developments. The Proposed Project remains in full alignment with local landscape and visual planning policies and designations, and design standards, ensuring a balanced approach between acceptable levels of landscape and visual effects and the urgent need to facilitate renewable wind energy development in Ireland.
<i>Impact on Water and Flood Risk</i>	Concerns raised with respect to the impact of the development on water quality (surface and groundwater), water supply schemes, flood risk, the adequacy of mitigation measures and the naming of local watercourses within Chapter 9 of the EIAR. The response to the various issues raised by Third Parties is set out in Appendix 2 of the First Party appeal (HES). It is stated that notable submissions were received from Hydro-G on behalf of KBT Responsible Energy and the Kilkenny West Group Water Scheme Cooperative Society. <i>KBT Responsible Energy</i> In terms of concerns regarding 'Assessment Reporting', it was noted in the submission that the name assigned to the river draining the site in the EIAR, i.e. the "Tullaroan Stream", was inappropriate and isolated the locals who know this watercourse as the Kilmanagh or Tullaroan River. It is stated that it was never HES's intention to mislead anyone through the naming of the local watercourses. HES just utilised the EPA's nomenclature which is best practice in the preparation of hydrological assessments. It is acknowledged that the watercourse draining the site is known by several different names and it was never the HES's intention to mislead any stakeholders by using the EPA's nomenclature. On the matter of 'WFD Compliance Assessment', the submission notes that the WFD Compliance Assessment Report (Appendix 9-3 of EIAR) is a desk study report and does not reference the site-specific field results which were presented in the Aquatic Baseline Report (EIAR Appendix 6-3). It is noted that the approach presented in the WFD

	Compliance Assessment utilises the available WFD status for local waterbodies, in line with best practice for the completion of WFD Compliance Assessments. WFD status should not be assigned to a waterbody by the public or by private environmental consultancies. Regardless of whether the Tullaroan stream_030 SWB is of 'Good' status (WFD 2016-2019 cycle) or 'Poor' status (biological monitoring completed as part of the baseline assessments), the tried and trusted, best-practice mitigation measures prescribed in the EIAR for the protection of surface water quality and quantity, will ensure that the proposed development: - will not cause a deterioration in the status of all SWBs assessed; - will not jeopardise the objectives to achieve 'Good' status; - does not jeopardise the attainment of 'Good' surface water chemical status; - does not jeopardise the attainment of 'Good' surface water quantitative status; - does not permanently exclude or compromise the achievement of the objectives of - the WFD in other waterbodies within the same river basin district; - is compliant with the requirements of the WFD (2000/60/EC): and, - is consistent with other Community Environmental Legislation including the EIA Directive (2014/52/EU), the Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC). For concerns raised regarding 'Potential Effects on the River Nore Surface Water Abstraction for Kilkenny City', it is contended that the potential for effects on the Kilkenny City (Troyswood) Supply has been comprehensively addressed in response to Uisce Éireann's submission (see below). It can be robustly concluded that there is no potential for effects on this supply due to its distant location from the proposed works, the minor and transient nature of the works located a significant distance upstream of the supply, the large volumes of water within the River Nore and the detailed mitigation measures prescribed for the protection of surface water quality. In terms of impacts on the 'Drinking Water Risk Assessment on the Catchment Scale - Kilmanagh Gravels and Ballingarry – GWBs', it is indicated that the WFD Compliance Assessment (Appendix 9-3) assessed the potential qualitative and quantitative effects of the proposed development on the Kilmanagh Gravels GWB and the Ballingarry GWB and in doing so also assessed the potential effect of the proposed development on these drinking water protected areas. The assessment concluded that with the implementation of the mitigation measures prescribed in the EIAR, the proposed development: - will not cause a deterioration in the status of all GWBs assessed; - will not jeopardise the objectives to achieve 'Good' status; - does not jeopardise the attainment of 'Good' groundwater chemical status; - does not jeopardise the attainment of 'Good' groundwater quantitative status; - does not permanently exclude or compromise the achievement of the objectives of the WFD in other waterbodies within the same river basin district;

	- is compliant with the requirements of the WFD (2000/60/EC), and, - is consistent with other Community Environmental Legislation including the EIA Directive (2014/52/EU), the Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC). In terms of 'Potential Effects on the Local Public Water Supplies', the third party submissions contend that the Callan PWS, Tullaroan GWS, BallyCallan Shale Region GWS and/or BallyCallan Limestone Region GWS have been incorrectly assessed in the EIAR. In response, HES note that the concerns regarding effects on the Callan PWS have been addressed in the response to Uisce Éireann's submission (see below). It is also stated that Sections 9.5.2.17 and 9.5.3.6 of the submitted EIAR present detailed, comprehensive and robust impact assessments of the potential effects of the construction and operational phases of the proposed development on the Tullaroan GWS, BallyCallan Shale Region GWS and/or BallyCallan Limestone Region GWS. Hydro-G have also stated that the EIAR has not considered potential impact of 1,000's of litres of gear oils and gases in the hub at the top of each of the turbine masts and the chemical coatings on the blades of the turbines. In response, it is acknowledged that the transformers within each of the 7 no. turbines will hold oil and any leaks could impact on local surface or groundwater quality. However, detailed mitigation measures are prescribed in the EIAR including that oil in the turbine transformers will be fully banded within the enclosed turbine. Therefore, the potential pathway to the water environment will be blocked and there will be no potential for surface or groundwater contamination. Concerning the use of chemical coatings on the blades of wind turbines and the potential for leaching, this has not been considered to be a significant issue previously. It is noted that weather resistant coatings are present on every wind turbine across the country and is not considered to be an issue which can result in significant effects on the local environment. <u>Flood Risk</u> - Hydro-G's submission states that the FRA and EIAR do not acknowledge the flood experience downgradient of the site in Kilmanagh and at the Graigue Ballycallan GAA Club Pitches. It is stated that this statement is untrue as the assessment presented in the FRA and in Chapter 9 of the EIAR refers to the OPWs record of a recurring fluvial flood event (OPW Past Flood Event ID: 2548) in the village of Kilmanagh. Furthermore, National Indicative Fluvial Flood zones are mapped along the Tullaroan Stream (Tullaroan/Kilmanagh River) in the vicinity and downstream of the site and show extensive flood zones which cover the Graigue Ballycallan GAA Club Pitches. These flood zones are discussed in Section 4.3.6 of the FRA, presented as FRA Figure F, and discussed in Section 9.3.6 of the EIAR. In terms of increasing the downstream flood risk from on-site infrastructure, the emplacement of the permanent development footprint at the site (in the absence of the proposed drainage system): - would only result in a 0.2% increase in surface water runoff from baseline conditions; - The drainage system has been designed to ensure that the proposed development will not change the existing flow regimes or the runoff rates across the site; - There will be no discharge or untreated or unattenuated runoff water; - All runoff from the developed areas will be routed through

	settlement/attenuation ponds; - The outflow from the settlement ponds will be released in a controlled (attenuated to greenfield runoff rates) and diffuse (not concentrated at one point but carefully spread out across the development) manner. Therefore, the proposed development will not increase the magnitude of the hydrograph peak; and, - The proposed development will therefore not contribute to the downstream flood risk. Hydro-G reference the embankment excavation and re-alignment works that have been observed and recorded in the Aquatic Survey Report (Appendix 6-3 of the EIAR) undertaken on the river and say that these have not been assessed in the FRA. It is confirmed that those alterations were not assessed in the FRA. However, the following is observed: - Downstream of WF-1: banks of the river channel appear to have been strengthened, and the channel has been widened. The strengthening of the LHS bank (left hand side) will prevent erosion and maintain water quality, and the widening of the river will slow water flow slightly, therefore reducing downstream flood risk slightly. - Downstream of WF-3: The modified river channel is in an area of sand and gravel that appears to be continuously altered by river flow. It appears the recent (observed) works here are intended to strengthen the damaged river bank in a likely attempt to improve water quality and prevent further erosion. The works also lengthen the river flow path (to its original pathway rather than the shortened pathway to LHS of the island), which in itself will slightly reduce any perceived increase in downstream flood risk or maintain its original form. In response to the criticism of the 'Site Investigation Methodology', it is contended that the completed site investigations were suitable because: - The use of point location geotechnical investigations (i.e. boreholes and trial pits) are a reliable and trusted method of site investigation for proposed developments; - These geotechnical investigations provide precise geological information at a given location, and the wider geology can be understood if there is a suitable quantity of point investigations completed at a given site; - The quantum of site data gathered to characterise the baseline soils and geological environment, comprising of 16 no. point investigations (14 no. trial pits and 2 no. boreholes) combined with site walkover surveys, logging of exposed soils/subsoils at the site and laboratory analysis of recovered soil samples, is considered to be suitable for the scale of the proposed development (7 no. turbine wind farm) and the geological/hydrogeological setting of the site; - The geology encountered at the site was relatively predictable with glacial tills and relatively shallow bedrock (0.4-3.3mbgl) encountered on the sides of the valley and thicker glaciofluvial deposits (up to 18.7m thick) encountered on the lower ground in the vicinity of the Tullaroan Stream (Tullaroan/Kilmanagh River); - The soils and subsoils encountered during the site investigations largely corresponded with the GSI mapped soils and subsoils (www.gsi.ie);

	- The siltstone bedrock encountered at the Proposed Wind Farm site was also consistent with the Killeshin Siltstone Formation as mapped by the GSI; and, - No karst bedrock is mapped at the site and karst features were recorded during walkover surveys or during the site investigations at the site which would warrant extensive geophysical surveys. <i>Kilkenny West Group Water Scheme Cooperative Society</i> Concerns raised in relation to the BallyCallan Limestone Region GWS where they conclude that 'the inherent vulnerability of the karst limestone aquifer, combined with the lack of soil data for T07' presents a risk to the GWS. In relation to the groundwater vulnerability and the karst aquifer, the following is highlighted: - The ZoC from the limestone aquifer to the Ballycallan GWS does not overlap with any area of the proposed wind farm site; - The Ballycallan Limestone Region ZoC is distant (c. 2km) from the closest proposed turbine (T07); - No limestone or karstic bedrock is mapped at the site; - The siltstone bedrock encountered during the site investigations corresponds with the GSI mapped Killeshin Formation which is classified as a 'Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones'; - Whilst some areas of the site are mapped by the GSI as having 'High' to 'Extreme' groundwater vulnerability, the areas in the south of the site which overlap with the BallyCallan Shale and BallyCallan Sand and Gravel ZoCs are mapped as having 'Low' to 'Moderate' vulnerability; - No excavations or works are proposed with the ZoC associated with the BallyCallan Limestone Region; - The only works proposed in the BallyCallan Shale and BallyCallan Sand and Gravel ZoCs relate to the construction of new roads and the upgrade of an existing road. These works will be of a short-duration and will have limited potential to impact local groundwater or surface water quality; - The EIAR details best practice mitigation measures for the protection of surface and groundwater quality. <i>Other 3rd Party Submissions</i> Potential Effects on Surface Water Quality - A robust and comprehensive impact assessment in terms of potential effects on surface water quality was presented in Chapter 9 of the EIAR which concluded that with the implementation of the prescribed mitigation measures, that there would be no significant effects on downstream surface water quality. It is stated that the prescribed mitigation measures are best in-class and will ensure that there is no potential for significant qualitative effects on the receiving surface water environment and have been successfully applied at many recently constructed wind farms across the country. Potential Effects on Groundwater Quality - The assessment presented in Chapter 9 of the EIAR concluded that with the implementation of the prescribed mitigation measures, that there would be no significant effects on local groundwater quality. As is the case above, tried and tested, best-practice mitigation measures have been prescribed in the EIAR in relation to felling, suspended solids, hydrocarbons, cement-based products, wastewater and morphological changes to watercourses which will ensure that there is no deterioration in water quality as a result of the proposed development. It is noted that short-

	term temporary excavation dewatering may be required in some turbine base excavations where all water pumped from the excavation will be treated via attenuation and settlement ponds or via a Siltbuster and there will be no discharge of untreated water from excavations. It is confirmed that there will be no discharge of untreated or unattenuated water associated with the proposed development. Furthermore, detailed, tried and test best practice mitigation measures are also proposed for the works along the proposed grid connection route. These works are shallow, minor and transient in nature with limited potential for effects on groundwater quality. Potential Effects on WFD Priority Action Areas - The Bregagh River sub-catchment is identified as a PAA under the Water Framework Directive. A small area in the east of the wind farm site is located in the Nore_SC_090 sub-catchment and the Bregagh (Kilkenny)_010 WFD river sub-basin. However, no infrastructure is proposed in the Bregagh (Kilkenny)_010 WFD river sub-basin with the closest turbine (T02) being located in excess of 120m from this river sub-basin, with topography in this area sloping to the west/southwest away from the Bregagh (Kilkenny)_010 river sub-basin. Therefore, there is no potential for the proposed development to impact this PAA or its WFD objectives. In terms of the proposed grid connection underground, 2 no. watercourse crossings are mapped within the Nuenna_020 river sub-basin which is also identified as a PAA. Due to the minor and transient nature of the works along the, it is stated that there is limited potential for effects. Furthermore, the EIAR details tried and tested, best-practice mitigation measures are proposed along the route. Potential Effects on Local Groundwater Well Supplies - There is limited potential for impacts on local groundwater wells for the following reasons: - There is no potential for effects on local dwellings to the west, north and east of the proposed Wind Farm site due to: - o the prevailing hydrogeological regime with all groundwater flow being towards the Tullaroan Stream; - o the low permeability till deposits present on the sides of the valley; - o the Poor Bedrock Aquifer with short groundwater flowpaths; and, - o the separation distances to potential receptors. - In the valley of the Tullaroan Stream, groundwater and surface water will interact as the local sand and gravel aquifer is unconfined in this area. The closest downgradient dwellings are situated c.1.2km south of the nearest turbine (T07). - All proposed excavations are temporary, and are near surface; - Limited temporary dewatering may be required at turbine bases; and, - The EIAR presents comprehensive mitigation measures for the protection of groundwater quality during all phases with respect to hydrocarbons, cement-based products, wastewater and also assesses the potential effects associated with piled foundations. The implementation of these mitigation measures, combined with the prevailing hydrogeological regime, will ensure that there are no residual effects on groundwater quality. Potential Effects on Downstream Designated Sites – It is noted that a comprehensive impact assessment was completed for the River Barrow and River Nore SAC, the River Nore SPA, the River Nore/Abbeyleix Woods Complex pNHA and the Inchbeg pNHA in Section 9.5.2.18 of

	the EIAR. The assessment concluded that no significant effect on downstream designated sites will occur for the following reasons: - The length of the hydrological flowpaths between the site and the downstream designated sites. The closest designated site (the River Barrow and River Nore SAC) is located c. 5.6km downstream on the lower reaches of the Tullaroan Stream; - The only works which are located in the immediate vicinity of a designated site is the new proposed crossing of the River Nore along the proposed grid connection route. There will be no instream works at this location and the crossing will be achieved by directional drilling under the river; - The potential for effects on other designated sites is limited given the increasing volumes of water and associated dilution effect in downstream watercourses (Munster, King's and Nore rivers downstream of the site and the River Nore downstream of the Pro proposed grid connection route); and, - Tried and tested, best-practice mitigation measures (as detailed in the EIAR and clarified further in the appeal response) for the protection of surface and groundwater water quality will be implemented during the construction phase to ensure that there is no deterioration in local or downstream water quality.
Noise	A number of third parties made observations in relation to noise effects due to the construction and operation of the proposed development. Responses to noise related observations have been prepared by AWN Consulting and are included in Appendix 3 of the First Party appeal. It is noted that the responses are provided to the summary of the Third Party observations included in the Planning Authority's Planner's Report on file. A summary of the issues raised and the response to same is included as follows: <i>Characteristics of Wind Turbine Noise</i> An observation noted that Slieveacurry Ltd was refused permission by the Commission the lack of guidance in the WEDG 2006 Wind Energy on low frequency noise and amplitude modulation, cumulative impacts, and potential impacts on residential amenity. In response, it is noted that the EIAR presents a discussion on the issue of Amplitude Modulation (AM) noise and if AM were to arise at a noise-sensitive location a best practice approach to this issue has been included within the EIAR which is repeated in the response. It is reiterated that it is not possible to predict an occurrence of AM at the planning stage. While OAM can occur, it is noted that the research has shown that it is a rare event associated with a limited number of wind farms. In relation to low-frequency noise, it is stated that there is a significant body of evidence to show that the infrasound associated with wind turbines will be below perceptibility thresholds and typically in line with existing baseline levels of infrasound within the environment. <i>Equine Receptors</i> It was highlighted that Bluegate Stud, a habitat for horses, is not identified or addressed as a sensitive receptor in the EIAR. It is acknowledged that there is an incorrect reference, in Chapter 5 of the EIAR, to the closest stud farm being Whytemount Stud, located in Kells, Co. Kilkenny, c. 14.5 km south of the nearest proposed turbine. However, it is confirmed that the closest registered stud farm is Bluegate Stud located c. 2.65 km south of T07. It is noted that horses on lands within the townland of Knockeenglass are also referenced within the submissions. A response to this issue is included in further detail below.

	<i>Grosvenor Report</i> The submission responds to the study of 'baseline acoustic monitoring' carried out by International Acoustic Research Organisation (IARO) at 11 houses at indoor locations during periods of between 3 and 20 hours. It is stated that the presentation of the results in the report appear to focus on narrow-band analysis in the low-frequency range. AWN note that the noise monitoring parameters measured are not applicable to an assessment of environmental noise from wind turbines as set down in the guidance used in the EIAR or the WEDG 2006. It is re-iterated that the baseline noise monitoring carried out by AWN in the preparation of the EIAR is in accordance with the relevant best practice guidance, i.e. the Institute of Acoustics (IOA) A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (IOA, 2013) and the supporting document Supplementary Guidance Note 1: Data Collection (IOA, 2014). On the issue of low-frequency noise and infrasound, AWN acknowledge that there are various studies in relation to the measurement of low-frequency noise in the vicinity of wind farms. They refer to commentary in the EIAR (Section 12.3.2) which concludes that there is a significant body of evidence to show that the infrasound associated with wind turbines will be below perceptibility thresholds and typically in line with existing baseline levels of infrasound within the environment. Furthermore, in the Draft WEDG 2019, a limit for low-frequency noise was raised. However, as presented in the EIAR, specific concerns expressed by a group of acoustic professionals working in the field are most relevant. <i>Huson Report</i> In terms of the relevant Wind Turbine Noise Criteria, AWN note that there is commentary within the EIAR regarding the continuing relevance of the WEDG 2006 and it is noted that the WEDG 2006 continue to be applicable. In relation to the Ground Absorption Factor 'G', which is a parameter of the noise modelling carried out for the EIAR, AWN confirm that the value of this parameter used was $G=0.5$. It is stated that this is fully supported in the guidance once the allowance for uncertainty in the sound power level also applied. The following is noted in section 12.3.7 of the EIAR: - "As per best practice guidance contained within the IOA GPG, an allowance for uncertainty in the measurement of turbine source levels of +2 dB is applied in modelling to all turbine sound power levels". In relation to the sound power levels used in the assessment, AWN confirms that the values as presented in main noise chapter were used throughout the assessment; with a highest sound power level of 106.6 dB LwA. The +2dB allowance for uncertainty is added to that for the noise model value giving 108.6 dB(A). The Huson Report also refers to the topics of amplitude modulation and low-frequency noise. It is stated that the responses for these topics provided for the Grosvenor report also apply here.
<i>Cumulative Effect</i>	It must be clarified that all EIAR chapters have assessed the cumulative effects that have the potential to arise from all wind farms within the cumulative study areas. These include cumulative noise and vibration impacts, cumulative visual impacts, cumulative impacts on biodiversity (including birds), impacts on hydrology and geology etc. Overall, it is

		stated that the proposed development has been designed to avoid and mitigate impacts on the environment and a suite of mitigation measures is set out within the EIAR. The mitigation measures set out in this EIAR will ensure that significant cumulative effects do not arise during the construction, operational or decommissioning phases. Additional detail in relation to the potential significant cumulative effects arising and, where appropriate, the specific suite of relevant mitigation measures proposed are set out within each of the relevant chapters of this EIAR.
Consideration of Alternatives		In response to concerns that alternative sites for the proposed development have not been adequately considered, it is stated that the process of identifying a suitable wind farm site is influenced by a number of factors, while wind speeds, the area of suitable or available land, proximity to a grid connection point and planning policy are all very important, a wind farm project must be commercially viable/competitive, as otherwise it will never attract the necessary project finance required to build it. It is stated that the site has been identified as having potential for a wind energy development as a result of a nationwide search of suitable lands. The site selection process has been constraints and facilitators led. In summary, the site selection process was guided by a nationwide analysis of suitable lands, balancing key facilitators and constraints. It is stated that the chosen site meets critical criteria, including environmental sensitivities, grid connectivity, adequate setbacks from sensitive receptors, and sufficient land availability. The site is located on low ecological value agricultural land and benefits from existing infrastructure while avoiding EU and National protected areas. The proposed underground grid connection has been designed to minimise environmental impact through horizontal directional drilling. Overall, it is stated that this location represents a sustainable and viable choice for renewable energy development.
Construction Traffic		Concerns have been raised regarding increased levels of traffic associated with the construction phase, citing an unacceptably high volume of traffic through the settlements of Tullaroan and Kilmanagh. Concerns also noted with respect to the potential significant disruptions to local road users due to the construction of the proposed grid connection where it is claimed that the impact of these disruptions which will cause additional travel expenses, along with the inconvenience and potential delays which has not been sufficiently addressed. Other traffic-related observations were made suggesting that the construction traffic would compromise the safety of road users (travelling in vehicles or on foot) in Kilmanagh and Tullaroan, traveling to and from the villages, the schools, GAA grounds and other recreational facilities. The proposed site entrance in Kilmanagh and its proximity to the local national school was also raised as an issue. <i>Volume of Traffic</i> During the construction of the proposed wind farm, it is stated that the traffic impacts will vary depending on the phase of work. Assuming a 12 month construction period, the general construction traffic will avoid the Turbine Delivery Route (TDR) through the settlement of Kilmanagh, with potential routes via Kilkenny identified for general construction traffic. It is forecast that this will have a temporary, slight negative effect for existing traffic. For 7 days of the 12 months, when the standard HGV delivery of smaller turbine components are made to the site, a temporary slight negative effect is forecasted for existing traffic. For 7 days when concrete is delivered to the site for the construction of the turbine foundations via the temporary junction on the L1009 west of

	Kilmanagh, it is forecast that the increase in traffic volumes will have a temporary moderate negative effect for existing traffic on the delivery route and at the temporary access junction on the L-1009. On the 19 nights that the abnormal loads carrying the large turbine components travel to site using the same access, it is forecast that the increase in traffic volumes will have a temporary moderate negative effect for existing traffic. It is noted that abnormal loads will be delivered at night, under Garda escort, in order to minimise disruption to general traffic. Following the implementation of all the management measures outlined in the Traffic Management Plan (Appendix 15-2 of the EIAR), this level of effect over the short-term duration of the construction phase is deemed acceptable. Proposed Grid Connection Traffic Disruption It is noted that the effects of the construction of the proposed grid connection route on the public road network (and the road users) has been assessed in Chapter 15 of the ELAR. Short term diversions (the longest proposed diversion being c. 13.1km) are required for local traffic, although the traffic volumes that will be impacted on the local road network are low due to low background traffic volumes. The construction of the route will necessitate a rolling works area. Therefore, by its nature the effects of these additional trips and diversions on the network will be transient and any potential negative effects, including inconveniences or perceived additional expenses, will be temporary and will be slight. Traffic Management A Traffic Management Plan (TMP), included as Appendix 15-2 of the EIAR, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior to construction works commencing. The TMP includes measures related to ensuring the safety of all road users during the construction phase of the proposed development. Proposed Wind Farm Site Entrances A general construction entrance will be constructed on the L-5024 at the north of the site and will be used as the main entrance for construction traffic throughout the construction phase. Appropriate sightlines will be established for the safe egress of traffic during the construction phase. On completion of the construction phase, this site entrance will be reduced in size and gated for security and will be used as an operational site entrance. A temporary access road will be constructed off the L-1009 in the south of the site which will facilitate the delivery of abnormal loads and concrete deliveries for the turbine foundations only. Appropriate sightlines will be established to the east and west of the temporary access road for the safe egress of traffic and following the turbine commissioning, this entrance will be reinstated.
Biodiversity	Botanical Data A submission was made in relation to the adequacy of the botanical data within the ecology reports submitted with the planning application. The Applicant is satisfied that all habitats within the site were accurately identified, that a thorough and robust assessment of potential impacts there-on was undertaken, and that the conclusions of the EIAR and the NIS submitted with the planning application remain valid. In relation to the mention of the FPO (Flora Protection Order) species orange foxtail (<i>Alopecurus aequalis</i>), it is stated that this was a typographical error and the actual species recorded was marsh foxtail (<i>Alopecurus geniculatus</i>). This does not alter the conclusions of the assessment undertaken which remain entirely valid.

	A number of concerns were raised relating to habitat loss, in particular hedgerow and treeline habitat, the level of detail provided regarding the proposed replanting measures to mitigate any losses, and the success of any planting measures. It is stated the proposed development will result in the loss of Hedgerow (WL1), Treeline (WL2) and Scrub (WS1) habitats as assessed in Section 6.7.2.1.2 of the EIAR. Mitigation has been prescribed in the form of enhancement of c. 3640m of currently heavily managed hedgerow by planting of additional native species, including a number of native tree species. In addition to this it is proposed to plant an additional 270m of new hedgerow within the north and south of the site. It is also proposed to create a new native riparian woodland buffer zone adjacent to the Tullaroan stream by planting c. 1.7ha of riparian woodland on both banks (as per the Biodiversity Management and Enhancement Plan (BMEP)). To address concerns raised relating to the monitoring of the success of the additional planting, it is stated that this will be monitored by a qualified ecologist as outlined in the BMEP. A submission was made relating to the recording of Black Poplar and the requirement for further investigation. It is clarified that this species was recorded outside of the infrastructure footprint and will not be lost as a result of the proposals and therefore no further surveys are required for this species. <i>Aquatic Environment</i> A submission was made in relation to the validity of MKO's electrofishing surveys due to alterations to the riverbanks and riverbed of the Kilmanagh/Tullaroan River that were undertaken prior to MKO's electrofishing surveys in 2023. The submission stated that fish could have been interfered with by the alterations and would have been more abundant before. In response, the Applicant has noted that they are satisfied that an accurate description of the baseline aquatic environment at the time of the surveys undertaken was provided within the EIAR and NIS submitted with the planning application. As per CIEEM (2018), ecological baseline conditions are those which exist in the absence of proposed activities. The alterations to the river mentioned in the submission were acknowledged within the Aquatic Baseline Report (Appendix 6-3 of the EIAR) which was undertaken in line with best practice guidance, optimal survey timing and in consultation with IFI. <i>Water Quality Impacts</i> A submission was also made relating to the adequacy of the assessment of potential effects on water quality and annexed species such as otter, salmon and lamprey arising from construction. It is indicated that both the NIS and Chapter 6 of the EIAR submitted with the planning application provide a thorough assessment of the potential for effects on water quality and aquatic receptors, including the River Barrow and River Nore SAC and the River Nore SPA and their Qualifying Interest species. No instream works will be required. Therefore, there will be no direct loss of supporting habitat for aquatic species. Mitigation measures for the protection of the aquatic environment, including aquatic species will ensure that there is no potential for significant effects on the aquatic environment or aquatic species due to deterioration of water quality. <i>Felling along the Proposed Grid Connection</i> It is noted that no trees are proposed for felling as part of the proposed

	grid connection route or to facilitate the proposed substation. <i>Bats</i> In response to concerns that the destruction of habitats and alterations to the local landscape will have a detrimental effect bat species within the site, the Applicant refers to Appendix 6-2 (Bat Report) of the EIAR, which notes that structures with identified roosts or potential roost features (PRFs) have been avoided by proposed infrastructure and will be retained. Therefore, no loss of roosting habitat or potential for bat mortality as a result of construction activities exists. It is acknowledged that while the majority of trees within the site will be retained, some habitat loss will be necessary to facilitate infrastructure and to establish the necessary separation between the proposed turbine blades and nearby vegetation (50m Bat buffer). It is stated that no roosts or evidence of roosting bats were identified in trees present within the bat buffers during the surveys. However, a number of trees presented Low to Moderate roosting potential. Therefore, on a precautionary basis, a pre-construction bat survey is proposed on any trees proposed for removal which have been identified as having potential for roosting bats. It is contended that the requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in 2023. Additionally, a bat box monitoring scheme is proposed to provide additional roosting opportunities throughout the site. No roosts or evidence of roosting bats were identified at any watercourse crossings associated with the proposed grid connection route during the surveys undertaken. It is acknowledged that while some crossings presented some potential for roosting bats, the works will be largely confined to the existing road network, no works are proposed for the underside of any bridges, and no trees are proposed for removal along the route. Therefore, no potential for bat mortality as a result of the construction of the route exists. <i>Marsh Fritillary</i> In response to concerns regarding the potential presence of marsh fritillary within the site, it is stated that 'a search for Marsh Fritillary (<i>Euphydryas aurinia</i>) records was carried out on the NBDC biodiversity map online viewer and no records of this species were found within hectads S35 and S45 or adjacent to the site boundary. A thorough search for suitable supporting habitat for marsh fritillary was also undertaken during the multi-disciplinary walkover surveys and no suitable habitat was recorded within the site. As no suitable supporting habitat for the species was recorded, dedicated marsh fritillary larval web surveys were not undertaken and no potential for impacts on this species was therefore identified. <i>Compliance with CJEU Case 258/11</i> The submission claims that a grant of permission would not comply with CJEU Case 258/11 due to lacunae in the application material. In response, it is noted that the precautionary principal was applied by MKO when preparing the Appropriate Assessment Screening Report (AASR) and Natura Impact Statement (NIS). A range of mitigation measure to ensure that there will be no adverse effects on water quality or the aquatic environment, including the aquatic QI habitats and species for which the relevant European Sites are designated, were detailed in of the NIS. Having regard to case CJEU 258/11, it is contended that the assessment undertaken does not contain lacunae.

	A comprehensive range of dedicated aquatic surveys were undertaken to inform the NIS, the methodologies and results of which are detailed in the NIS and associated Appendices 3 and 5. The assessment contained complete, precise and definitive findings, i.e. it identified a pathway for effects on water quality and as a result, aquatic QI habitats and species of the River Barrow and River Nore SAC and River Nore SPA, during both construction and operation in the absence of mitigation and therefore, prescribed precise and robust mitigation measures to block any pathways for such effects. Birds <i>Owls and night-time bird surveys</i> Concerns were raised that no owls were seen nor night-time assessments for owls undertaken by the applicant. In response, it is stated that dusk breeding woodcock surveys were undertaken within the site which also allowed the observer to survey for owls, i.e. barn owls and long-eared owls". The methodology involved the surveyor walking set transects during the period of one hour before sunset until one hour after sunset (or last light). In addition, vantage point surveys covering the site were carried out at dawn and dusk (i.e. starting one hour before sunrise or finishing one hour before sunset) during migratory/wintering periods throughout the two years of surveying. Suitable accessible buildings within the site were also investigated for evidence of barn owl presence, however no signs of barn owl were recorded. In relation to the submitted record of "owls" 1km from the site, it is noted that this is beyond the recommended surveying distance for owls as outlined in SNH (2017), i.e. within a 1km radius. Furthermore, this owl site record would be beyond the distance for potential effects as barn owl have a limit of disturbance at 50-100m, with many nest sites not being disturbed until a human was within 10m during the study. (as per Ruddock & Whitfield (2007)). It is stated that the Forestry Commission of Scotland (2006) recommends a 250m disturbance buffer around a known nest site where operations should be limited. The submitted record is significantly beyond this distance from the site thus limiting the potential for significant impacts. <i>Kingfisher survey</i> Submissions noted that it was not surprising that no Kingfisher burrows were observed near the Kilmanagh/Tullaroan River given the destruction of riverbanks in 2023, just before the survey was conducted. In response, it is noted that dedicated breeding Kingfisher surveys were carried out in April and May in 2021 and 2022, as detailed in Section 7.2.4.2.5 of Chapter 7 Birds of the EIAR. The results of these surveys are given in Section 7.3.6.1 of the EIAR and raw data is presented in Appendix 7-4 (Survey Data). It is stated that no potential for significant effects were identified following mitigation. <i>Adverse effects</i> A Third Party submission noted that "Kestrel and other raptor species, Cormorant, Curlew, Kingfisher are all observed onsite and as the applicant states, "Important migratory and recolonising species were also observed on site including Golden Plover, Greylag goose, Lapwings, Little Egret and even a Great Spotted Woodpecker was spotted once on site". In response, it is stated that the quote attributed to the Applicant is false and does not appear in any of the documents submitted with the planning application. In addition, cormorant, curlew, lapwing and greylag goose were not recorded within the site during the two years of surveying.

	<i>Golden plover avoidance rate</i> It is stated that there were only 3 no. observations of golden plover during vantage point surveys over the two years of surveying. The study of Golden Plover Avoidance Rates completed by Tom Gittings and appended to Appendix 7-6 Collision Risk Assessment was not commissioned directly for the proposed development. As outlined in the study, the previous 98% avoidance rate typically used for golden plover is a default avoidance rate not based on any published empirical evidence. The study, which looks at evidence from four UK wind farms, recommends recommend that collision risk modelling for wintering Golden Plover populations use two avoidance rate values: 99.6% and 99.8%. These are now the standard avoidance rates applied to golden plover for all collision risk assessments undertaken by MKO. Even when applying a 98% avoidance rate, which is a default rate not based on any published empirical evidence and as such no longer used in such assessments, the predicted collisions per year would be 0.42, i.e. less than one bird per year. Therefore, there is no potential for significant effects. <i>Passerines</i> Concerns were raised in submissions in in relation to the passerine population of the site. In response, it is stated that passerine population of the site were classified as of no greater than Locally Important (Lower Value). As per NRA (2009) criteria, receptors of Local Importance (Lower Value) do not typically require detailed impact assessment consideration. Furthermore, as per NatureScot guidance, it is generally considered that passerine bird species are not significantly impacted by wind farms due to their ecology and large (relative) populations. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the proposed development will have a significant population-level effect on passerine species. <i>Peregrine falcon</i> Surveys undertaken provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the proposed development on avian receptors. As outlined in the EIAR, this species was recorded very infrequently, i.e. only twice within the site in February and August, i.e. outside the core breeding season months. The species was observed on average once every 75 hours of vantage point surveys, this is a very low rate of occurrence. This very low rate of occurrence limits the potential for significant effects to result from the proposed development.
<i>Impact on Property Prices</i>	In response to concerns regarding the impact of development on property prices, it is stated that the only Irish study, a 2023 working paper by the Centre for Economic Research on Inclusivity and Sustainability (CERIS), suggests a potential 14.7% decrease in property values within 1km of a turbine. However, it is stated that the study is based on a small sample of 225 houses and acknowledges that no significant price reductions were found beyond 1km, with any observed effects diminishing over time. Given its limited dataset and working paper status, further research is needed before drawing firm conclusions. Overall, the existing body of research, particularly large-scale, peer-reviewed studies, does not support claims that wind farms significantly devalue nearby properties in the long term. While localized impacts may occur in specific cases, the evidence suggests these effects are not widespread or long-lasting, with house prices instead reacting negatively to the expectation of likely impacts and construction,

	but these prices recover during the operational phase.
<i>Lack of Community Engagement</i>	Submissions have claimed that there was a lack of meaningful public engagement, with misleading visuals, withheld information, and ineffective communication, violating the Aarhus Convention's principle of effective public participation. In response, it is stated that Chapter 2 and Appendix 2-1 of the EIAR provide comprehensive detail on the extensive community consultation that occurred and on the substantial community benefit fund associated with the proposal. It is stated that active engagement and consultation with the local community has taken place from an early stage during the pre-application phase of the proposed development. The Applicant notes that the consultation process has been an extremely valuable exercise and has provided a detailed, and enhanced understanding of the key issues and concerns of the local community, which have ultimately shaped the final project proposal.
<i>Impact on Sensitive Receptors</i>	<i>Local Schools</i> Concerns raised that the EIAR failed to adequately assess direct and indirect impacts on the local National Schools and Montessori School (St. Aidan's NS, Kilmanagh and Scoil Ruadhain NS, Tullaroan and Giant Steps Montessori, Ballagh) as sensitive receptors. The following is noted: - St. Aidan's NS (Sensitive Receptor ID - H081) and Giant Steps Montessori (Sensitive Receptor ID - H093) were considered in both the shadow flicker and noise impact assessments within the EIAR. - St. Aidan's NS, due to its distance and direction from the nearest proposed turbine will not experience any shadow flicker. In addition, there are no predicted exceedances of the turbine noise limits at this location, The proximity of this national school to the proposed temporary site access road off the L-1009 Local Road is discussed above. - In terms of Giant Steps Montessori School, H093, on days when weather conditions are such that shadow flicker can occur, will experience a maximum daily shadow flicker duration of 37 minutes. The mitigation measures outlined in will ensure that shadow flicker will not exceed the Guidelines threshold of 30 minutes per day. The Montessori school is not predicted to experience noise levels that exceed the turbine noise limits. The Montessori School is located on the L1008 which is not proposed to be used as a construction haul route. - Scoil Ruadhain NS, is located 2.9km north of the nearest proposed turbine. It is located significantly outside the Shadow Flicker study area (1.69km) therefore shadow flicker is not a concern at this property. The school is located outside of the predicted cumulative 35db noise contour. Therefore, it was not included in the operational phase noise impact assessment as noise impacts are not anticipated during the operation. This school is located along the proposed grid connection route. The potential construction phase noise effects on sensitive receptors along the route is assessed in Chapter 12, of the EIAR. Due to the rolling nature of the works area during the construction of the cabling route, the potential noise construction effect at sensitive receptors located adjacent to the route is considered to be brief, negative but not significant. <i>Equine Facilities</i> Racehorses – It is acknowledged that there is an incorrect reference in Chapter 5 of the EIAR that the closest stud farm being Whytemount Stud (c. 14.5km south of the nearest proposed turbine). However, it is

	stated that the closest registered stud farm is Bluegate Stud located c. 2.65km south of T07 which is significantly outside the Shadow Flicker study area (1.69km) and the predicted cumulative 35db noise contour. In the absence of national policy or guidance in relation of the development of wind farms near stud farms/equestrian centres, it is noted that MKO have reviewed the British Horse Society's 'Advice on Wind Turbines and Horses - Guidance for Planners and Developers' which states the following in relating to the siting of wind turbines in the vicinity of equine businesses; - 'The British Horse Society strongly recommends that the views and concerns of local equestrians should be recognised and taken into account when determining separation distances and that normally a minimum separation distance of 200m or three times blade tip height (whichever is greater) will be required between a turbine and any route used by horses or a business with horses.' Horses on lands within the townland of Knockeenglass are also referenced within the submissions and it is noted that landholdings within this townland, owned by landowners that are not involved in the proposed development, are located in excess of 570m from the closest proposed turbine (T07). Therefore, in both instances, the proposed turbines are at a distance beyond that of the British Horse Society's recommended minimum separation distance of 555 metres separation distance (based on three times the proposed turbine blade tip height of 185 metres) between a turbine and any equine facility.
<i>Land, Soils and Geology</i>	Concerns have been raised in third-party submissions relating to the reliance on trial pits during the site investigation effort and that there are no site investigation boreholes to the actual depths below the proposed invert elevations for the foundations. A response to these issues is discussed above and the Applicant refers to Appendix 2 of the First Party appeal prepared by HES. It has also been suggested that the use of the term "Borrow Pit" is misleading and contrary to EPA (2022) Guidelines on accessibility of ELAR to the public. It is noted that a borrow pit is a term that has been used in dozens of renewable energy development applications that have been granted by both local authorities and the Board.
<i>Built Heritage and Archaeology</i>	Concerns raised regarding the impact of the development on local vernacular architectural heritage, particularly historic bridges. There are also concerns that the turbines will significantly affect the visual setting of St. Aidan's Church of Ireland. In response, it is noted no significant direct or indirect effects to the recorded cultural heritage resource as a result of the proposed development have been identified. Where potential direct effects to sub-surface archaeology have been identified appropriate mitigation measures are proposed in order to ameliorate this potential effect. A standardised approach was utilised for the assessment of effects of visual setting (indirect effects), within which St. Aidan's Church of Ireland was considered (Table 14.17 of Chapter 14 (RPS ID C196)), according to types of monuments and cultural heritage assets which may have varying degrees of sensitivity. While direct physical effects to a site or monument can easily be assessed in quantitative terms, the assessment of effects on setting can be subjective and as such is a matter of qualitative, professional judgement and experience. It has been acknowledged that the potential indirect effect on the setting of St. Aidan's Church of Ireland is considerate to be moderate based on the proximity of the church to the closest proposed turbine and the number of turbines that will be theoretically visible from that location. However,

		in reality it is stated that the effect will be less severe since screening from vegetation and screening from other buildings into consideration which will alleviate the effect on setting.
<i>Insufficient Spacing</i>	<i>Turbine</i>	Concerns raised that the spacing between the proposed turbine locations stating that it does not comply with the separation distances recommended within the Guidelines (i.e. 3 rotor diameters in the cross wind direction and 7 rotor diameters in the prevailing wind direction). In response, it is noted that the design of the wind farm has been an informed and collaborative process from the outset, involving the designers, developers, engineers, landowners, environmental, hydrological and geotechnical, archaeological specialists and traffic consultants. The aim being to reduce the potential for environmental effects while designing a project capable of being constructed and viable. It is stated that the reference to 3 and 7 rotor diameters from the Guidelines relates to the required separation from any existing wind turbines rather than the required separation between the proposed turbines. The proposed wind turbine layout has been optimised using wind farm design software (WindPro) to maximise the energy yield from the wind farm, while maintaining sufficient distances between the proposed turbines to ensure turbulence and wake effects do not compromise turbine performance.
<i>Multiple Applications</i>		Concerns were raised about this planning application insofar as it being the third application for the proposed development since October 2024 and the accessibility of documentation, particularly detailed maps, which were difficult to view and interpret, leading to calls for invalidation due to limited public access. In terms of the multiple planning applications, it is noted that the first application was invalidated application due to missing site notices during their inspection. A clerical error was identified in the electronic copy of Chapter 3 of the EIAR in the second application. To rectify this, the application was withdrawn and resubmitted with the necessary documentation corrected. The third and final application (i.e. the current proposal) was validated ensuring all required documentation was included. It is noted that the community liaison officer (CLO) continued to communicate the situation to the local community and there were no material changes to the proposal. Regarding concerns about the Planning Drawings, the submitted drawing pack was confirmed by the Local Authority to be fully compliant with the Regulations, as evidenced by the validation of all three applications. Whilst it is acknowledged that large planning drawings can be difficult to view on some devices, the hard copy of the file at the office of the Planning Authority was available for public viewing.
<i>Concern about Applicant's Company Structure and Agent</i>		Concerns raised about the applicant company and whether it has the necessary backing to deliver the proposed development. Questions were also raised about MKO's credentials, and reference was made to issues at the Meenbog Windfarm. It is clarified that the Applicant, Briskalagh Ltd, is an associated company of Enerco Energy Ltd., an Irish-owned company based in Cork. It is noted that Enerco has extensive experience in the design, construction, and operation of wind energy developments across Ireland, with ongoing or completed projects in Counties Cork, Kerry, Limerick, Clare, Galway, Mayo, and Donegal and all operational wind farms are operating under standalone companies. Further detail is provided on Enerco's track record in the Irish Renewable Energy Sector. Regarding questions about MKO's credentials, information is provided on the company's experience. It is also noted that the proposed

	development is entirely unrelated to Meenbog Wind Farm (an upland peatland site), which is entirely irrelevant to the outcome of this application. It is acknowledged that the developer of Meenbog Wind Farm, Planree Ltd, is an associate company of Enerco Energy Ltd. A peat slide occurred during the construction of the Meenbog Wind Farm in November 2020, which was not attributed to any negligence by the developer. It is noted that Planree Ltd continue to work with the relevant Authorities to resolve the issues at that development, which is a clear indication of Enerco's commitment to follow through on the delivery of all their projects.
<i>Policy and Legislation</i>	Concerns have been raised that the 2021-2027 Kilkenny City and County Development Plan is subject to a Ministerial Direction, which means certain provisions of the previous 2014-2020 Development Plan may still apply. Despite the absence of a local Wind Energy Strategy for Kilkenny, it is stated that the Kilkenny CDP is supportive of renewable energy developments, such as the proposed development, as it sets out the need for Kilkenny to transition to a low carbon and climate resilient County with a focus on renewable energy to increase the County's energy sustainability and security. Specifically, a strategic aim of the plan is to generate 100% of the County's electricity demand through renewable energy by 2030. It is also noted that due to the comprehensive suite of international, national, regional and local policy support for wind energy, the principle of the proposed development at this location is acceptable.
Prescribed Body Submissions & Response	
Prescribed Body	Applicant Response
<i>Department of Housing, Local Government and Heritage</i>	<i>Archaeology (DAU)</i> The potential for effects is noted with respect to previously unrecorded sub-surface archaeology, especially features which may be associated with some of the recorded monuments along the proposed grid connection route, namely the historic town of Freshford (KK013-023-) and the graveyard at Freshford Lots (KK013-023002). A recommendation is made that an Archaeological Impact Assessment, including Archaeological Geophysical Surveys and Archaeological Test Excavation be carried out as part of a response to a request for further information to any decision being made on the planning application. It is noted that the Applicant's commitment to pre-construction archaeological testing in order to identify sub-surface archaeological features appears to have been missed by the Department. It is contended that the mitigation measures proposed within the EIAR are deemed sufficient to address the recommendation from the Department a condition relating to the same would be welcomed by the Applicant. <i>Natural Heritage (NPWS)</i> <u>Matters Relating to Appropriate Assessment</u> Otter – As noted, no otter holts were recorded within 200m of any proposed infrastructure. A single otter spraint was recorded in the west of the site adjacent to the Tullaroan stream, in proximity to where the grid connection route commences. No other evidence of otter was recorded within 150m of any proposed infrastructure. While a potential holt site was identified within the wind farm site on the banks of the Tullaroan stream, this was located c. 6.9km upstream of the River Barrow and River Nore SAC and in excess of 200m from any proposed infrastructure. Camera trap footage was also deployed at a second potential holt site within the site on a precautionary basis and no evidence of otter was recorded at this location. Upon further investigation, it was determined not to be a holt and was not considered further in the assessment. While the potential holt site and deployment of camera traps were not specifically discussed within the NIS given the

	large distance between the potential holt and the River Barrow and River Nore SAC (c. 6.9km hydrological distance), it is stated that this does not change the findings or conclusions of the NIS. While evidence of otter in the form of spraints and tracks was recorded along the proposed grid connection route, no otter breeding sites were recorded. A potential otter couch was also recorded 240m to the south of the location of the crossing of the River Nore by Horizontal Directional Drilling (HDD). However, given the distance between this potential couch and the works associated with the HDD crossing, there is no potential for significant effects thereon as a result of disturbance. Kingfisher - No kingfisher nesting sites were recorded within or in proximity to the location of the proposed crossing of the proposed grid connection route beneath the River Nore by HDD. Therefore, it is contended that there will be no significant effects on breeding kingfisher due to disturbance. While the river at this location provides suitable habitat for commuting and foraging Kingfisher, the HDD works will be temporary in nature, approximately 5 days therefore are unlikely to result in adverse effects on the species as a result of disturbance. The Applicant also refers to the proposed mitigation measures. Surface water protection measures – In terms of the submission in relation to silt fencing and water quality at watercourse crossings along the proposed grid route, the Applicant confirms that they agree with and are happy to comply with the Department's recommendation and can confirm that silt fences will be utilised downgradient of works areas adjacent or close to water crossings. <i>Matters Relating to Ecological Impact Assessment</i> Birds – In terms of scheduling vegetation removal works, the Applicant confirms that they agree with the recommendation made by the Department in relation to vegetation removal and they refer to the mitigation proposed within the EIAR. Bats – In terms of the proposed wind farm, it is noted that the bat survey methodology and assessment followed the most recent recognised industry best practice i.e. Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation (NatureScot 2021). Ground-level static detector surveys provide the core dataset for which the bat impact assessment is informed. The proposed wind farm site was surveyed and appraised in terms of the suitability of habitats to support roosting, commuting and foraging bats. As part of this, the potential for structures to support bats was assessed. The 4 no. structures and associate buildings were subject to additional internal and external inspections with emergence surveys carried out based on the results of the daytime inspections. No evidence of large maternity roosts or Nationally Important bat roosts were identified during the surveys. However, three roosts containing small numbers (ranging from 1-10 individuals) of soprano pipistrelles, Myotis spp. and brown long-eared bats were identified. While bat roosts have been confirmed within the site (Appendix 6-2), "All structures will be avoided as part of the Proposed Project, and thus no significant loss or damage to the identified or potential roosts within buildings/structures is anticipated." Therefore, no further surveys are deemed necessary at this stage. Habitat connectivity will remain and no significant impact on roosting, commuting or foraging bats is anticipated. In terms of the grid connection, a total of 9 no. bridge crossings, 2 no. culverts and 1no. concrete pipe will be traversed. It is stated that three

	crossings will require horizontal directional drilling (HDD) including beneath the River Nore and all other works will be confined to the road structure. It is noted that an incorrect reference was included in Table 4-5 of the Bat Survey Report (Appendix 6-2) in relation to Water Crossing no. 10 (WC10). Whereas Table 4-5 stated this watercourse will be crossed using HDD, the proposed crossing methodology at this location is a flatbed formation over bridge/culvert. Nonetheless, the conclusions of the assessment contained within the bat survey report and EIAR remain unchanged. Of the 3 no. crossings requiring HDD, one had no structure associated with it (WC1), one was assessed as having Negligible roosting potential (WC2) and one had Low potential (WC13) for opportunistic roosting. No evidence of bat roosts was found at any of the structures during the inspections and no significant impacts on bats as a result of the grid connection cabling is anticipated. It is confirmed that a pre-commencement inspection survey of WC13 will be carried out prior to commencement of works to determine if any bats are present, including any further recommendations to safeguard bats if required. The recommendation for a pre-commencement survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice as the function of the survey will be to assess any changes in baseline environment since the time of undertaking the survey in March 2024. Flatbed formation is proposed for nine crossings which varied in suitability and were assessed as Negligible (3no.) to Low (6no.). No evidence of roosting bats was identified during the inspections. It is stated that proposed works will be confined to the existing road corridor and no works are proposed on the underside of the structures. These crossings are subject to existing traffic conditions and it's likely that any potential roosting bats are accustomed to some level of noise and vibration disturbance. No significant impact on potential roosting bats is anticipated. On a precautionary basis, as low potential is present at 6 no. crossings, the Applicant confirms that a pre-commencement inspection survey will be carried out prior to works to determine if any bats are present, including any further recommendations to safeguard bats if required. Badger - It is confirmed that the sett identified during the surveys is a confirmed badger sett and that the word 'potential' used in Section 6.6.4.3 of the EIAR was in reference to the identification of the sett prior to deployment of the camera trap to confirm activity and usage of the sett. Amphibians and Reptiles – It is noted that the multi-disciplinary walkover surveys undertaken throughout 2023 and 2024 were designed to detect the presence, or likely presence, of a range of protected species, including reptiles and amphibians. As no evidence of populations of reptiles and amphibians being significant at more than a local level was recorded, no likely significant effects on these species are anticipated and therefore further survey/assessment was not deemed necessary. Habitats - The hedgerow habitat which will be lost consists of a mix of managed and unmanaged hedgerow and has been assigned Local importance (higher value) as they are important in maintaining connectivity to the wider landscape as well as providing suitable nesting habitat for birds as well as foraging habitat and shelter. In order to mitigate the loss of c. 1,388m of linear habitat, it is proposed to enhance c. 3,640m of heavily managed hedgerow through additional planting with native species and to plant an additional 270m of native hedgerow

	within the site. In order to comply with the Department's recommendation that planting is completed at the outset of construction, the Applicant can confirm that the proposed new hedgerow planting will be completed at the outset of construction to allow the vegetation to mature and develop, and prior to any removal of hedgerow habitat.
<i>Inland Fisheries Ireland</i>	A response to these matters raised by IFI is included within Appendix 2 of the First Party appeal prepared by HES. It is confirmed that all recommendations will be complied with. It is stated that the detailed tried and tested, best-practice, mitigation measures prescribed in the EIAR will ensure that the works associated with new and existing watercourses crossings will not result in any significant effects on downstream surface water quality.
<i>Transport Infrastructure Ireland</i>	<i>Proposed Turbine Haul Route</i> It is confirmed that consultation between the wind farm developer and PPP Concessions, Motorway Maintenance and Renewal Contractors (MmaRC) and local authorities (namely, Kilkenny County Council) will be undertaken prior to the commencement of turbine component delivery to confirm the delivery schedule and to ensure that the strategic function of the national road network is maintained. In addition, a Traffic Management Plan (TMP), incorporating all the mitigation measures is included as Appendix 15-2 of the EIAR, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior to construction works commencing on site. <i>Abnormal Weight Loads</i> It is confirmed that no abnormal weight loads will be associated with the proposed development and therefore, a technical load assessment was not deemed necessary as part of the scope of the traffic and transport assessment. <i>Grid Connection Routing</i> The proposed grid connection route will traverse a short section of the N77 National Secondary Road (c. 1.1km or 4.8% of the entire route). It is stated that the construction methodology of providing an underground grid connection cabling route under and along public road networks is well established and accepted nationwide. There are in excess of 300 wind farms currently operational in Ireland and the majority of these are connected to the national grid via underground cable connections predominantly along the public road networks. It is stated that the Applicant and their Contractor will work with the Road Authority to minimise impacts on construction and maintenance of the road network through the scheduling of construction of sections of the route and agreement with diversion routes where required. The additional points were noted: - Any works within the public road corridor will be subject to a road opening licence. - Once the grid connection works have been completed, it will be become an ESNB asset and be treated no differently to any other existing service or utility within the public road corridor. - It is confirmed that an assessment of alternative grid connection options has been undertaken and included consideration of an overhead line connection and routing of an underground connection through agricultural lands adjacent to the public road network. These options were not chosen due to the potential visual impacts of an overhead line and the need to construct approximately 18.2km of new access road through agricultural lands to accommodate an underground connection.

	- Regarding concerns that it is not technically feasible to lay multiple electricity connections in the same section of road given the separation distances required, it is stated that the underground cabling trench will measure c. 600mm in width. Therefore, there will be sufficient space for other utilities, including other grid connections, within the public road corridor. <i>Greenways</i> It is stated that there are no known Greenway or Active Travel proposals within the Site. However, should any proposals emerge in the future that use infrastructure corridors pertaining to the proposed development, consultation will be undertaken with Kilkenny County Council.
<i>Uisce Éireann</i>	<i>Callan PWS</i> Concerns raised regarding the potential to impact Uisce Éireann drinking water sources, with particular reference made to the Callan PWS and the surface water abstraction for Kilkenny City (Troyswood). These concerns are addressed below. It is stated that the robust and comprehensive impact assessment, as presented in Chapter 9, found that there is limited potential for effects on the Callan PWS for the following reasons: - The scale of the works proposed within the ZoC to the Callan PWS is infinitely small in comparison with the overall size of the ZoC. The total footprint of the Proposed Project within the ZoC is 5.93ha, which accounts for only 0.2% of the total ZoC area; - The separation distance between the closest turbine (T07) and the Callan Spring and its associated inner source protection area (>9km); - The emplacement of the proposed infrastructure at the proposed wind farm site will not significantly alter recharge or runoff rates. As detailed Table 9-20 of the submitted EIAR, even in the absence of mitigation measures, the development footprint at the site would only result in a 0.2% increase in surface water runoff from baseline conditions. This is due to the naturally high runoff rates across the site (due to the presence of relatively low permeability tills) with groundwater recharge confined to the lower ground along the Tullaroan Stream (Tullaroan/Kilmanagh River) where glacio-fluvial sands and gravels are present; - The construction of infrastructure and foundations within the ZoC will not impact groundwater flowpaths as groundwater can move relatively freely in the sand and gravel subsoils in the valley of the Tullaroan Stream and can easily migrate around any installed infrastructure; - The proposed drainage regime will ensure that there are no changes in surface water runoff and/or groundwater recharge rates and there will be no net loss of water within the ZoC; - Tried and tested, best-practice mitigation measures have been prescribed in the EIAR. These mitigation measures will ensure that there is no deterioration in water quality; - Short-term temporary excavation dewatering may be required in some turbine base excavations. All water pumped from the excavation will be treated via attenuation and settlement ponds or via a Siltbuster. There will be no discharge of untreated water from excavations. - The sands and gravel subsoils in the valley of the Tullaroan Stream (Tullaroan/Kilmanagh River) are excellent natural filters and will polish all treated water within a couple of metres of flow; and,

	- There will be no discharge of untreated or unattenuated water associated with the proposed wind farm. <i>Kilkenny (Troyswood Supply)</i> It is noted that an impact assessment of the potential effects on the surface water supply for the Kilkenny City (Troyswood] Supply, located on the Nore_160 river waterbody, was screened out of the impact assessment presented in the EIAR as there was no potential for effects on this drinking water supply were identified. The closest downstream surface water abstractions to the site (located on the Nore_220 river waterbody) and the proposed grid connection (located on the Nore_120 river waterbody) were assessed in the EIAR and the WFD Compliance Assessment. It is stated that the assessment presented in the EIAR concluded that there would be no significant effects on these drinking water protected areas, which are the nearest abstractions downstream of the proposed development. The proposed development has no potential for significant effects on the Troyswood supply because the works are minor, transient in nature and are distant from the water supply. The proposed works along the grid connection route are similar to pipelaying works that are competed by Uisce Éireann or their subcontractors. <i>Interactions with Uisce Éireann assets</i> It is noted that Uisce Éireann assets are mapped to overlap with the proposed grid connection along the L5023 in Tullaroan, along the R694 at Freshford and Ballyragget and on the N77. It is confirmed that a build near query would be lodged and a Confirmation of Feasibility would be acquired, where necessary along the grid connection route, following a grant of planning permission and prior to construction.
<i>Irish Aviation Authority</i>	The applicant confirms its agreement to conditions recommended by the IAA in the event of a grant of permission
<i>Gas Networks Ireland</i>	Gas Networks Ireland raised no objection to the proposed development but have provided a document detailing their code of practice for working in the vicinity of the Transmission Network.
<i>Health Service Executive</i>	Commentary of note within the response included: <i>Public Consultation</i> It is confirmed that Applicant has continued to engage with the local community since the application was lodged and will continue the public consultation process through the pre-construction, construction, operational phase. <i>Shadow Flicker</i> The Board is reminded that the WEDG 2006 is still the current, adopted guidance that must be adhered to by both developers and planning authorities. Thus, the inclusion of a condition arising from guidance that is still in draft format would be contrary to any grant of planning permission by local authorities and the Board for wind energy developments where the applicant committed to complying to the shadow flicker thresholds within the Guidelines (i.e. 30 minutes per day or 30 hours per year).

Appendix 4: Summary of Third Party Observations to Appeal

Principle of Development

The issues raised by Third Parties with respect to the principle of development can be summarised as follows:

- The submission from KBT Responsible Energy notes there are already four approved wind farms Ballybay, Foyle, An Cnoc, and the upcoming Farranrory situated within 10km of the site. These developments position the local community at the forefront of Ireland's energy transition and it means that communities in close proximity to the site are already generating nearly 22 times more renewable wind powered electricity per person than the national average consumption per person.
- Concerns highlighted with respect to the location of the proposed met mast relative to the turbines and is noted that the Applicant has not responded to this issue. An improperly positioned meteorological (met) mast in a wind farm can have a significant negative impact on the entire project. The met mast is critical because it collects wind data (speed, direction, turbulence, etc.), is used for energy yield assessment, turbine siting, and financial modelling. If the mast is not sited correctly, there are several potential consequences including:
 - o Inaccurate Wind Resource Assessment,
 - o Suboptimal energy capture, Increased wake losses, uneven wear due to turbulent inflow.
 - o Turbulence and Shear Mischaracterisation.
 - o Obstructions and Flow Distortion.
- An observation notes that the First Party appeal is silent on the unauthorised temporary met mast structure that was erected for far longer than was permissible. The Board is requested to deem all wind speed measurements and meteorological data that were captured from this illegal met mast structure as invalid/inadmissible.

Planning Policy

The issues raised by Third Parties with respect to planning non-compliance can be summarised as follows:

- The proposed development fails to comply with the policies of the Kilkenny CDP, 2021-2027.
- It is stated that the developer attempts to argue that the current Kilkenny CDP should be disregarded due to a ministerial direction. However, the observer refers to section 31(6)(b) of the Planning and Development Act which indicates that the former wind energy strategy map remains in force. This document does not designate the subject site as suitable for wind development. To selectively dismiss this, while relying on the current suspended CDP mapping is misleading and legally flawed. Therefore, the appeal materially contravenes the operative plan. The submission refers to the KBT Submission 2-Group Submission, Appendix 6 letter from F P Logue Solicitors, dated 7th January 2025 which outlines their view on the Ministerial Direction on Kilkenny CDP. The submission also refers to the Board's opinion in relation to White Hills Wind Farm ABP-315365-22 where a similar opinion was formed.
- An observation notes that the proposed development fails to accord with the relevant policies of the Kilkenny CDP, 2021-2027, which include:
 - Section 9.2 - Natural Heritage and Biodiversity.
 - Chapter 9.3 - Built and Archaeological Heritage.
 - Section 10.2.6 – Flooding.
 - Figure 10.2 (Wind Energy Strategy of the Kilkenny County 2014-2020 development plan) Spatial Categorisation of Wind Energy.
 - Core Strategy: Balanced Rural Growth.
- Furthermore, it is an observer's view that the proposed development is in conflict with Ireland's National Planning Framework and Climate Action Plan, fails to comply with EU law under the Habitats and Water Framework Directives and contravenes the European Landscape Convention by failing to protect landscape as lived cultural space and undermines public participation principles under the Aarhus Convention.

Application Deficiencies

The issues raised by Third Parties with respect to application deficiencies can be summarised as follows:

- It is highlighted that the EIAR is deeply flawed and both Kilkenny County

Council and the independent consultants CAAS have identified serious deficiencies across multiple chapters that have not been addressed in the appeal. Key deficiencies include:

- Incomplete noise and health assessments, no amplitude modulation or infrasound modeling.
- Visual impact photomontages taken from unrepresentative locations.
- Hydrology chapter lacking flood pathway and groundwater modelling, despite known vulnerabilities.
- Cumulative impact chapters fail to assess real world combined effects with existing and permitted wind farms.
- Species surveys that are outdated, missing key data, or based on faulty identification, for example erroneous inclusion of protected flora species.
- Concerns are raised regarding the Applicant's intention to select turbines through a competitive tender process and dictated by the manufacturer. This approach is problematic, as key factors such as noise mitigation, ice accumulation controls, and flicker shutdown mechanisms and varying setback requirements depend heavily on the quality and specifications of the turbines.
- An observation highlights the following deficiencies in the application:
 - It is indicated that the Applicant mapping is fragmented and lacking critical contextual data. Of the 92 submitted plans, only one (230502-01) includes a scaling bar.
 - It is stated that the absence of scaling bars made it nearly impossible to grasp the overall layout, including turbine placement. Some maps lack background details, such as rivers, villages, and houses, making orientation difficult (e.g. Site Location Map 230502-2 P01). A particular concern is drawing D105 from Hydro Environmental Services, which depicts a new entrance in Kilmanagh village but omits the nearby housing estate. This is misleading, as other available maps (e.g. 230502-04, Sheet 1 of 25) include these houses.
 - Previously refused applications were excluded from cumulative impact analysis.
- It is an observer's view that the planning application failed the test of accessibility, completeness, and procedural fairness required for major

infrastructure development, therefore violating the Aarhus Convention principle of effective public participation.

Consultation

The issues raised by Third Parties with respect to inadequate consultation can be summarised as follows:

- It is indicated that no amount of community funds can compensate the local community for the lasting impacts of living and working in the environs of these large scale turbines.
- Throughout the application and appeal process, the local community has been misrepresented, omitted or overlooked. It is stated that the Applicant:
 - Ignored Kilmanagh village on the public materials despite its proximity,
 - Denied offers for community sourced photomontage viewpoints,
 - Failed to consult meaningfully with residents or community groups,
 - Deferred questions regarding well placed community concerns regarding health, environment and ecology to the planning application where opportunity for real community engagement has now ceased,
 - Made no reference to the 800 signature community letter submitted in 2023 nor the large volume of individual submissions and community signatures attached to the KBT community submission to KCC, all of which violates both the spirit and the requirements of public participation as outlined in the Aarhus Convention, to which Ireland is a party.
- The Grounds of Appeal document (GOA) fails to demonstrate any meaningful, proactive engagement with the community. While the developer cites compliance with statutory processes and minor layout changes, this falls far short of the transparent, inclusive dialogue expected of modern renewable energy projects.
- It has been highlighted that the systematic omission and minimisation of Kilmanagh village, the settlement most directly affected by the proposed Briskalagh Wind Farm must be noted as the Applicant has failed entirely to address this in the GOA. Kilmanagh is occasionally mentioned in the developer's reports, but it is consistently grouped with Tullaroan and Ballycallan into a vague category of "local receptors." This downplays its unique

vulnerability, especially given:

- Its proximity to turbines and haul routes,
- Its residential density, including housing estates and rural dwellings,
- Its public amenities such as a national school and heritage structures.
- It is indicated that the omissions by the Applicant reflect a consistent pattern across the project lifecycle, whereby:
 - Kilmanagh was excluded from early engagement materials, despite being the nearest village.
 - Its community assets, homes, and heritage were downplayed, misrepresented, or ignored in key assessments.
 - No photomontages were ever produced to show the true visual impact on the heart of the village.
 - And at every stage, Kilmanagh was treated not as a stakeholder, but as a peripheral concern.

Alternatives and Cumulative Impacts

The issues raised by Third Parties with respect to Alternatives and Cumulative Impacts can be summarised as follows:

- Concerns raised regarding the overall scale of the turbines, the suitability of the site and the Applicant's assessment of alternatives.
- It's difficult to accept that a site requiring 23km of grid connection along small rural roads, through two rural villages and crossing a significant designated European site is suitable for a wind energy development.
- The proposed turbines are more suited to very remote sites that have significant setbacks from houses and settlements, for example state owned bog lands in the midlands.
- The environmental impact of different turbine size options has not been properly assessed in the EIAR with regard to viable alternatives.
- It is indicated that there are 18 existing operational wind turbines located within 10 kilometers of the site. The proposed development will create a proliferation of turbines in the area, especially for houses and communities that will be located between existing and proposed turbines. There will be cumulative impacts in terms of shadow flicker, noise and visual impact.

- By selecting the largest available turbine, the applicant has made no real attempt to minimize cumulative impacts.
- The proposed development fails to provide a comprehensive, site specific and holistic assessment of the combined visual, noise, biodiversity and human health impacts from all wind farm developments in the area. It is stated that the level of development proposed in a confined, inhabited landscape raises real and long term risks to public health, biodiversity and social cohesion, none of which are adequately addressed by the developer.
- The cumulative impact of multiple wind farms within 10km of the proposed development demands an analysis beyond individual assessments, factoring in combined noise and infrasound levels, flicker, visual intrusion, and ecological disruption. Additionally, changes in land use, wildlife habitats, and socio-economic effects must be fully addressed.
- An observation highlights that significant discrepancies have been noted in the planning application by KBT Responsible Energy, independent experts Grosvenor Consultancy, Huson & Associates, Dr Pamela Bartley, Mr Roger Goodwillie, along with the planning authority KCC and CAAS Consultancy in fourteen chapters of the EIAR. Until all discrepancies in those chapters are fully resolved, the Applicant cannot reasonably claim that cumulative impact has been properly assessed.

Procedural Matters

The issues raised by Third Parties with respect to procedural matters can be summarised as follows:

- The Applicant has misrepresented the company structure in community engagement, and the appeal does not satisfactorily address concerns in relation to compliance, enforcement and liability.
- An observation notes that questions were raised by the community regarding the ownership structure of the applicant Briskalagh Ltd. It is stated that the applicant has not addressed these questions in their Grounds of Appeal (GOA). The GOA states that Briskalagh Ltd is an associated company of Enerco Energy Ltd., an Irish Owned company based in Cork. The ownership of Briskalagh has not been addressed. It is concluded by the community that an

SPV is being used in this instance to protect the interests and assets of the owners where they are engaged in very high risk environmental construction activity such as wind farm development.

- The issue of Meenbog was raised by this community as it is owned by Planree Ltd. which is another associated company of Enerco Energy Ltd. similar to Briskalagh Ltd. It is indicated that this company was the subject of a High Court Order in April 2024 in which the company was prohibited from carrying out any further development of the Meenbog wind farm due to what was described as "multiple" deviations from the Planning Permission. It is stated that it is difficult for this community to reconcile all of the claims being made by the Applicant in their planning application and GOA, when an associated company has been found guilty by the High Court and the Court of Appeal of "multiple deviations from a Planning Permission" on another renewable wind energy development.
- The Applicant has failed to address issues relating to incomplete maps (e.g. missing scale bars, housing omissions), national schools omitted from scoping stage and exclusion of refused projects.

Impact on Property Values

The issues raised by Third Parties with respect to property values can be summarised as follows:

- The Applicant dismisses Irish research showing negative impacts (CERIS, 2023) on property prices while relying on older, foreign studies irrelevant to this context.
- A high volume of homes within 2km of the turbines are likely to experience severe amenity degradation.
- It is highlighted that the potential loss in value of existing properties poses an unfair economic impact on those who have invested in their homes for its tranquility and natural beauty.
- There has been no acknowledgement of the local context, particularly that this proposed wind farm would be:
 - one of the largest wind farms in Ireland by turbine height (185m),
 - located just over 1km to a village centre (which is unprecedented),
 - and the number of family homes located within 2km and which are

predicted to experience significant cumulative impacts.

Population and Human Health

The issues raised by Third Parties with respect to residential amenity and population and human health can be summarised as follows:

- The Applicant has failed to address judicial precedent (Justice Egan ruling) and has failed to rebut community's health-based evidence.
- Shadow Flicker impacts exceed legal threshold for 41 homes. It has indicated that the flickering light can penetrate homes, creating a disruptive strobe effect that impacts daily life and can cause issues such as migraines, nausea or general discomfort. Proposing non-binding mitigation through turbine shutdowns or window coverings shift the burden onto affected residents rather than the developer.
- There are no guarantees that the Applicant will implement SCADA, nor that it will function effectively. Moreover, the proposal to offer "screening" or "blinds" instead of enforcing turbine shutdowns places the burden on impacted residents - not the developer.
- It is noted that the Applicant references and relies on data from surveys and reports on human health & public perception of wind farms which are completely out of date and bear no relevance to the industrial scale project that is being proposed adjacent to Kilmanagh & Tullaroan villages and the significant number of family homes located within close proximity to the proposed development.
- Concerns regarding electromagnetic fields and its impact on human health.
- Concerns are raised with respect to low frequency noise and it is indicated that studies have shown that this noise, especially during night hours, disrupts sleep patterns, potentially leading to stress and other health problems over time.
- Noise impacts will be exacerbated due to the undulating landscape.
- The applicant relies on outdated standards and fails to model amplitude modulation or infrasound, both of which are known to cause adverse effects in some of the individuals, particularly when turbines are cited in close proximity to homes and villages. Reference is made to the findings of the recent High Court case in Wexford and the judgment by justice Emily Egan.

- The submission refers to the conclusions of the First Party Appeal review prepared by the observer's consultant which indicate that consenting the proposed Briskalagh wind farm would create an unacceptable risk of adverse wind turbine noise (WTN) impacts to the local residents and therefore the application should be refused development consent.
- Concerns raised regarding the siting and location of the proposed construction compound and spoil management area to the south of T7 in terms of noise impacts and additional traffic generation in close proximity to the village of Kilmanagh.
- Concerns raised regarding the proximity of the turbines to local GAA pitches in terms of the generation of noise pollution and visual distraction by shadow flicker.
- Health and safety related concerns associated with a large scale construction project of this nature.
- The proposed development will discourage young people from staying in the locality and will contribute to rural decline.
- The Applicant has demonstrably failed to acknowledge and adequately assess the various risks and impacts to St. Aidan's National School (Kilmanagh Village), Scoil Ruadhain (Tullaroan Village), Giant Steps Montessori (H104), Ballagh, Kilmanagh as sensitive receptors.
- Concerns are raised by an observer that the applicant has failed to identify their dwelling as also being a place of employment, that being a Montessori school. The applicant has failed to acknowledge, consider and assess all of the additional risks and the direct and indirect impacts relating to the school, its pupils and its staff. It is indicated within the submission that there is factually incorrect information about the location of the Montessori school in the application.
- Concerns are raised with respect to the impact of the proposed development on the health and welfare of staff and young children, many of whom are sensitive to loud noises, low frequency sound and a light flicker, especially those who are neurodivergent. In addition, it is highlighted that there are children who present with sensory difficulties and similar concerns exist.
- It is contended that regardless of the mitigation actions proposed by the

developer, the health and well-being of these young children will be adversely affected.

- The proposed turbines will dominate the skyline and create a sense of industrial intrusion which will affect residents' enjoyment and use of their own outdoor spaces.
- Concerns that development will negatively impact the health and well-being of children through increased levels of dust, vehicle exhaust particulates and carbon monoxide created by development traffic.
- Safety concerns are highlighted due to the proximity to existing dwellings and the risk of structural failure and ice throw in winter.
- Concerns raised with respect to the impacts of the development on land use and its impact on horses.

Separation Distances

The issues raised by Third Parties with respect to inadequate separation distances can be summarised as follows:

- The turbine spacing violates the recommendations provided within the WEDG 2006.
- The appeal does not supply the minimum turbine manufacturer distances and uses hypothetical turbine model for noise and flicker modelling.
- An observation refutes the applicant's response to their concerns raised with respect to turbine spacing. It is highlighted that insufficient turbine separation distances result in excessive wear and tear, increased noise and reduced output capacity. It is stated that the lack of understanding of the design teams regarding the critical issue of turbine separation distance is worrying, especially in afforested and hilly terrain.
- The submission refers to a link from SEAI who have published a series of documents on how to design and plan a wind farm layout. It is highlighted that these advice documents are specifically for turbines within a proposed wind farm. It is indicated that the afforested and hilly terrain of this project will increase those spacings by approximately 20%.
- An observation refers to the Huson & Associates "Review of Proposed Briskalagh Wind Farm Planning Application", as per KBT "Submission 1" which

states that 'The distance between the wind turbine towers is significantly less than recommended to reduce wake turbulence effects which can lead to higher noise emissions and lower efficiency.'

- It is noted that the close spacing of the seven proposed turbines is likely to cause turbulence within the wind farm, reducing power output, increasing acoustic emissions, and accelerating wear and tear, ultimately exacerbating noise issues over time.
- An observation refers to the legal case of Gibbet Hill (Byrne V ABO Wind Ireland Ltd) where the plaintiff's house was upwind of the windfarm and beyond the required minimum separation distances. However, the turbine separation distance from each other was less than 5 rotor diameters apart i.e. below the 2006 WEDG recommendations. It is contended that the inadequate separation, coupled with the adjacent forestry caused a huge wind shear factor at Gibbet Hill which caused both turbulence and noise. The observation also refers to Ballyduff Windfarm legal case (Webster & Another vs Meenacloghspar (Wind) Ltd; Sorten & Another vs Meenacloghspar (Wind) Ltd.) which ruled that inflow from one turbine to another may have been a factor in the noise nuisance element.

Visual Impact

The issues raised by Third Parties with respect to landscape and visual impacts can be summarised as follows:

- It is stated by an observer that the application contained photomontages intended to illustrate the potential visual impact of the development. However, in multiple instances, key details are obscured by trees, buildings, or other features, raising concerns about the accuracy and transparency of the visual assessment. It is noted that:
 - 6 of the 7 photomontages within 2km were taken in August, before hedge-cutting season, when dense vegetation reduced visibility,
 - Foreground objects, overcast lighting, or strategic siting obscured key visual details in several official viewpoints (e.g. VP8 and VP13)

For a comprehensive analysis of these issues, the observation refers to KBT Submission 2 – Group Submission (Chapter 7,

Landscape/Visual/Photomontages).

- The lack of meaningful engagement with residents has further eroded confidence in the completeness and reliability of the Applicant's visual impact assessment. Consequently, it is indicated that the community was left with no option but to independently commission alternative viewpoint images which were included in KBT Submission 2 (Appendix 7). It is the observer's contention that this viewpoint images provide clearer, more accurate, and unobstructed representations of the potential visual impact of the proposed development.
- The Applicant presented selective viewpoints in the application which obscured the true scale and visual impact.
- The Applicant chose to focus on dismissing the community montages presented by KBT Responsible Energy in their submission to Kilkenny County Council.
- It is indicated that the area has already a proliferation of medium scale wind turbines and the proposed development will dominate the local landscape and be overbearing for the households in the immediate site environs.
- The proposed development will significantly alter the visual character of the community, will dominate views will create an industrial aesthetic that is out of place in a rural area.
- The alteration to the landscape risks undermining the sense of place and community cohesion, negatively impacting residents' mental health and well-being.
- Concerns have been raised regarding the visual impact of the proposed development on Tom Ryall Park within Kilmanagh. It is stated that it is entirely foreseeable that Tom Ryall Park is at risk of falling out of favour with opposing teams, particularly as a preferred neutral venue due to visual clash/visual distraction issues should the Briskalagh wind farm should it be permitted. It is noted that photomontages should have been provided from this location.
- The applicant has failed to adequately assess the cumulative effect on the character of the landscape in respect of visual distraction, visual clash, consequential loss of attraction, consequential loss of gate revenue/income.

Hydrological and Hydrogeological Impacts

The issues raised by Third Parties with respect to hydrology and hydrogeology can be summarised as follows:

- An observation has been received by the Kilkenny West GWS Cooperative Society Ltd., the governing body for the Ballycallan Group Water Scheme (GWS), which provides water to over 320 residents and community facilities in Kilmanagh. Included with the observation is the GSI 'Establishment of Groundwater Zones of Contribution' (May 2018) and the Kilkenny County Council Preliminary Assessment Report for the Rationalisation and Amalgamation of Group Water Schemes (Ballycallan GWS, May 2021).
- It is noted that the proposed development area lies within zones of high to extreme groundwater vulnerability, with particularly sensitive areas mapped for turbine installation, spoil management, and borrow pits. Geological Survey Ireland (GSI) vulnerability maps confirm that T01 and T02, as well as associated infrastructure, are positioned in zones where pollutants could readily reach the groundwater. The reliance of Ballycallan GWS on a karstified limestone aquifer, with its rapid and unfiltered water flow through fractured rock, makes any contaminants introduced at the surface a serious risk to groundwater quality. Given the importance of this aquifer for the community's water supply, any disruption within this ZOC could have immediate impacts on water quality and safety for residents.
- Concern raised that no test pit was dug for the proposed site of T07, an omission that leaves a significant gap in the understanding of the soil and subsoil conditions at this location. Without a test pit, there is no baseline for soil composition, contamination risk, or depth to bedrock at the T07 location. This absence of data is particularly concerning given that T07 is situated near groundwater recharge areas that are crucial for maintaining the quality and flow of the Ballycallan GWS water supply. The lack of a geotechnical investigation at this site increases uncertainty about the structural and environmental suitability of the T07 location, as well as the efficacy of any proposed mitigation measures.
- Ballycallan GWS relies on a karst limestone aquifer overlain by sand/gravel deposits, both of which are highly permeable and lack natural filtration layers. This aquifer type, characterized by rapid, unfiltered groundwater flow, is

especially vulnerable to surface pollutants. Any contaminants introduced by construction, material leachate, or accidental spills could quickly reach the borehole, potentially compromising the water quality for the entire community. The permeability of the karst landscape, combined with unknown soil conditions at T07, raises significant concerns about the uncontrolled movement of contaminants into groundwater recharge areas.

- The Tullaroan Stream is located c. 40m from the Ballycallan GWS borehole, contributing directly to the local groundwater recharge system. Construction activities near this stream—including the proposed watercourse crossings—pose additional contamination risks. The planned activities risk introducing sediments and pollutants into this interconnected water system, affecting both surface water and the underlying aquifer. Any disturbances or contaminants introduced near the stream could compromise the water quality within Ballycallan GWS's recharge zones.
- Borrow pits and spoil areas are proposed in zones classified as extremely vulnerable to contamination, requiring excavation that exposes soils and bedrock with minimal natural barriers to contamination. If pollutants from these areas enter the groundwater, they could be transmitted rapidly through the karst aquifer, affecting the GWS borehole. The potential for contamination is further compounded by the proximity of high-risk sites like T07.
- While standard mitigation method is proposed, such as silt fences and spill kits, these may not sufficiently address the sensitivity of the groundwater system surrounding Ballycallan GWS. The lack of baseline geotechnical data, especially at T07, adds to the difficulty in predicting or controlling pollutant spread in this high-risk area.
- In terms of the treatment of run-off, it is stated that it is not clear from the maps in the EIAR, where vegetation filters would be and where dams, traps, silt fences and settlement ponds will be located and their sizes/dimensions, and if these have any interaction with the pluvial runoff downslope towards the Kilmanagh / Tullaroan River.
- It is noted that water quality monitoring is only proposed during the construction phase. However, it is not clear what will be monitored, the quality of the river, or the output of the traps/fences/ponds.

- An observation notes that only two boreholes were investigated, with further test pits mostly into soil and subsoil levels. It is stated that boreholes should extend at least to the actual depth below the proposed invert elevations for the foundations of the turbines. A range of boreholes should be confirmed to establish the depth and nature of bedrock.
- Concerns raised regarding the Applicant's comments with respect to the potential need for dewatering at the turbine bases and whether this will interfere with the river.
- There are significant data gaps in the Applicant's assessment which have not been overcome in the appeal.
- With specific consideration to flooding:
 - No hydraulic assessment or analysis has been undertaken in relation to the proposed new access road across the Kilmanagh/Oldtown/Tullaroan River between proposed T7 and T6.
 - The potential adverse impacts in relation to this proposal have not been quantified in any way. These present a potential significant flood risk elsewhere.
 - The potential adverse impact to the existing hydrological regime of the area due to the proposed spoil management and borrow pits has not been quantified in any way.
 - These significant excavations and spoil stockpiling areas have the potential to alter catchment runoff flow-paths and increase flood risk elsewhere.
- In the absence of any detailed hydrological assessment and hydraulic analysis, the development as proposed presents an inherent flood risk to lands and properties adjacent to and downstream of the proposed development.
- It is noted that changes to the local landscape and drainage patterns would exacerbate existing flood issues and would render the local GAA pitches unusable and would disrupt club activities and community events.
- Concerns are raised regarding the impact of flooding on the ability of emergency services to access existing businesses, including the existing Montessori school. An observation notes that larger and more frequent flooding events will certainly impede and/or delay the emergency services from

accessing the village at its bridge points.

- In terms of the alterations undertaken to the Kilmanagh/Tullaroan riverbank, an observation notes that there should be no interference with these river banks, as they are the responsibility of Inland Fisheries Ireland and this should have been reported. It is indicated that the widening will result in increased water flow in periods with much rain, thus increasing erosion. Widening and straightening will increase the flow path and flood risk downstream where flooding is already an issue.
- It is indicated that each turbine will contain thousands of liters of gear oil and thousands of liters of fuel will be delivered to and stored on site to run diggers, excavators and various other site machinery. Concerns raised with respect to the impact of the proposal in terms of groundwater contamination and pollution of existing river courses.

Biodiversity Impacts (excluding birds)

The issues raised by Third Parties with respect to biodiversity can be summarised as follows:

- Concerns raised with respect to the impact of the proposed development on biodiversity.
- In terms of Plants/Trees, the following is noted:
 - Goodwillie Report: Botanical report particularly bad, including poor species knowledge. Missing ecological value/condition of various areas of hedgerow/treelines that will be removed/felled. This needs to be assessed and mapped to ensure sufficient mitigation
 - Kilkenny County Council Planner's Report: Lack of information and location of Third schedule invasive species on site and along turbine delivery route. The report used only online resources and did not examine the species list resulting from the onsite botanical surveys for FPO species.
 - KBT original submission: No mention of tree felling along grid/haul route and substation, despite locals being told otherwise. Missing information of location of certain plants and rich ground flora areas, such as Black Poplar, and listings and maps of surveyed species.

- In terms of Mosses/Liverworts/Lichens, it is indicated that literature has been provided within the EIAR but no observations, field surveys, mapping nor species lists.
- In terms of Fish/Aquatic Life the following is noted:
 - Destruction of riverbanks one month prior to electrofishing, impacting presence of and habitat for fish species (as well as mammals and birds), thus invalidating survey results.
 - No assessment of impacts on water quality and effects on SAC and annexed species from construction works.
- In terms of Mammals the following is noted:
 - Otter: conflicting information on holts.
 - Questionable validity of surveys, not in optimal season.
 - Mitigation should be included in NIS.
- Badger: holt survey not in optimal season, not a reliable representation.
 - No assessment of impacts on water quality and effects on SAC and annexed species from construction works.
- In terms of Bats, the following is noted:
 - Only one survey, no baseline information and not undertaken in peak season.
 - For 'Complex 3', no investigation despite having potential.
 - Kilkenny County Council Planner's Report: Assessment of impact on bat population is lacking in several aspects (survey, display of potential roost features in mature trees to be felled, lack of consideration/assessment of value of ecological corridors in bat baseline which will be fragmented as a result of felling resulting in need for re-examination of potential impacts and mitigation measures.
 - Bats and their roosts are protected by Irish and EU law. There is no guarantee that bat species will survive the construction activities on site because of habitat destruction and changing destruction of habitats and changing local landscape.
 - Hedgerow removal has knock-on effects/impacts on bat behaviour and commuting routes
- In terms of Amphibians/Reptiles, the following is noted:

- No surveys undertaken, despite NBDC evidence the presence of Common Frog and Smooth Newt in hectares S35/S45. Thus, the EIAR is incomplete in this respect.
- It is indicated that the EIAR and NIS are non-compliant with EU Law (Habitats Directive). The developer's NIS has been found to be non-compliant with the Habitats directive by Kilkenny County Council.
- There continues to be critical data gaps and errors along with new errors.
- No reasonable alternatives have been provided to avoid crossing the River Nore which raises serious doubt about the suitability of this site for wind energy development.

Ornithology

The issues raised by Third Parties with respect to ornithology can be summarised as follows:

- There is an unacceptable risk to Kestrel.
- Lack assessment for Snipe, Buzzard, Sparrowhawk.
- Deficiencies in methodology to identify target species and collision risk assessments, omitting certain bird species.
- Only Kingfisher assessed in NIS, no other SCI species.
- No full data set of SCI species recorded.
- Missing relevant literature regarding migratory pathways of recorded species, target species, cumulative impact assessment.
- Inadequate reference to red-listed Lapwing.
- No night surveys/Owl sightings despite being known to be present on site.
- It is confirmed in a submission that they have sighted Hen Harriers in the area. It is contested that the information in the application is not accurate and therefore the impacts on Hen Harriers have not been adequately assessed.
- It is indicated that there is lacunae in various reports and it is not considered to be compliant with the CJEU C-258/11 case.
- PIE poster and community information on bird identifications on site that are not included in final reporting and supporting information. This questions the reliability of the ornithological results.

Traffic and Transport Related Impacts

The issues raised by Third Parties with respect to traffic and transport can be summarised as follows:

- Concerns raised regarding the excessive grid routes which have not been adequately addressed in the appeal.
- The haul route through Kilmanagh Village and the knock-on impacts locally in terms of safety and inconvenience have not been addressed in the appeal.
- The construction phase will lead to huge increase in heavy vehicle traffic within Kilmanagh village and will cause disruption to GAA club members and cause congestion generally.
- The surrounding local road network is not suitable for the very significant construction traffic required to build the wind farm and will require significant road widening, tree felling and upgrading to meet the requirements for construction traffic. These works have not been adequately addressed in the application.
- The proposed grid connection route will have major impacts on people who live and work in the area and there is inadequate information in the application with regards to the impacts on the built environment and cultural heritage of the villages which it passes through. If permitted, the development will result in hundreds of lorries of concrete, thousands of large arctics containing plant and materials and combustible fuels and thousands of loads of stone passing homes, schools and recreational facilities for months on end.
- It is stated that Kilmanagh and Tullaroan villages will be effectively building sites for the estimated 18 to 24 months of construction work.
- Concerns have been raised with respect to the impact of the haul route for the proposed development on the surrounding road network, notably its proximity to Scoil Ruadhain NS, Tullaroan.
- The assertion by the applicant that the potential for access disturbance is minimal and easily mitigated is directly contradicted by the concerns raised by Kilkenny County Council, the national roads authority (TII), the local community group KBT Responsible Energy, and hundreds of local residents that signed submissions. It is contended that the evidence clearly indicates that the proposed haul route poses a significant threat to residential amenity through

unacceptable levels of access disruption. The potential negative impacts on the community's daily lives due to the proposed haul route are simply too significant to ignore.

- In terms of the proposed GCR, an observation refers to the matters raised in the EIA Scoping Report and the concerns raised by the Planning Authority with respect to the impact of the proposal on bridges along the route, its impact on Uisce Eireann infrastructure and the architectural and archaeological heritage of the area. The observation indicates that no bridge specific design report has been enclosed with the application as previously suggested by the Applicant. Concerns are also raised regarding the impact of the development on trees along this route.

Telecommunications

The issues raised by Third Parties with respect to telecommunications can be summarised as follows:

- Concerns raised regarding the impact of the proposed development on broadband, mobile and TV connectivity and reception.

Cultural Heritage Impacts

The issues raised by Third Parties with respect to archaeology and cultural heritage can be summarised as follows:

- Concerns raised regarding the impact of the development on St. Aidan's Church and Kilmanagh Creamery which have not been appropriately addressed.
- An observation highlights that the creamery building (RPS D38) is not assessed in any meaningful way within the appeal or EIAR, even though it's a Protected Structure in direct proximity to the grid infrastructure route and visual zone.
- It is stated that the Applicant's appeal:
 - Does not take account or real-life visibility, such as seasonal vegetation thinning, open sightlines on roads, or the elevated siting of St. Aidan's Church, and,
 - Does not take account of the community photographic evidence showing Foyle Wind Farm turbines (which are smaller and further away) which

impact the visual character of the church already.

- It is considered that the Applicant has repeatedly failed to consider and state the true visual impact effect on St. Aidan's Church of Ireland church and graveyard and the Creamery building both in their application and the subsequent appeal.
- Concerns raised regarding the impact of the proposed development on sub-surface archaeology, and it is contended that geo-physical surveys should be undertaken of the whole wind farm area.
- Concerns are expressed with respect to the impact of the proposed grid connection route on local vernacular structures, notably the historic bridges. It is highlighted that there are 13 no. protected structures and 29 no. National Inventory of Architectural Heritage (NIAH) structures within 100m of the grid connection route, including six bridges that need to be crossed.
- It is indicated that the proposed wind farm area to be developed is large and will require much groundworks and alteration of the landscape. As such, it is contended that simple test excavations are insufficient and LIDAR surveys over the whole valley area are suggested. It is noted that a weir formerly existed at the location of the river crossing between T6 and T7 and any works on site should be preceded by detailed geophysical surveys.

Appendix 5: Summary of Third Party Observations to Applicant's Further Information Response

Table: Summary of issues raised in further submissions.

Theme	Issues Raised
<i>Biodiversity</i>	- Inadequate methodology with regard to establishing vantage points, undertaking view sheds, collision risk modeling and establishing zones of influence. - Inadequate assessment of impacts on diurnally active species. - Inadequate consultation of relevant Natura 2000 data forms. - Inadequate assessment of risk for bats species as a species integral to the ecological functioning of European sites. - It is deemed that the updated AA screening report and the NIS are not fit for purpose. - Inadequacy of the additional otter surveys that were carried out. - Noise and vibration related concerns and its impact on Kingfisher, a qualifying interest of the River Nore SPA. - Concerns raised regarding the reliability of the noise monitoring results and concerns regarding the adequacy of the survey work. - Concerns highlighted regarding the adequacy of the additional layout drawings submitted by the applicant where HDD is proposed, at watercourse crossings and along the riparian corridor. - Continued concerns that the extent of hedgerow and tree loss is still underreported given the extent of new access tracks. Concerns that the applicant has failed to provide an updated assessment of tree and hedgerow loss. - Continued concerns regarding the impact of the proposed development on bat species and the adequacy of the applicant's additional assessments. It is contended by an observer that a derogation license is likely required. - Concerns regarding the impact of the proposed development on the amphibians and reptiles. - It is contended that the submitted restoration plan is inadequate. - Concerns raised regarding the impact of the development on other avian receptors. - Concerns remain as to how the Kilmanagh River/Tullaroan Stream can be monitored by the Inland Fisheries. - The Applicant's FIR does not provide any details in relation to the Marsh Fritillary butterfly surveys, staff qualifications or methodology deployed. - The Applicant's bat's surveys show contradictory results regarding potential roosting features. - The restoration plan for the proposed borrow pit lacks sufficient detail and assessment.
<i>Noise</i>	- It is highlighted that there are missing details in the applicant's response including the lack of octave band sound power levels used in the noise model, clarification of whether concave ground profiles had been included, lenient noise limit determinations and the generally optimistic noise modelling. - Concerns regarding the adequacy of the Applicant's assessments in terms of cumulative noise impacts. - It is highlighted that the sound levels tabled in Appendix 6 and 7 of the FIR shown noncompliance at 7m per second for H008, H012 and H-048, despite the predicted noise levels being overly optimistic and the use of the most lenient noise levels. With less optimistic noise modelling and more realistic daytime noise limits, it is contended that many more dwellings are noncompliant. - Continued concerns regarding the adequacy of the turbine spacing. - Independent evidence has been submitted which confirms that

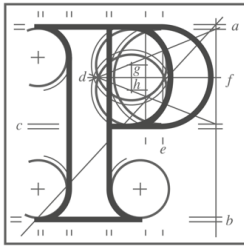
	residents in the area already experience intrusive turbine noise from existing developments. It is stated that the potential additive effect of the proposed development has not been modelled comprehensively. - Concerns raised regarding the potential impacts associated with operational noise, including low frequency noise and infrasound. - An observer suggests that the Commission should request the Applicant to confirm whether Windpro software was used to design turbine spacing and layout for various wind farms in County Clare as there have been numerous noise nuisance complaints to the respective County Council.
<i>Hydrology and Hydrogeology</i>	- The hydrological assessment and analysis undertaken is not appropriate and is not comprehensive enough. - There is a failure by the applicant to provide new deeper trial holes or provide a robust and credible basis for why they are sufficient given the depth of the turbine foundations. - Concerns raised regarding the impact of the proposed borrow pits and spoil management areas on the existing hydrological regime of the site and surrounding area. - Concerns raised regarding surface and groundwater contamination and impacts on public water supplies. - Concerns regarding the inadequacy of this site investigations for turbine 7. - Continued concerns regarding the potential for flooding and the inadequacy of the Applicant's flood risk assessment. - The FIR changes to the design of the development increase the intensity and frequency of hazard events at locations that drain toward the location of the Ballycallan water abstraction. - It is highlighted that the most serious drinking water risk arises at the location of T07. Development within this area creates a realistic pathway for construction contamination to reach drinking water. The risk will persist even if mitigation performs as designed, because permeable gravel aquifers transport contamination faster than attenuation mechanisms can respond, especially during rainfall. - The Ballycallan GWS has no treatment safety margin, the abstraction borehole sits beside a river in a hydrologically connected system. It is noted that the GWS is already sensitive to water quality disturbance and T07 is located directly on a proven flowing groundwater. - Various discrepancies are highlighted within the applicant's FIR. - Concerns raised regarding the location of the proposed substation in the context of additional flood risk potential. - A submission from Graigue Ballycallan GAA club seeks to clarify that there are two pitches located in the village, with their pitches which are bounded by Kilmanagh bridge to the north by the Kilmanagh River to the east. Significant concerns are raised that the output of the hydraulic modelling exercise demonstrates that the pitch immediately downstream of bridge does not flood. This is a concerning erroneous statement and a miscalculation given that it has been regularly subject to flooding. This demonstrates that the site-specific hydraulic modelling exercise is significantly flawed and does not provide any confidence in relation to the potential adverse impact of the development on the existing hydrological regime of the area. Photographs of the pitches flooding are provided in the submission. - Concerns raised regarding the extent of hydraulic modelling undertaken which only extends c. 60m downstream of village bridge.
<i>Roads and Traffic</i>	- Concerns that the Applicant has not addressed either the cumulative or specific roads concerns this proposal would cause. - Concerns regarding the inadequacy of the local road network to cater to a development and the adequacy of the Applicant's FIR. - It is contended that the Applicant has provided no new assessment of the subject local roads and the details provided are not more

	advanced than those in the original assessment which were criticized by the Planning Authority. It is also noted that no new traffic counts, surveys, precondition surveys of roads and no impact assessment have been carried out individually or cumulatively as to the predicted impact of the project on local roads. - Concerns raised regarding the extent of road closures which have not been adequately addressed in the FIR. - Concerns highlighted with respect to the adequacy of the submitted entrance layouts and the level of detail required including visibility splays, drainage requirements, sightline requirements and auto track turning movements. - Concerns that the proposed development will impact the ability of emergency services to access homes, schools and businesses in the area. These impacts would be exacerbated by potential flooding. - Concerns raised regarding the volume of traffic that will be generated by the proposed development. - It is contended that the Applicant's FIR fails to adequately assess reasonable alternatives for the proposed GCR and as a result, does not demonstrate how impacts on local communities, the road network and traffic can be mitigated. - Continued concerns raised regarding the extent of projected road closures and it is contended that the Applicant has failed to demonstrate that closures can be avoided or minimised, or that diversion routes can safely accommodate additional commercial traffic. - Continued concerns raised regarding traffic disruption over a prolonged period.
<i>Cultural Heritage</i>	- Concerns regarding the lack of detail on road depths to facilitate the amended proposals as regards accommodating underground cables at bridge crossings. It is highlighted that Chapter 14 of the EIAR has not been updated to reflect the amendments. - Continued concerns regarding the potential impact of the proposed development on historical bridges along the GCR. - The Applicant's response fails to evaluate or protect the cultural heritage value of structures within the surrounds of the site including the Kilmanagh Creamery and St. Aidan's church. - Archaeological related concerns are noted. - Concerns raised that non-intrusive geophysical and other surveys for the wider area have been disregarded.
<i>Landscape and Visual Assessment</i>	- The Commission has been asked to refuse planning permission for the proposed development such that a revised and more focused LVIA can be prepared. - Continued concerns were raised regarding the potential visual impact of the development on the receiving landscape. - It is contended that the proposed development would overshadow homes and dominate views, creating an industrial aesthetic that is out of place in a rural, residential area.
<i>Other Concerns</i>	- Concerns that the Applicant's agent has essentially taken over the role of expert and replaced the project's cultural heritage assessor, ecologists etc. It is noted that it has been difficult to follow the line between the project agent and as project expert when reviewing the submitted FIR. - It was indicated that the site is not designated suitable for large wind energy development under the operative wind energy strategy and the proposals materially contravene multiple local and national policy objectives. - There is a persistent failure to engage meaningfully, repeated errors in identifying receptors on poor quality, shifting information which is contrary to the Aarhus principles. - Significant residential amenity concerns raised as a result of

	unacceptable risk from noise, shadow flicker, construction disturbance, the proximity of the structures to existing homes and the subsequent impact on property values. - Residential properties will be exposed to shadow flicker exceeding the accepted threshold. These impacts are significant, long term and not reliably mitigated. - Professional advice has been provided by an auctioneer to demonstrate that observer's properties would be negatively impacted by the proposed development in terms of valuation (Property appraisals included as appendices). - It is contended that the proposed development will negatively impact the health and well-being of students and residents as a result of increased levels of dust, vehicle exhaust particulates and carbon monoxide created by the development related traffic. - It is contended that the Applicants FIR continues to minimize health risks, relying heavily on dated literature. - Concerns highlighted around the company structure and accountability. - Concerns highlighted regarding the validity of the application and the adequacy of the landowner consents. - An observer is the owner of an existing Montessori School which has been incorrectly identified in the application documents. The Applicant has failed to consider their submissions or update the assessments to have regard to the location of their property. - Significant concerns raised regarding the level of community engagement. - Impact of the proposed development on land use, including the equine industry. - Concerns that the Applicant's study has failed to consider the equine industry including the requirement for consideration to be given within the shadow flicker assessment as required by the development plan policy. - Safety concerns are raised which include risk of structural failure and the potential for ice throw in winter. - It is argued that there is precedent for the provision of greater setbacks to be provided. Without an adequate buffer, residents are disproportionately burdened by the environmental and aesthetic costs of the development. - It is highlighted that many children and adults are sensitive to loud noises, infrasound and light flicker. Significant concerns are raised regarding the impact of the development on school children who present with sensory difficulties, anxiety or epilepsy as well as those who are on the autism spectrum or neurodivergent. - It is argued that there is a clear failure to properly evaluate the combined impacts of this proposed development and other wind farm developments in the area, particularly in relation to human health landscape character, noise, ecology and the cumulative burden on the local community. - Concerns raised with respect to the impact of the proposed development on mobile phone and Internet reception, a point which has not been addressed by the Applicant. - The loss of additional hedgerows along the entrance to the site within the village will also result in the removal of electricity poles which will have significant implications for residents in the area. - Rural decline is a major concern for GSS clubs and concerns are raised that the proposed development would discourage young people from staying in the locality. - It is unclear how the construction compounds are to be supplied in terms of electricity. Concerns were also noted regarding the potential for light pollution from these work areas.

	- Significant concerns raised regarding the location of the construction compounds and spoil management areas relative to the village of Kilmanagh. Significant concerns are highlighted with the potential environmental risks associated with spoil heaps and the potential risks to habitats and wildlife.

Appendix 6: Senior Ecologist Report



An
Coimisiún
Pleanála

Specialist Report to Inspector **ABP-322154**

Development

Proposed development of 7 no. turbine windfarm project located at Briskalagh and adjacent townlands, near Kilmanagh in Co. Kilkenny.

Planning Authority

Kilkenny County Council

Applicant(s)

Briskalagh Ltd

Type of Application

Planning Appeal

Inspector

Enda Duignan

Ecologist

Fiona Patterson

Topic

Specialist ecologist support for the EIA and AA

Report No

R322154_App 1

Date

18th June 2026

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1. Introduction

1.1. Proposed Development

- 1.1.1. The subject application is for the proposed development of a windfarm in northwest Co. Kilkenny. The proposed development includes 7 No. turbines and associated infrastructure, an on-site 38kV substation and associated works, underground electric cabling to connect into the national grid at Ballyragget 110kV substation and all associated works.

1.2. Scope of Specialist Ecology report to Inspector

- 1.2.1. Specialist ecological support was requested via a memo from the Senior Planning Inspector, following his review of the applicant documentation, planning authority decision, submissions (application and appeal), third-party observations, further information response and further third-party submissions. In his memo, the Senior Planning Inspector sought assistance in ascertaining whether the issues raised in relation to the surveys and impacts within the submitted NIS and EIAR of inter alia kingfisher, otter, birds and bats are appropriately addressed by the Applicant's Appeal and Further Information response. In this context, he also referred to the submission from the Department of Housing, Local Government and Heritage (Otter and Kingfisher) at application stage, the Environmental Impact Assessment Review of Chapter 7 (Birds) prepared by CAAS Ltd (on behalf of Kilkenny County Council) and the submission of Dr Patrick Moran – Ecologist (on behalf of KBT Responsible Energy).
- 1.2.2. This specialist report provides expert input for the biodiversity impact assessment, particularly focussing on the ecological issues raised in relation to the surveys and impacts within the submitted NIS and EIAR of inter alia kingfisher, otter, birds and bats. This report to the Senior Planning Inspector and which is available to the Commission is a written record of my review and examination of the submitted information and will support the EIA and Appropriate Assessment (AA) regarding biodiversity impact assessment.

1.3. Site Visit

- 1.3.1. I visited the proposed development site on 12th June 2026.

2. Documentation

2.1. Overview

I have read the documentation attached to this file ABP 322154 relating to biodiversity, including the EIAR and NIS, the planning authority decision, submissions (application and appeal), third-party observations, further information response and further third-party submissions on Biodiversity and AA. I have also reviewed the relevant drawings, plans and particulars etc.

3. Issues examined and suggestions for consideration by the Planning Inspector/Commission

3.1. Competent Experts

- 3.1.1. Section 1.8 of Chapter 1 of the EIAR provides overall details on the project team who prepared the EIAR.
- 3.1.2. Section 6.3.1 of Chapter 6 (Biodiversity) provides a statement of authority (including qualifications and expertise) for those who prepared this chapter and those who carried out the baseline ecological surveys. Statements of authority are also included in the survey reports (Appendix 6.1- 6.3) and in the BMEP (Appendix 6.4).
- 3.1.3. Section 7.1.3 of Chapter 6 (Birds) provides a statement of authority (including qualifications and expertise) for those who prepared this chapter and who devised the scope of works and survey methodology. Section 7.1.3 lists the surveyors who undertook the bird surveys. Qualifications and expertise are not specifically stated in Chapter 7 for each of the individual surveyors listed. Section 7.1.3 states that surveyors are suitably qualified competent experts in ornithological surveying.
- 3.1.4. A statement of authority is included in Section 1.3 of the revised NIS. I note that the qualifications of the ornithological surveyors listed in Section 7.1.3 of the EIAR are provided in Section 1.3 of the revised NIS.

- 3.1.5. Having reviewed the documentation, I consider that the Applicant has demonstrated sufficient biodiversity expertise to carry out surveys in accordance with best practice and to prepare the biodiversity & birds chapters of the EIAR and AA Screening/NIS report.

3.2. Methodology/Baseline including surveys

- 3.2.1. The survey methodologies, survey results and description of baseline are provided in Chapters 6 and 7 of the EIAR, the revised NIS and accompanying appendices for both EIAR and NIS. Additional ecological surveys, noise surveys and further details on methodologies and clarifications of the baseline, in the context of informing potential impacts of the proposed windfarm and grid connection route on biodiversity and birds, were also provided as part of the first party appeal and further information response.
- 3.2.2. I consider that the extent of evidence provided by the Applicant generally provides sufficient details of biodiversity/birds baseline on the site in the context of this type of proposed development. I consider that the surveys and reporting have been carried out with regard to best practice guidance and that there is sufficient detail on the biodiversity/birds baseline within the zone of influence of the proposed development such that a robust impact assessment can be carried out for both EIA and AA. I consider that the documentation provided by the Applicant has been prepared in accordance with relevant legislation and best-practice guidance. I consider that sufficient ecological data (obtained via scoping, desktop study and various ecological surveys) has been provided in order to assess the potential for likely significant effects to arise from the proposed development on biodiversity and birds.
- 3.2.3. I have addressed matters relating to a number of individual species/habitats which were raised in the submissions/further information request in the section below.

3.3. European designated sites and connectivity with proposed development site

- 3.3.1. The proposed windfarm site is not located within any designated site. It is drained by the Tullaroan stream and its tributaries. A section of the Tullaroan stream forms part of the River Barrow and River Nore SAC (002162) which is approximately 5.7km

downstream of the proposed windfarm site just before the Tullaroan drains into the Munster river which then drains into the Kings river which subsequently drains into the River Nore. The Kings river also forms part of the River Nore SPA (004233) just east of Callan which is approximately 14.1 km downstream of the windfarm site. Thus, the SAC and SPA are hydrologically linked to the proposed windfarm site via the watercourses which drain the site.

- 3.3.2. All watercourses draining the proposed grid connection route (GCR) ultimately discharge to the River Nore. The GCR runs immediately adjacent to the River Nore within the road corridor of the R694 between Grange and Ballyragget. Along most of this stretch of the R694, the boundary of the River Barrow and River Nore SAC runs parallel to the road. At Ballyragget, the GCR continues north along the N77 road corridor (also adjacent to the River Nore) for approximately 600m (just south of the Tirlán facility) where it then turns east, crossing beneath the River Nore (via horizontal directional drilling (HDD)). The GCR then joins the R432 where it terminates at the existing Ballyragget 110kV substation. The western boundary of the River Barrow and River Nore SAC runs parallel and/or overlaps the N77 between Ballyragget and the Tirlán facility at the HDD location. The eastern boundary of the SAC at this location includes the river itself and a section of improved agricultural grassland (GA1). Refer to Figures 6.2 of Chapter 6 of EIAR and Figure 4.1 of the NIS.
- 3.3.3. The launch pit for proposed HDD as part of the GCR is located within the N77 road corridor just south of the Tirlán facility. I note that the SAC boundary appears to overlap some of the N77 road corridor at this location. Having reviewed the drawings including 230502-76F1¹, the NIS and Chapter 6 and having visited the site, I note that the location of the HDD launch pit is within the existing N77 road corridor. I note that the habitats within the N77 road corridor at the launch pit location include buildings and artificial surfaces (BL3) and a small section of grassy verge (GS4). Improved agricultural grassland (GA1), is located between the N77 road corridor and the banks of the River Nore. On the other side of the river, in a field where the reception pit will be, is improved agricultural grassland (GA1). There are no QI designated habitats for

¹ Proposed Grid Connection Watercourse Crossing 01 (230502-76F1)

this SAC within the launch pit or reception footprint. Neither the launch pit nor reception pit footprints are located within the River Nore SPA boundary. Refer also to Section 4.1.2.13 of Aquatic baseline report which describes the habitats and species identified within and along the river Nore at the HDD crossing.

3.4. Specific issues raised in submissions/further information request regarding individual species/habitats

Table 1 Issues raised regarding otter

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
Otter	<i>Refer to Section 3.3.1.2, 3.5.3.5, 6.2.1 and 6.2.2 of Revised NIS (Appendix 3 of Applicant Response to Further Information (RFI)). Statement of Authority is provided in Section 1.3 of revised NIS. Refer to Section 2.1.2 of Applicant RFI (main document). Refer to original Chapter 6 (Biodiversity) and Appendix 6.3 (aquatic report) of EIAR. Refer also to the relevant drawings showing works in proximity to watercourses.</i>	
Revised NIS must consider and assess all aspects of the proposed development which could result in significant effects on Otter (QI of River Barrow and River Nore SAC). Otter surveys were carried outside of optimum	Potential effects on otter are assessed in the revised NIS. The survey methodology employed to detect signs of otter during field surveys is provided in Section 3.3.1.2 of the revised NIS. Refer also to Section 2.5 of Appendix 6.3 of EIAR (Aquatic baseline report) which provides additional detail on the survey methodology & results undertaken during 2023 and 2024. Surveys (including camera traps)	Having reviewed the documentation, I consider that the extent of evidence provided by the Applicant on otter provides sufficient details of otter baseline at the site. There is adequate baseline data contained in the application documentation. NRA 2009 ² guidance states that there are no seasonal constraints for otter survey, but any dense vegetation (especially in summer) can reduce success in the identification of otter holts or couches. Multiple surveys (consisting of thorough searches) were carried out over a number of different months including outside of summer season, between 2023 and 2025. I consider that the surveys and reporting have been carried out with regard to best practice guidance and that there is sufficient detail on the otter baseline within the zone of influence of the proposed development such that a robust impact assessment can be carried out for both EIA and AA. I consider that the Applicant has demonstrated sufficient biodiversity expertise to carry out robust otter surveys and to prepare the relevant

² NRA 2009 Guidelines for the treatment of otters prior to the construction of national road schemes.

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
season (winter). Details on survey methodology, otter activity, mitigation measures also to be included in revised NIS.	were carried out Feb, March, April, June, July and August 23/24. Additional survey on 3rd September 2025 of previously identified potential otter holts within approximately 150m upstream and downstream of any proposed infrastructure, and the proposed HDD location. Refer to Section 3.5.3.5 of NIS for details on otter survey results. Mitigation measures detailed in Section 6.2.2 of the revised NIS include the requirement to carry out pre-construction surveys to capture any changes to the baseline which could arise with mobile species, between the time that the current surveys were carried out and construction stage.	assessments within the EIAR and NIS. No potential otter holts or evidence of otter were recorded directly adjacent to the proposed works areas. The proposed development will not result in a loss of any habitat for otter. There is, however, potential for otter to utilise all watercourses within and downstream of the proposed development site for foraging and commuting. I consider that direct and indirect effects on otter (including water quality, habitat degradation and disturbance) have been appropriately identified by the Applicant except for potential disturbance from artificial lighting, if it were required, in the vicinity of the watercourse crossing works during construction. I note that otter is crepuscular in nature and is unlikely to be significantly impacted by the proposed works, given that works will be undertaken during daylight hours (7am-7pm) and given that the works will be of short duration. However, as noted in section 4.7.1 of Chapter 4 of EIAR, it may be necessary on occasion to work outside of these hours. I also consider that artificial lighting could be required during some of the above daytime hours if the crossing works were to take place during the autumn/winter months. I consider that the lighting mitigation measures proposed for bats at the windfarm site (see Section 6.1.2 of Revised bat survey report (Appendix 4 of further information response document)), if also applied at the watercourse crossings, would be adequate to rule out potential significant effects of artificial lighting on otter also. I suggest that a condition (in the event of a grant of

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
		permission) could be added to state that “<i>where lighting is required to facilitate construction works at watercourse crossings, lighting restrictions shall be implemented as set out in Section 6.1.2 of revised bat survey report, dated 16th October 2025</i>”. Taking the above condition into consideration and the mitigation proposed by the Applicant for otter overall, I consider that, likely significant residual effects on otter will not arise.
Consideration of the requirement for a derogation	See Section 6.2.2 of NIS	Not required at this stage. Should pre-construction surveys identify the presence of an otter holt etc, a derogation licence will be sought as per guidance at that stage.

Table 2 Issues raised regarding bats

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
Bats	<i>Refer to revised bat survey report (Appendix 4 Applicant RFI). Statement of Authority is provided in Section 1.4 of revised bat survey report. Refer to Sections 2.1.8 and 2.1.9 of Applicant RFI (main document). Refer also to original Chapter 6 (Biodiversity). Refer also to the relevant drawings showing works in proximity to watercourses in addition to works at windfarm site</i>	
Bat report to be updated having regard to potential	Survey methodology and results are presented in Sections 3 and 4 of revised bat survey report. Section 4.3.2.1.5 describes the ground-level tree assessments undertaken. It notes that a small number of trees	Having reviewed the documentation, I consider that the extent of evidence provided by the Applicant on roosting bats in trees provides sufficient details of bat baseline on the site at this stage.

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
impacts on bats arising from additional hedgerow removal/tree loss on site (83 trees). Applicant to consider if the tree removal will require a derogation (bats), having regard to guidance	contained “<i>moderate</i>” roosting potential whilst the majority of trees assessed were classified as having “<i>low</i>” potential. Other trees (including the conifer plantation) were defined as “<i>negligible</i>”. All trees assessed are outlined in Table 4-6, Figure 4-1 and shown in Plates 4-30 to 4-45. A more detailed assessment was undertaken in August 2025 of all the trees proposed for removal to facilitate the bat felling buffers and the infrastructure footprint, including the site entrance (L1009), temporary construction compound, spoil management area, substation entrance, and access track to T7. Section 4.3.2.1.5 states that the survey was completed by a licensed bat ecologist following the updated Collins (2023) guidance and Bat Tree Habitat Key (2018) using “<i>binoculars, a thermal camera, high powered torch, endoscope, and a ladder where required</i>”. Section 4.3.2.1.5 states “<i>In total, 83 no. trees were inspected, with features previously noted in the 2023 survey (e.g. broken branches, knot holes, cankers, ivy cover) determined on close inspection to be superficial, without cavities or crevices suitable for roosting bats. In line with Table 4.2</i>	I consider that the surveys have been carried out with regard to best practice guidance and that there is sufficient detail on the bat baseline within the zone of influence of the proposed development such that an impact assessment can be carried out for EIA. I consider that the Applicant has demonstrated sufficient expertise to carry out bat surveys and to prepare the relevant assessments within the EIAR. I do not consider that derogation is required at this stage. Should pre-construction tree surveys identify the presence of PRFs or an active bat roost in any of the trees scheduled for removal, a derogation licence will be sought as per guidance at that stage.

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	<i>of Collins (2023), all trees requiring removal to facilitate construction were classified as None, with no PRF-I or PRF-M trees identified”.</i> Section 6.2.4 of the revised bat report includes the requirement to carry out confirmatory pre-construction tree surveys to capture any changes to the baseline which could arise with mobile species, between the time that the current surveys were carried out and construction stage as tree condition can change over time.	
Daytime bat inspections were completed at all bridge crossings, some of which were valued as low potential however no bat activity surveys were completed at these	Survey methodology and results are presented in Sections 3 and 4 of revised bat survey report. Section 4.3.1.2 of the revised bat survey report states that <i>“The structures at the existing 12 no. watercourse crossings were inspected for signs of bat roosts and were assessed for bat roost potential on the 21st and 22nd of March 2024 with no evidence of roosting bats recorded at that time. Structures identified as having potential bat roost suitability were subsequently revisited on the 25th of August 2025, and again no evidence of roosting bats was found. The findings are summarized in Table 4-5”.</i> 8no structures were classified as “low” bat roost potential of	I consider that the Applicant has demonstrated sufficient expertise to carry out bat surveys and to prepare the relevant assessments within the EIAR. Having reviewed the documentation, I consider that the level of survey effort is reasonable and acceptable and that the extent of evidence provided by the Applicant on roosting bats in watercourse crossing structures provides sufficient details of bat baseline on the site at this stage. I consider that the surveys (2024 & reinspection 2025) have been carried out with regard to best practice guidance. 8no structures which were inspected in 2024 and 2025 were classified as “low” bat roost potential of which 3no will be crossed via HDD (WC5,6,7) and 5no

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
bridges. Potential roosting features present should have been inspected with a torch/endoscope. Clarify if there is a potential for noise/vibration impacts on roosting bats during watercourse crossing works. Data be provided on level of noise and vibration	which 3no will be crossed via HDD (WC5,6,7) and 5no (WC4,9,11,12,13) will be crossed within the bridge deck via flatbed formation. Section 2.1.9.1 of Applicant RFI (main document) states that reinspection in August 2025 involved the “<i>use of binoculars, thermal camera, high powered torch, a ladder and an endoscope to facilitate a comprehensive examination of the structures including any crevices, expansion joints, and bridge arches, where accessible. Improved access to WC7 in particular allowed for a closer inspection than was possible during the 2024 effort. No evidence of roosting bats (droppings, staining, feeding remains, or live specimens) was identified during the inspection survey</i>”. Section 2.1.9.1 notes that all eight crossings were reconfirmed as having “<i>low</i>” suitability due to the presence of a small number of potentially suitable gaps/crevices for opportunistic use by individual bats. It is stated that given the temporary nature of the works,	(WC4,9,11,12,13) will be crossed via flatbed formation. I note that “<i>low</i>” suitability is defined in Collins 2023³ as “<i>a structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year</i>”. No evidence of roosting bats was recorded during the inspections in 2024 or 2025. I consider that there is sufficient detail on the current bat baseline within the zone of influence of the proposed development at this stage such that an impact assessment can be carried out for EIA. I consider that the Applicant has demonstrated sufficient evidence to determine that derogation not required at this stage. I note that Section 6.1.6 of the revised bat report includes the requirement for <i>confirmatory pre-construction inspections/surveys</i> to be carried out at all crossings assessed as having <i>low</i> suitability (8no) to capture any changes in baseline which could arise with mobile species. It is not clear from the text however, whether a daytime roost inspection and/or dusk emergence survey will be carried out as part of the preconstruction inspection survey.

³ Collins, J. (ed) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust.

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
during works and bat activity surveys to be carried out. In the context of above, Applicant to consider if the proposed development will require a derogation (bats), having regard to guidance.	the setback distances for HDD launch pits, given the flatbed formation cabling installation will take place within the existing road build-up over the structure and no works to the underside or abutments of the structure will take place, no significant effects on bats are anticipated. It is stated in Section 5.4 of the revised bat survey report that potential noise and vibration associated with temporary works at crossing points are not expected to be out of character with existing traffic activity or typical roadworks, to which any potential roosting bats in the area would likely already be accustomed. Accordingly, it is stated that significant disturbance or displacement of bats is not anticipated and that a derogation is not required. Section 6.1.6 of the revised bat report includes the requirement to carry out confirmatory pre-construction inspections to be carried out at all crossings assessed as having <i>low</i> suitability (8no) to capture any changes in baseline which could arise with mobile species between the time that the current surveys were carried out and construction stage. Section 6.1.6 states these surveys will be undertaken by a suitably qualified ecologist	In the event of a grant of permission, I consider it reasonable that a condition could be added that <i>“dusk emergence surveys shall be included in the programme of confirmatory pre-construction bat inspections/surveys at the watercourse crossings”</i>. The emergence survey will determine the presence or likely absence of bats in the 8no low suitability structures immediately prior to construction and inform additional mitigation, if deemed required at that stage. If roosting bats are identified during those surveys, a derogation licence will be sought as per the guidance at that stage. As noted above regarding otters and disturbance from artificial lighting, I consider that artificial lighting could be required during some of the above daytime hours if the crossings were to take place during the autumn/winter months. I consider that the lighting mitigation measures proposed for bats at the windfarm site (see Section 6.1.2 of revised bat survey report (Appendix 4 of further information response document)), if also applied at the watercourse crossings, would be adequate to rule out potential effects of artificial lighting on bats also. I suggest that a condition (in the event of a grant of permission) could be added to state that <i>“where lighting is required to facilitate construction works at watercourse crossings, lighting restrictions shall be implemented as set</i>

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	immediately prior to works to ensure no bats are roosting in the structures and to safeguard compliance with relevant legislation. It is stated that if roosting bats are identified during these surveys, a derogation licence will be sought as per the guidance at that stage.	<i>out in Section 6.1.2 of revised Bat survey report, dated 16th October 2025</i>". Taking the above condition into consideration and the mitigation proposed by the Applicant for bats overall, I consider that, likely significant residual effects on bats will not arise.
Further bat surveys recommended to be undertaken at the farm complexes. Farm complex 2 had just one emergence survey in October 2023 whilst Farm complex 3 had no emergence surveys	Survey methodology and results are presented in Sections 3 and 4 of revised bat survey report. Section 4.3 describes the results of the roost surveys carried out at the farm complexes. Each of the farm complexes have a number of buildings varying in bat roosting potential from "Negligible" to "Moderate". The results of the emergence surveys are presented in Section 4.3.2.2. Farm Complex 1 is approximately 275m from the nearest turbine T05. Two derelict buildings are located approximately 125m from T06. Farm Complex 2 is located approximately 500m south of T04. Farm Complex 3 is located 600m from T04. Bat roosting evidence was identified at Farm Complexes 1 and 2. PRF suitability post emergence survey was defined as "low" at the two derelict buildings. None of the farm complexes will be removed as part of the proposed development. Mitigation measures are	I consider that the Applicant has demonstrated sufficient expertise to carry out bat surveys and to prepare the relevant assessments within the EIAR in accordance with best practice guidance. I consider that the survey effort is reasonable, given that none of the farm complexes will be removed as part of the proposed development and thus no significant loss or damage to the identified roosts can occur. Bat roosting potential has been identified at farm complexes 1 & 2. All of the farm complexes are greater than 100m from the turbines. Farm complex 1 is approximately 275m from the nearest turbine whilst farm complex 2 is located approximately 500m south of the nearest turbine. Farm complex 3 is 600m from nearest turbine and is outside of the proposed development site. Therefore, I consider it acceptable that emergence surveys were not carried out at Farm complex 3. Taking into consideration the mitigation measures (including bat buffer

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	presented in Section 6 of the revised bat report and include noise and lighting restrictions and a bat felling buffer of 50m to each of the turbines.	around turbines) provided by the Applicant, I consider that there will be no significant impacts on roosting bats at the farm complexes.

Table 3 Issues raised regarding kingfisher

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
Kingfisher	<i>Refer to Section 3.3.1.5, 3.3.1.6, 3.5.4 of Revised NIS (Appendix 3 of Applicant Response to Further Information (RFI)). Statement of Authority is provided in Section 1.3 of revised NIS. Refer to Section 2.1.3.1 of Applicant RFI (main document). Refer also to the relevant drawings showing works in proximity to watercourses.</i>	
HDD watercourse crossing underneath River Nore SPA. No information provided on baseline noise conditions & predicted noise/vibration levels, timing &	Section 3.3.1.5 of the revised NIS notes that an additional breeding kingfisher survey was undertaken in May 2025, at the location where the proposed grid connection route would cross under the River Nore (via HDD). Section 3.3.1.5 confirms that survey methodology followed Cummins et al. (2010) and that the survey encompassed the proposed crossing location and extended approximately 150m upstream and downstream of this location. Section 3.5.4 notes that no nesting burrows were recorded within the entire windfarm and grid connection survey area. The majority of the area was classed as unsuitable habitat with the exception of 10m of “ <i>sub-optimal</i> ” habitat c45m from HDD crossing point. A section of <i>suitable</i> nesting habitat was recorded approximately 85m upstream of the proposed crossing	I consider that the level of survey effort is acceptable and sufficient information has been provided in the revised NIS such that AA can be undertaken. Having visited the site myself, I observed continuous noise emissions from the vehicles using the N77, many of which were entering/exiting the adjacent Tirlán facility. I note that the aim of the mitigation measures as detailed in Section 6.2.3 of the NIS is to address disturbance which includes seasonal constraints on the HDD works to thereby (effectively) eliminate any possibility of an adverse effect for

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
duration of works. Revised NIS to include details such that effects on Kingfisher can be determined. Survey methodology for kingfisher to be included in revised NIS.	location. Both the Nore and Tullaroan rivers were deemed to offer suitable commuting and foraging habitat for kingfisher. The kingfisher recorded along the Tullaroan river within the windfarm site are considered to be separate from the SPA population give the 9km distance overland and 15km channel distance. Section 3.3.1.6 states that baseline noise and vibration surveys were undertaken at the proposed grid connection HDD crossing location of the River Nore SPA on 2nd September 2025. Section 3.5.5 discusses the baseline noise survey conducted at the River Nore crossing results, and states that predicted noise levels as a result of operation of machinery and the drill generator are not dissimilar to the existing baseline noise levels, which features noise interference from vehicles commuting on the nearby N77, in which the launch pit will be located. It is stated that the noise levels are classified as moderate to low noise stimulus as per Cutts criteria (2013) and is therefore not expected cause any potentially significant effects on the Kingfisher, nor the SPA. It is stated that while vibration levels cannot be determined, levels recorded in a south Dublin study reached a maximum of 5 mm/s, which could potentially disturb foraging Kingfisher.	kingfisher during the breeding season. Following this approach, the Applicant in Section 6.2.3 of the NIS has proposed to undertake the proposed HDD underground crossing of the River Nore SPA outside the “<i>bird nesting season, i.e. outside March and July inclusive</i>”. Section 2.1.3.1 of the RFI states that the works will be undertaken outside of the “<i>kingfisher breeding season, i.e. outside March and July inclusive</i>”. I note that the “<i>bird nesting season</i>” is generally interpreted as occurring between 1st March to 31st August as per national legislation and best practice. I note that the NPWS in its submission stated that “<i>The Department recommends that all vegetation removal works will be scheduled outside of nesting bird season, i.e. between 1 March and 31st August</i>”. I note that Section 7.6.2.2.1.1 of Chapter 7 of the EIAR states that “<i>works will commence outside the bird nesting season (1st March to 31st of August inclusive, where possible</i>”. Given the above inconsistencies around terminology of the “<i>bird nesting season</i>” in the documentation and taking a precautionary principle approach, I suggest that a condition (in the event of a grant of permission) could be added to state that “<i>HDD works beneath the River Nore will be undertaken outside</i>

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	Section 4.1 notes that noise and vibration impacts resulting in kingfisher disturbance cannot be ruled out. However, in Section 6.2.3 of the NIS notes that following mitigation measures will eliminate any possibility of an adverse effect for kingfisher during the bird nesting season: <i>"HDD works beneath the River Nore will be undertaken outside bird nesting season i.e. outside March and July inclusive"</i>. In addition, a pre-commencement kingfisher survey will be undertaken prior to HDD works to confirm the absence of kingfisher nest sites within 100m of the crossing point. If breeding sites are identified and occupancy confirmed, all construction works within 100m will be suspended until the nest is no longer occupied.	<i>the bird nesting season i.e. outside 1st March to 31st August inclusive"</i>. I note that the HDD works will be temporary in nature (noted in first party appeal document as approximately 5 days). In addition, a pre-commencement kingfisher survey will be undertaken prior to any works to confirm the absence of kingfisher nest sites within 100m of the crossing point. If breeding sites are identified and occupancy confirmed, all construction works within 100m will be suspended until the nest is no longer occupied. Taking the mitigation measures and proposed condition into consideration, I consider that likely significant residual effects on kingfisher will not arise.

Table 4 Issues raised regarding birds other than kingfisher not being included in the NIS. Impacts on kingfisher and other birds (under EIA)

Issues raised	Applicant documentation/re sponse/ref	Inspectorate Ecologist review & comment
Birds		<i>Refer to Section 4 (Stage 1 – AA Screening) of Revised NIS. Refer to Chapter 7 (Birds) of the EIAR</i>
Inadequate assessment of birds in the NIS. No other SCI species (except for kingfisher) considered in NIS. Collision Risk Assessment not considered in the NIS.	Section 4 of revised NIS addresses the AA Screening stage. All European sites which could potentially be affected were identified using a source-pathway-receptor (SPR) model. European sites surrounding the site are shown on Figure 4-1. Reference was	I consider that the methodology used for screening for AA is in accordance with best practice guidance. The only SPA located within the zone of influence of the proposed development is the River Nore SPA. The only SCI species included in the River Nore SPA is Kingfisher. Aside from the River Nore SPA, there are no other SPAs located close enough to the proposed development site such that it would be within the core foraging range (foraging range from nest site during breeding season and/or from night roost during winter season) for any other SCI species connected to an SPA. Foraging ranges differ for individual species, for example, the core foraging range for breeding hen harrier is 2km, with a maximum range of 10km. After the River Nore SPA, the next closest SPA the Slieve Bloom SPA (SCI includes hen harrier), located approximately 27km north of the GCR which is well beyond the maximum foraging range for hen harrier. Therefore, I accept the reasoning provided by the Applicant as to why just the River Nore SPA was screened in for AA and why just kingfisher has been considered in the NIS. I note that Section 4.1 of the NIS states that, results from the 2010 national kingfisher survey estimated individual kingfisher territories as spanning up to a maximum of 5km of channel length. As noted in Section 4.1 of the NIS, the proposed windfarm is located approximately 9km (overland) and over 15km (in-channel distance) from the River Nore SPA. Therefore, I accept that direct disturbance effects from the windfarm site

Issues raised	Applicant documentation/re sponse/ref	Inspectorate Ecologist review & comment
	made to Scottish Natural Heritage (SNH 2016) guidance on assessing connectivity with Special Protection Areas (SPAs), taking into consideration the distances species may travel beyond the boundary of their SPAs. The River Nore SPA was the only SPA that was identified as having an SPR. All other SPAs were ruled	on the kingfisher SCI population (associated with the River Nore SPA) have been ruled out. A collision risk assessment is also not required for the SCI population associated with the River Nore SPA due to the significant distance between the SPA and windfarm site. Therefore, it is not included in the NIS. The location of the HDD crossing under the Nore is adjacent to the River Nore SPA and disturbance effects from the HDD on the kingfisher SCI population (River Nore SPA) have been addressed in the NIS (See Table 3 above). Indirect effects on kingfisher due to a deterioration in water quality have also been addressed in the NIS (See Table 3 above) and in Chapter 7 of the EIAR. The kingfisher population recorded along the Tullaroan stream (recorded on eight occasions) within the windfarm site are a separate population to the SCI (River Nore SPA) population and therefore the impacts on the Tullaroan population can be addressed under the EIA process (see below). The kingfisher population recorded along the Tullaroan stream within the windfarm site was assigned County Importance (Section 7.4.1.1 of Chapter 7 of EIAR). This species was not recorded flying over the windfarm site within the potential collision risk zone. As noted in Section 7.5.2 of Chapter 7 of the EIAR, generally this species travels along watercourse corridors rather than across open terrestrial habitats when moving across the landscape. The closest turbine to the Tullaroan stream (T6) is over 250m and no turbine blades will overhang the stream. Therefore, a collision risk assessment for the Tullaroan kingfisher population is not required and has not been included in the EIAR. I accept this reasoning. Direct habitat loss and disturbance on the Tullaroan

Issues raised	Applicant documentation/re sponse/ref	Inspectorate Ecologist review & comment
	out as no SPR was identified.	kingfisher population within the windfarm site is addressed in Section 7.5.2 of Chapter 7 of the EIAR.
Full data sets of all SCI species recorded during surveys (including non-target species) to be included & considered in NIS. Provide clear rationale for selection of target bird species and exclusion of	See above. Refer also to Section 7.2.3 of Chapter 7 of EIAR	I accept that other SCI bird species were recorded close to the development site however impacts on these bird species are addressed under the EIA process, not under AA (see row above as to reasoning why only kingfisher has been considered in NIS). In terms of a rationale for selecting target species - refer to sections 7.2.3 and 7.2.4 of Chapter 7 of the EIAR which sets out the rationale for choosing target bird species. This approach (comprehensive desk study, consultation, initial site visits) is in accordance with best practice. The target bird species list is drawn from those species which are of most conservation concern and/or have international/national protection and those species which are likely to be in the vicinity of the development (taking into account the local environment and ecology of the bird species) and those species which are most sensitive to a windfarm development (such as raptors). Site specific surveys of the target species were designed and undertaken by experienced ornithologists as per best practice guidance and the results informed the assessment on birds (in an EIA context). The assessment in Chapter 7 focuses on the target species with the greatest potential to be impacted by a development of this nature (i.e. windfarm). Table 7.9 in Section 7.3.6 provides the list of target species recorded within the ZOI of the proposed windfarm site during the windfarm site along with a summary of the breeding and roosting status – this includes kingfisher, golden plover, little egret, peregrine falcon, whooper swan, kestrel snipe, buzzard, sparrowhawk and some red listed passerines. A list of all bird species recorded during the two years of surveys is provided in Appendix 7.1, Appendix 7.3 presents the results summary tables whilst Appendix 7.4 presents the raw survey data and mapping.

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
other SCI species in the NIS.		
Passerine concerns		The red listed passerines observed during the surveys are listed in Section 7.3.6.10. Populations recorded at the windfarm site were classified as <i>Local Importance (Lower Value)</i> . As noted in Section 7.4.2 of the EIAR, these passerine species are widespread, of low ecological significance and important only in the local area. As per NatureScot, passerines are generally considered not to be significantly impacted by windfarms due to their ecology. I accept this reasoning.
Peregrine falcon concerns	Refer to Chapter 7 of EIAR	In terms of peregrine falcon, overall breeding status confirmed as non-breeding. Overall wintering status confirmed as no regularly used roosts identified. It is stated that peregrine falcon was observed at the windfarm site on two occasions within 500m of the windfarm site over the two years of surveys, comprising single birds travelling/hunting and outside of the core breeding season months. This is a very low rate of occurrence. As noted in Section 7.4.1.4, the windfarm site was classified as <i>no ecological importance</i> to peregrine. I agree with this reasoning. As noted in Table 7.11, no pathways for significant effects were identified. I consider that the level of survey effort is adequate and that impacts on peregrine falcon have been adequately addressed. Peregrine was included in the collision risk assessment (See Appendix 7.5) for completeness and on a highly precautionary basis. The resulting collision rate is very low. Likely significant effects are not predicted.
Kestrel concerns around	Refer to Chapter 7 of EIAR	Kestrel is discussed in detail in section 7.3.6.6 in terms of survey results and evaluation detailed in Section 7.4.1.6. It is stated that up to three breeding territories were identified between 850m and 2.6km of the windfarm site but none within the site. It is stated that this indicates a resident population of 6 adult birds during the

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
mortality from collisions		breeding season in the wider area. It was recorded foraging within the site however it is stated that the habitats on the site are not unique or rare and similar levels of kestrel activity have been recorded beyond the site boundary. It is stated that this population would be bolstered by fledglings at the end of the breeding season, which will remain present in the area until the start of the next breeding season, when birds become territorial again. It is stated that given that kestrel have brood sizes of four to five chicks, and a survival rate of 30% in their first year it is likely that there would be a population of approximately six adults and five juvenile birds by the end of each winter season. The population was assigned <i>county importance</i> (regularly occurring population of 2 birds) at the windfarm site. As per Section 7.4.3, kestrel was assigned as a <i>medium</i> sensitivity KOR. As noted in Table 7.11 it was determined that an assessment of direct habitat loss, displacement effect and collision risk assessment was required. Refer to Section 7.5.2.3 regarding potential effects. It is stated that significant effects from direct habitat loss and disturbance are not predicted (See Section 7.5.2.3). According to Section 7.4.1.6, it is stated that the population of kestrel at a county level in Kilkenny is estimated to be 270 birds. In terms of collision risk at the windfarm site, it has been calculated as 0.391 collisions/yr. Whilst not provided in the applicant assessment, I have calculated that this equates to approximately 13.69 birds over the lifetime of the windfarm (35 years). It is stated by the Applicant that annual mortality of adult kestrel is 31%/year. Considering a county population of 270 birds, the Applicant calculates that if 0.391

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
		collisions/year were to occur, this would mean that the annual mortality of the county population would increase by 0.47%. Percival (2003) criteria have been used to assess the magnitude of impacts. The magnitude of collision risk effect is stated as <i>negligible</i> in the context of the county population as per Percival 2003. This equates to a “<i>very low</i>” effect significance (Percival) and “long term <i>not significant</i> negative” effect (EPA). I note that the bird monitoring programme as detailed in Appendix 7.6 of the EIAR includes collision monitoring for a number of years throughout the lifetime of the project – this will include recommendations that may inform additional mitigation or adaptation if required. Having regard to above, I consider that the assessment is adequate and has been undertaken in accordance with best practice. I accept the above analysis.
No owls observed nor night-time assessments for owls undertaken.	Refer to Section 7.2.4.2.3 (Breeding raptor surveys) and Section 7.2.4.2.4 (breeding woodcock surveys). Refer to Appendix 7.2 – survey effort	Barn owl was identified during the desk study (see Section 7.3.2 bird atlas records). As noted in Section 7.2.4.2.4 of Chapter 7, it is stated that dusk breeding woodcock surveys were undertaken within the site which also allowed the observer to survey for owls, i.e. barn owls and long-eared owls”. Surveys commenced one hour before sunset and continued for one hour after sunset or until it was too dark to see as per best practice. In addition, some of the vantage point surveys covering the site were carried out at dawn and dusk (i.e. starting one hour before sunrise or finishing one hour before sunset) during migratory/wintering periods throughout the two years of surveying. Breeding raptor surveys (includes all harrier, falcon, buzzard, eagle, owl, kite and osprey species) were undertaken during the core breeding season (See 7.2.4.2.3) and owls were not observed. The first party appeal states that “<i>suitable accessible buildings within the site were investigated for evidence of barn owl presence, however no signs of barn owl were recorded. In relation to the submitted record of “owls”</i>

Issues raised	Applicant documentation/re sponse/ref	Inspectorate Ecologist review & comment
		<i>1km from the site, it is noted that this is beyond the recommended surveying distance for owls as outlined in SNH (2017), i.e. within a 1km radius. Furthermore, this owl site record would be beyond the distance for potential effects as barn owl have a limit of disturbance at 50-100m, with many nest sites not being disturbed until a human was within 10m during the study. (as per Ruddock & Whitfield (2007)). It is stated that the Forestry Commission of Scotland (2006) recommends a 250m disturbance buffer around a known nest site where operations should be limited. The submitted record is significantly beyond this distance from the site thus limiting the potential for significant impacts”.</i> Having regard to above, I consider that the potential for significant effects on owl is very limited.
Inadequate assessment of impacts on diurnally active species (lapwing, golden plover, whooper swan)	Chapter 7	I note that some of the vantage point surveys covering the site were carried out at dawn and dusk (i.e. starting one hour before sunrise or finishing one hour before sunset) during migratory/wintering periods throughout the two years of surveying. Whilst lapwing are referenced in Section 7.3.2 (bird atlas records) of Chapter 7 of the EIAR, the first party appeal states that no lapwing was recorded within the proposed windfarm site during the two years of surveying. Having regard to survey results presented in the application documentation, I consider that the potential for significant effects on lapwing is very limited. Both golden plover and whooper swan were observed during the surveys. Overall breeding status confirmed as non-breeding. Overall wintering status confirmed as no regularly used roosts identified.

Issues raised	Applicant documentation/re sponse/ref	Inspectorate Ecologist review & comment
		As noted in Section 7.3.6.2, golden plover was observed during the winter season only. It was recorded infrequently during the VP surveys with flock sizes ranging from 20-50 birds. Just two observations were recorded within 500m of the windfarm site over two years of surveys, comprising birds travelling. As noted in Section 7.4.1.2, the windfarm site was classified as <i>no ecological importance</i> to golden plover. I agree with this reasoning. As noted in Table 7.11, no pathways for significant effects were identified. I consider that the level of survey effort is adequate and that impacts on golden plover have been adequately addressed. As noted in Section 7.4.1.5, just one observation of whooper swan (2 birds) occurred within 500m of the windfarm site over the two years of surveys (including VP and waterbird distribution surveys), the windfarm site was classified as <i>no ecological importance</i> to whooper. I agree with this reasoning. As noted in Table 7.11, no pathways for significant effects were identified. I consider that that the level of survey effort is adequate and that impacts on whooper swan have been adequately addressed. Finally, golden plover and whooper swan were included in the collision risk assessment (See Appendix 7.5) for completeness and on a highly precautionary basis. The resulting collision rates for both species are very low. Therefore, I consider that the potential for significant effects on both species is very limited.

Table 5 Issues raised regarding birds, viewsheds and vantage point (VP) surveys

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
Birds	<i>Refer to Section 7.2 of Chapter 7 (Birds) of the EIAR</i>	
Inadequate methodology with regard to establishing vantage points and undertaking viewsheds.	Section 7.2 of Chapter 7 sets out the assessment approach and methodology undertaken for the ornithology assessment. Section 7.2.4.2.1 describes the methodology undertaken for the vantage point surveys and viewshed analysis. It states that VP surveys were undertaken in	I consider that the chapter has been prepared in accordance with best practice guidance (See sections 7.1.2 and 7.2.4.2.1 of Chapter 7). The focus of VP surveys is to monitor flight activity within the windfarm site and within a 500m radius of the turbine positions. It is stated in Section 7.2.4.2.1 that surveys were conducted from one fixed vantage point (VP1) with comprehensive coverage of the windfarm site (see Figure 7.1). It is stated that the vantage point was selected by undertaking a viewshed analysis and confirmed by a reconnaissance visit and initial field surveys to ensure that the turbine layout was adequately covered. I consider that this selection approach is in line with best practice and guidance. NatureScot 2025 ⁴ notes that when selecting VPs, the aim should be to cover all the flight activity survey area such that no point is greater than 2km from a VP. Exceptions should be agreed with them (noted consultation with NatureScot is not possible as Ireland is in a different jurisdiction). It also notes that it is important to choose VPs which achieve <i>maximum</i> visibility with the <i>minimum</i> number of points. NatureScot notes that with proposals for up to three turbines it may be possible to observe the entire survey area from a single VP. NatureScot notes that in most cases, however two or more VPs will be required. The question to consider therefore in the case of this proposed development is whether the entire seven turbines can be observed from the single VP (VP1) chosen.

⁴ NatureScot (2025) Recommended bird survey methods to inform impact assessment of onshore windfarms

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	accordance with NatureScot 2017 to monitor flight activity within the windfarm site and within a 500m radius of the proposed wind turbine position. Section 7.2.4.1 notes that “surveys were conducted from one fixed point vantage point (VP1) with comprehensive coverage of the Proposed Windfarm site (Figure 7-1). This vantage point location was selected by undertaking a viewshed analysis and confirmed	Section 7.2.4.2.1 of Chapter 7 states that the viewshed analysis “<i>aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points</i>”. It is stated that “<i>viewsheds were calculated using visibility analysis over raster DEM (Version 1.8) in QGIS (Version 3.28) using a notional layer suspended at 22m, which is representative of the minimum swept height of the proposed turbine. While the relevance of being able to view as much of the site to ground level is acknowledged, the NatureScot guidance (2017) emphasises the importance of visibility of the ‘collision risk volume’ when the data is to be used to estimate the risk of collision with turbines by birds.</i> It is also stated that the vantage point location “<i>was tested for visibility coverage of the proposed turbines and to a 500m radius of the outermost turbines in line with NatureScot (2017). The viewshed analysis was undertaken by creating a viewshed point 1.75m in height (to represent the height of the observer) on a map using a 25m resolution digital terrain model (DTM). The relative height of any surrounding vegetation and its effects on visibility was recorded during a site visit and is also accounted for in the analysis. Using QGIS (Version 3.28), a viewshed of 360° was produced calculating an area 22m from ground level up to a 2km radius. The resulting viewshed image was then cropped to 180° to give the viewshed. A 500m buffer was applied to the outer most turbines of the Proposed Wind Farm</i>”. The visible viewshed coverage at 22m is presented in Figure 7.2 of Chapter 7 and demonstrates that the VP1 survey area captures the “<i>collision risk volume</i>” at all of the seven turbine locations. The viewshed

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	<i>by a reconnaissance visit and initial field surveys to ensure that the Proposed Windfarm turbine layout was adequately covered".</i> The visible viewshed coverage at 22m is presented in Figure 7.2.	analysis has been carried out in accordance with the guidance. I have reviewed the VP survey effort, summary of VP survey records and VP survey data including flight paths in Appendix 7.2-7.4 in addition to the collision risk assessment (Appendix 7.5). I have reviewed the habitat mapping presented in Chapter 6 of the EIAR (Figure 6.5 of Chapter 6) and the visibility mapping presented in Chapter 13 (and accompanying appendices) (LVIA) to get some background detail on the physical landscape features, elevation gradients and visibility within the receiving environment. I studied coverage of the windfarm from VP1 during my site visit. I have also reviewed the calculation parameters presented in Section 2.5 of the collision risk assessment in Appendix 7.5. Based on the evidence provided, it appears that there is adequate coverage of the seven turbines from VP1 and that additional VPs are not required. I consider that VP1 survey effort and results are sufficient to enable collision risk assessment to be carried out.

Table 6 Issues raised regarding white clawed crayfish

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
White clawed crayfish (WCC)	<i>Refer to Appendix III (eDNA results) of Appendix 5 of EIAR (Aquatic Baseline report), Sections 3.5.3.3, 5.1.1.1, 5.1.1.3.3, Table 5.4 and Section 6.2.1 of revised NIS. Refer also to Section 9.5.2 of Chapter 9 (hydrology and hydrogeology) and Chapter 6 (Biodiversity of EIAR</i>	

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
Inadequate assessment of impacts of proposed development on the conservation objectives of white-clawed crayfish. Risk of spread of crayfish plague by proposed development during flood events have not been taken into account in NIS.	Section 3.5.3.3 of the revised NIS notes that environmental DNA surveys were undertaken on watercourses at 4 locations within the proposed windfarm site and that white-clawed crayfish (WCC) and crayfish plague (<i>Aphanomyces astaci</i>) were both tested for at each location. Section 3.5.3.3 notes that there were no positive results for WCC at any survey location indicating an absence of these species within the areas surveyed and areas upstream of these survey areas but that there was a strong positive result for crayfish plague at three of the survey locations. I note that eDNA analysis was not undertaken on watercourses along the grid connection route. It is stated that in-stream works are not required to construct the grid connection works. I note that Section 2.7 of the Aquatic baseline report (Appendix 6.3 of EIAR) provides details on the biosecurity measures that were undertaken during the field survey work to prevent spread of crayfish plague.	The crayfish plague (<i>Aphanomyces astaci</i>) records obtained as part of the national crayfish plague surveillance programme are presented in www.biodiversitymaps.ie. White-clawed crayfish (WCC) records are also available on the same database. I have reviewed this database in addition to the application documentation. From my review of www.biodiversitymaps.ie, I note that there is a record of crayfish plague at Cappagh Bridge on the Munster River upstream of the confluence of where the Tullaroan River discharges into the Munster River. The Munster River drains into the Nore river. The windfarm site is located within the Munster catchment. There are two records of White-clawed crayfish (WCC) at the confluence of the Tullaroan River and Munster River and another further downstream on the Munster River. Taking into account the results of the Applicant eDNA analysis at the windfarm site and the data from biodiversitymaps.ie, I consider that it can be assumed that crayfish plague is likely present in the overall river catchment of the windfarm site and that WCC is at present at least downstream of the windfarm site. Some of the grid connection route (GCR) is located within the Tullaroan catchment (which flows south into the Munster River whilst some of the GCR is located in a different catchment whose watercourses flow north into the river Nore. From my review of www.biodiversitymaps.ie, I note that there is a record

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	Section 5.1.1.1 notes that pollution of surface waters in the vicinity of the proposed windfarm site or HDD locations has potential to result in likely significant effects (LSE) on this QI species in the absence of mitigation. Section 5.1.1.3.3 acknowledges that WCC is present throughout the SAC and that a potential pathway exists in the form of water quality deterioration & habitat degradation. Refer also to Table 5.4 of revised NIS. It notes that crayfish plague will not be spread as a result of the proposed project given that no in-stream works are proposed. Mitigation measures to address water quality/habitat degradation are summarised in Section 6.2.1 of revised NIS and detailed in Section 9.5.2 of Chapter 9 (hydrology and hydrogeology) of EIAR. In addition to no in-stream works, mitigation measures are also proposed to ensure that silt laden or contaminated surface water runoff from excavations does not discharge directly to the	of crayfish plague on the Nore river upstream of Ballyragget (upstream of the GCR). There are a couple of crayfish plague records along the Nore at Threecastles bridge and Jenkinstown (the watercourses that are crossed by GCR drain into the Nore upstream of Threecastles). Crayfish plague records are also located further downstream on the Nore at Thomastown and Brownsbarn bridges. From my review of www.biodiversitymaps.ie, I note WCC records are present throughout the Nore river upstream and downstream of the GCR and windfarm site. Taking into account above, I consider that it can be assumed that crayfish plague is likely present in the overall Nore river catchment and that WCC is also present within the catchment. The national crayfish plague surveillance programme https://www.fishhealth.ie/fhu/news/update-crayfish-plague-ireland, recommends biosecurity measures are implemented in affected catchments for anyone involved in activities in any watercourse. I note that in the application documentation, it is stated that in-stream works are not proposed as part of the construction works for the proposed windfarm development. I note that the Applicant has assumed that WCC is present throughout the SAC and has proposed mitigation measures to address potential downstream water quality effects arising from the construction works on WCC and other aquatic fauna, in particular avoiding carrying out works during heavy rainfall events etc. I note that the overall assessment of conservation status for WCC is bad and

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	watercourse, buffer zones for crossing locations and fencing off watercourses, weather forecast monitoring so that works can be scaled back/suspended when heavy rainfall is predicted etc. It is stated that site construction works will be timed such that they will only be undertaken during periods of low rainfall and therefore minimum runoff rates. Specific mitigation is detailed in Section 6.2.1.2.3 for works within hydrological buffer zones within the proposed windfarm site. This includes works being completed during the dry summer months unless otherwise agreed with IFI and works postponed in the event of rainfall. Specific mitigation is proposed in Sections 6.2.1.2.6 to 6.2.1.2.9 in relation to morphological changes to surface watercourses including confining the works to summer period which coincides with lowest period of expected rainfall.	one of the main threats is crayfish plague (NPWS 2025 Article 17 reports). I note there is no change in the overall Article 17 assessment and trend in this species from the last assessment period (Article 17 report 2019). <i>"The impact of Crayfish Plague on the population has been severe and will continue and it is predicted this will be reflected in the range with more gaps appearing as populations suffer mortalities"</i> (NPWS 2025 Article 17 reports). Given that crayfish plague is already within the catchment, given that in-stream works are not proposed, given that the construction works have been designed not to be undertaken during flood events (albeit primarily to minimise water quality impacts), I do not consider that the proposed development will increase the risk of spread of crayfish plague thereby resulting in a likely significant impact on white clawed crayfish (WCC). Overall, taking into consideration the implementation of mitigation measures (water quality) provided in the EIAR and NIS, I do not consider that there will be likely significant impacts on white clawed crayfish from the proposed development.

Table 7 Issues raised regarding amphibians & reptiles

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	Refer to Sections 6.6.5, 6.6.7, 6.7.2.1.1, 6.7.3.1.1 and Table 6.10 of Chapter 6 (Biodiversity), section 4.2.1.2.2 of First party appeal	

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	<i>response. Refer to Sections 2.1.10 and 2.7.4.1.5 of Applicant RFI (main document).</i>	
No amphibian/reptile surveys completed but suitable habitat which likely supports these species is present	Section 6.6.5 of Chapter 6 of the EIAR notes that the site likely supports amphibian and reptile species at some local level due to the presence of suitable habitat (several watercourses and ditches). Table 6.10 of Chapter 6 notes that no evidence of reptile/amphibian populations being significant at more than a local level was recorded, thus further survey/assessment were not deemed necessary. Therefore, they were not included as key ecological receptors (KERs). Section 4.2.1.2.2 of first party appeal notes that the multi-disciplinary walkover surveys were designed to detect the presence, or likely presence, of a range of protected species, including reptiles and amphibians. Section 6.6.5 (Chapter 6) notes that no amphibians or reptiles were identified during the surveys conducted. Section 6.6.5 notes that given watercourse/ditch habitats are widespread in the surrounding area, the proposed development will not result in a significant loss to habitat for amphibians or reptiles. Section 6.6.7 notes that the proposed project will not result in a significant loss of suitable habitat for these species. Mitigation measures for the protection of water quality are detailed in Sections 6.7.2.1.1 and 6.7.3.1.1 of the EIAR. Sections 2.1.10 and 2.7.4.1.5 of Applicant RFI	I accept the Applicant reasoning provided as to why these species were not included as KERs and as to why specific surveys were not undertaken. Having reviewed the documentation, considering no in-stream works are proposed and having regard to the water quality mitigation measures proposed for construction stage, I am satisfied that there will not be a significant residual impact on amphibians or reptile species.

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	(main document) reiterates the above points.	

Table 8 Issues raised regarding habitats

Issues raised	Applicant documentation/response/ref	Inspectorate Ecologist review & comment
	<i>Refer to Sections 3.3.1.1, 3.3.1.4 of Revised NIS. Refer to Aquatic Baseline report. Refer to the first party appeal</i>	
Doubt regarding the accuracy of grassland habitats determined for the NIS	Sections 3.3.1.1 and 3.3.1.4 of the revised NIS provide details on the botanical/habitat surveys. Surveys were undertaken within the windfarm site and GCR infrastructure. Surveys were undertaken during optimum period and in accordance with best practice guidance and by experienced ecologists. A description of the habitats within the site is provided in Section 3.5.1 and graphically presented in Figures 3.1 and 3.2 of the revised NIS. The aquatic baseline report provides the results of river and fisheries habitat assessments, eDNA surveys, electrofishing and macroinvertebrate surveys all of which have informed the NIS. No Annex I habitats which are QIs for the SAC were recorded within or adjacent to the proposed development.	I consider that the habitat and botanical surveys were carried out in accordance with best practice guidance, by experienced ecologists. I consider that there is sufficient detail on the baseline such that AA can be carried out. No Annex I habitats which are QIs for the SAC were recorded within or adjacent to the proposed development. Therefore, there is no potential for direct loss to any QI habitats associated with this SAC. As I've noted previously in Sections 3.3.2 and 3.3.3 above, there are no QI designated habitats for the SAC within the launch pit or reception footprint at the HDD location north of Ballyragget. This is the only location where the proposed development is partially located within the SAC. I consider that indirect impacts (for example siltation, degradation, water quality etc) on QI habitats for this SAC have been adequately addressed in the relevant sections of the revised NIS.

4. Draft conditions

4.1.1. In the event of a grant of permission, I consider it reasonable to include the following conditions:

- Dusk emergence surveys shall be included in the programme of confirmatory pre-construction bat inspections/surveys at the watercourse crossings. Reason: for the protection of bats, a protected species
- Where lighting is required to facilitate construction works at watercourse crossings, lighting restrictions shall be implemented as set out in Section 6.1.2 of revised Bat survey report, dated 16th October 2025. Reason: for the protection of otters and bats, both protected species.
- HDD works beneath the River Nore will be undertaken outside the bird nesting season i.e. outside 1st March to 31st August inclusive. Reason: for the protection of kingfisher, a protected species.

5. Conclusion

5.1.1. Having had regard to all of the information provided by the Applicant and to best practice guidance and having regard to the suggested draft conditions above, I consider that the issues raised in relation to the surveys and impacts within the submitted NIS and EIAR of inter alia kingfisher, otter, birds and bats are appropriately addressed by the Applicant's Appeal and Further Information response

Signed:

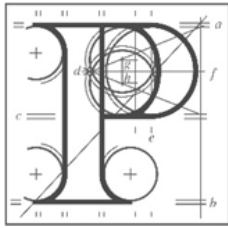


Fiona Patterson, BSc, MSc, MISEP CEnv

Inspectorate Ecologist

18th June 2026

Appendix 7: Senior Environmental Scientist Report



Development

The construction of a renewable energy development comprising 7 no. wind turbines, and associated infrastructure in the townlands of Briskalagh and adjacent townlands, near Kilmanagh in Co. Kilkenny, and a 38kV on-site substation and associated works, including underground 38kV cabling to connect to the national grid at Ballyragget 110kV substation, in the townland of Moatpark, Co. Kilkenny.

Type of Application

Planning Appeal

Topic

Review the issues raised pertaining to flooding, potential impacts on the Group Water Schemes and the adequacy of the site investigations as addressed by the Applicants appeal and further information response. Review of the submission in response to the appeal

and the applicant's further information response.

Senior Planning Insp. **Enda Duignan.**

Date **24th June 2026.**

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1.0 Development Overview & Scope of Report:

1.1 The proposed development is for the construction of a renewable energy development comprising 7 no. wind turbines, and associated infrastructure in the townlands of Briskalagh and adjacent townlands, near Kilmanagh in Co. Kilkenny, and a 38kV on-site substation and associated works, including underground 38kV cabling to connect to the national grid at Ballyragget 110kV substation, in the townland of Moatpark, Co. Kilkenny.

1.2 Given the technical nature of the hydrology/-hydrogeology of the site and the positions put forward by both the applicant and third parties, the assistance and input of the in-house Environment team was requested to assist in the assessment of the following aspects of the proposed project; review the issues raised pertaining to flooding, potential impacts on the Group Water Schemes and the adequacy of the site investigations as addressed by the Applicants appeal and further information response. Review of the submission in response to the appeal and the applicant's further information response.

1.3 In addition to the above I have reviewed the following. Data available on up-to-date water Quality using the EPA's Eden WFD application and the GSI data and floodinfo.ie.

1.4 In my capacity as Inspectorate Environmental Scientist with over 25 number of years professional experience, I have the relevant expertise to provide a professional opinion as to the aforementioned.

2.0 Issues Examined:

2.1 Potential impacts on Callan public water schemes.

Site location of the Turbines, Water Framework Directive.

2019-24 Status Tullaroan_020 Tullaroan_030 & Bregagh (Kilkenny)_010

The subject site is located within the Nore catchment, hydrometric area 15 which drains an area of 2,540km² the Nore then joins the Barrow which then enters the sea at Waterford harbour and into the Eastern Celtic Sea.

The Tullaroan stream_020 (IE_SE_15T020250) is at Good ecological status for 2019-24 and not deemed to be at risk of achieving the objectives of the Water Framework Directive. There are no identified pressures within this waterbody. The Tullaroan stream_030 (IE_SE_15T020450) risk status is presently under review with regard to attaining the water framework directive objectives and based on the data for the period 2019-2024 is in good status. The pressures identified within this waterbody are Agriculture which is deemed significant and Urban Wastewater which is not deemed significant. The Bregagh (Kilkenny)_010 is currently at risk of not meeting the objectives of the Water Framework directive. Based on the data 2019-24 the status is poor.

The groundwater body underlying the turbine site location is the Ballingarry Groundwater body IE_SE_G_009 and the Kilmanagh gravels IE_SE_G_083 ground water body. The Ballingarry Groundwater body is not at risk and of good status based on the 2019-24 data. The Kilmanagh gravels groundwater body is not deemed to be at risk and of good status based on the 2019-24 data.

Grid Connection Route & Water Framework Directive

The applicant has screened in the following surface water bodies, with WFD risk and ecological status in parentheses. Tullaroan_020 (Not at risk- Good) Tullaroan_010 (Under Review- Moderate), Arigna_010 (At Risk-Moderate), Nuenna_020 (At Risk-Poor), Nore_120 (At Risk- Moderate), Nore_130 (Not at Risk- Good), Nore_140 (Not at Risk- Good) and the Nore_150 (Not at risk - Moderate) along the grid connection route based on proximity to and works within the waterbodies.

I am satisfied, having regard to the assessment of the applicant, that the conclusions reached are accurate and reasonable and I conclude that the proposed development within the study area will not compromise the achievement of the objectives of the WFD for any waterbody.

Hydrogeology.

Topographically, the turbine site incorporates a steep sided valley c. 8.5 km to the West of Kilkenny City and elevated land on either side of the valley rising to 150m OD over 300 metres in the southwest of the site and rising to 191 OD in the Northeast portion of the site. The Tullaroan stream surface water feature runs through the site from Northwest to the South to the village of Kilmanagh just South of the turbine location area.

Site Location of the Turbines

The mapped bedrock across this area is of the Killeslin Siltstone formation which can be described as a muddy siltstone and silty mudstone.

The site subject of this application is underlain by a Poor Aquifer with bedrock which is generally unproductive except in local zones. In addition to this within the area of the Windfarm there is the presence of a Regionally Important gravel aquifer, the Kilmanagh sand and gravel Aquifer, which incorporates a large portion of the Western side of the site. In an effort to differentiate between the two aquifer types under the windfarm site I will give a brief description of both as follows.

Poor Aquifer description in the location of the subject windfarm Bedrock aquifer capable of supplying small abstractions (e.g. domestic supplies, small group schemes), or 'moderate' to 'low' yields (<100m³ per day). Groundwater flow occurs predominantly through a limited and poorly connected network of fractures fissures and joints and with less permeable and/or more limited zones of higher permeability.

A sand/gravel aquifer essentially is classed as regionally important when it can

supply regionally important abstractions such as public water supplies or significant yields exceeding 400 m³/d. It is highly permeable and more than 10 m thick or has a saturated thickness of at least 5 m and normally extends over at least 10 km². The Kilmanagh sand and Gravel aquifer falls into this category. Groundwater flows through the pore spaces between the sand/gravel grains, and the permeability is mainly determined by the grain size. Larger grains resulting in pore spaces, and the 'sorting' of the material, i.e. the more uniform the particles, the higher the permeability. There is a relatively uniform distribution of groundwater, good aquifer storage and long groundwater flow paths, typically limited by the aquifer's extent. Groundwater gradients are typically low ('flatter' water tables), giving relatively low groundwater velocities. There is generally a strong interaction between surface water and groundwater, with groundwater discharging into streams if the water table is high, or conversely, the surface water moving into the aquifer, if the surface water level is high. Large springs are often associated with sand/gravel aquifers, especially in low-lying areas or at the periphery of the aquifer.

The site overall, outside of the footprint of the river valley, comprises of tills derived from Namurian rocks falling within the soil grouping of Surface water and ground water gleys. On the more elevated parts of the site bedrock is at or near the surface falling within the soil grouping of Lithosols and regosols. In the footprint of the river valley the soils are Glaciofluvial sands and gravels within the soil grouping of Renzinas and Lithosols with the soils along the river alluvial in nature, this corresponds with the footprint of the Regionally important gravel aquifer.

The subsoil permeability across the site is low in the areas of the surface water and groundwater gleys and high permeability corresponding to the glaciofluvial sands and gravels and the alluvial soils within the river valley. It then follows that the at groundwater recharge to the west of the proposed site is 85% in the glaciofluvial sands and gravels telling us that most of the effective rainfall makes its way to the underlying aquifer. The alluvial soils bounding the watercourses has a recharge coefficient of 42%. The higher slopes to the northeast of the turbine site where the lithosols and

regosols are located there is a recharge coefficient of 85% and along the slopes of this area the recharge coefficient drops to 22%. Effective rainfall across the area is 622mm/ year.

The groundwater vulnerability across the Glaciofluvial sands and gravels has a high vulnerability rating, with extreme and extreme with rock in the more elevated portions of the site to the northeast in the areas of the lithosols and the regosols. In the south of the site near the village of Kilmanagh there is moderate vulnerability rating.

Essentially what this is telling us is that the areas of the site where groundwaters are at most risk of contamination are located along the river Valley and the elevated portions of the site to the Northeast of the site.

The turbine site is located within the outer source protection zone for the Callan public water scheme, with the inner source protection area located c.8km to the southern boundary of the turbine portion of the site. The turbine site also intersects the Ballycallan, Shale region and the Ballycallan Sand and gravel region group water schemes preliminary source protection area zones of contribution.

Grid connection Route.

As the route exits the turbine location area, the connection route passes through a poor aquifer generally unproductive except for local zones for about 10kms. The route then skirts along the west of the River Nore (upper) regionally important gravel aquifer through a regionally important karstified diffuse aquifer for c.6.5km. The route then enters the River Nore (upper) regionally important gravel aquifer and terminates to the West of the village of Ballyragget. The grid connection route as it leaves the turbine site runs for c.2.75km through the outer source protection area for the Callan Public water scheme. Vulnerability rating along the route varies, initially vulnerability is low along the first 4km of the route, the route then crosses an area of extreme and with extreme with rock for c.1km. Over the next c.4km vulnerability varies from extreme to moderate. The last section of the connection route of c.7.5 km runs through an area of high vulnerability.

Discussion: The development in the context of the Callan Public Water Scheme.

Primarily, the site is located within the Outer Source Protection area for the Callan Public Water Scheme. The inner source protection area is determined by the 100-day time of travel to the source from a point below the water table. The purpose of this delineation is to protect against the effects of potential contamination which may impact the source, with particular regard to microbial contamination. The Windfarm site is located within the outer source protection area, in other words the complete zone of contribution of the source of the Callan Public water scheme. This area is required to support the abstraction from long term recharge. This area is determined by groundwater flows and gradients, aquifer permeability and the recharge in the area. The boundary of this zone of contribution, an area of 30km², aligns with the boundaries of the sand and gravel aquifer which is the limit within which the zone of contribution will likely occur. Based on the groundwater protection scheme. The Kilmanagh sand and gravel aquifer accounts for ~250 hectares of the approximately 1000-hectare site.

In essence this essentially rules out the remaining 75% of the site that may have the potential to impact on the Callan public water scheme. The aquifer is divided into 2 the confined portion & the unconfined portion of the aquifer. The confined portion of the aquifer (part of the aquifer that is held between impermeable layers of either rock or clays) is located near the Callan source and covers an area of 20km², the remaining 10km² is representative of the unconfined portion of the aquifer (essentially there is no upper impermeable layer confining it). This is based on the following estimated discharges from the Callan source of c.1.3 million m³ per annum, with the confined portion of the aquifer producing c.600,000m³ per annum which is based on 30mm/year recharge over a 20km² area. This essentially means that the shortfall must be coming from the unconfined portion of this sand and gravel aquifer North of Kilmanagh. It is this portion of the site that has the potential to be impactful on the Callan public water scheme an area of c.250 hectares. The groundwater vulnerability within this area is divided by largely high vulnerability to the west and low vulnerability with a ribbon of

high vulnerability running through this area in the eastern portion of the site. Approximately 2.7km of the grid connection route transects the outer source protection area through an area of low groundwater vulnerability.

It is now necessary to explain groundwater vulnerability to give an indication of the extent of layers of deposits above the groundwater. In the area that can be ascribed as having the potential to impact the Callan public water scheme within the windfarm site i.e. the area of the sand and gravel aquifer the GSI mapper has shown the following vulnerability ratings within the windfarm site and the following vulnerability rating within the grid connection route that is located within the outer source protection area.

In the wind farm site, the area that incorporates the sand and gravel aquifer groundwater vulnerability is recorded as high and low. The material within this area is described as largely Glaciofluvial sands and gravels and alluvial deposits confined to the route of the Tullaroan stream. The boundary of this sand and gravel aquifer within the confines of the windfarm site may also include some surface and groundwater gleys. Subsoils permeabilities across this portion of the windfarm site are mapped as low around the alluvial deposits to high within the sands and gravels. This would point towards the following levels of deposit above the water table based on the aforementioned. Within the areas of high vulnerability, a likely deposit thickness of >2m of sands and gravel exists. In the alluvial deposits of low permeability and low vulnerability this would be indicative of >8m of subsoil thickness.

Whilst having regard to the area of the site that has the potential to impact on the Callan Groundwater scheme i.e. the Kilmanagh sand and gravel aquifer, the area within this deemed to be of high groundwater vulnerability is most vulnerable to groundwater contamination, but still with >2m of deposits, trial pit examinations would appear to support this. Turbines 6 & 7 and the spoil management areas south of these turbines appear to be located just outside the area underlain by the Kilmanagh sands and gravels aquifer and it is works carried out within this area that may have the

potential to impact on the Callan Public water scheme in the absence of appropriate mitigation measures. Regarding the potential to impact on the Tullaroan Public water scheme this is located along the grid connection route to the north of the windfarm site. Given the mitigation measures as proposed I am satisfied that the potential for significant effect has been adequately addressed. The Ballycallan Shale regions intersects the southern portion of the windfarm site there would appear to be no proposed construction works within this area. The groundwater vulnerability is deemed to be moderate.

The mitigation measures proposed and discussed within Chapter 9 of the Environmental Impact Assessment Report address the potential likely significant effects during the different phases of the development, construction operational and decommissioning. Regarding the mitigation measures as proposed it is my opinion that these measures will remove the likelihood of significant effect on the Callan Public water Scheme and the other public water schemes.

2.2 Adequacy of the site investigations addressed in the appeal and the applicant's response to further information.

I will discuss each further information item individually with regard to the hydrology and the hydrogeology.

Point 1 requested the applicant to provide a robust rationale for the adequacy of the trial pits provided across the site, noting their depth relative to the depth of the foundations for the proposed turbine bases.

The applicant responded by detailing the following: The investigations carried out included 22 trial pits 8 at the proposed borrow pits and the remaining 16 across the windfarm site. Ground conditions at 6 of the 7 turbine locations were carried out via trial pitting. Particle size distribution analyses was carried out on 8 samples from the trial pit excavations and 2 monitoring wells drilled in the river valley of the Tullaroan

stream. The turbine bases will be between 4-4.5m BGL and this will be determined by local conditions. The issues of site investigations surrounding T7 will be dealt with under point 3. The applicant puts forward that the extent of investigations is considered to be more than adequate given the consistency of the geological profiles across the site. The applicant provided a rationale for the extent of the investigations carried out across the site.

Geotechnical investigations including trial pitting and boreholes are a widely accepted methodology for the characterisation of the baseline environment. The applicant goes on to state that these methods provide for precise geological information at individual locations, and the wider geology can be understood given the suitable quantity of investigations carried out. As referenced above the volume of investigations carried out in conjunction with site walk over surveys, logging and laboratory analysis is deemed to be acceptable given the geological and hydrogeological setting and the scale of the development. In 7 of the 22 trial pits across the site bedrock was encountered between 0.4 & 3.4 mBGL on the slopes of the valley with thick deposits on the valley floor within the glaciofluvial deposits. Karst or Karst bedrock was not encountered across the site. This lends itself to the applicant's position regarding the consistency of the geology across the site which is consistent with the Geological survey mapper at www.gsi.ie. Both gravity and piled foundations were assessed as part of the EIAR and the applicant states that this is a precautionary approach in the level of assessment. The applicant further states that the potential impacts on waters as a consequence of the piling with the implementation of widely accepted mitigation measures.

Point 2 stated that 'Concerns were raised regarding the extent of site investigations undertaken for the proposed borrow pit given its proximity to the aquifer and nearby watercourse onsite. Noting its location relative to this regionally important gravel aquifer, you are required to establish the impacts of such an excavation on the potential to impact surface water and groundwater flows in the area. Further detailed site investigations shall be provided to fully establish a conceptual site model for flow

regimes in this area.

The applicant responded detailing the following as summarised. The site is overall mapped over some aquifer as is the country in its entirety. Regarding the borrow pit this is underlain by a poorly productive aquifer generally unproductive except in local zones. Essentially this means that the bedrock is of low permeability and transmissivity. This means that the surface waters will be the sensitive receptor within this area of the borrow pit. This borrow pit is outside the regionally important sand and gravel aquifer. Bedrock was encountered at depths ranging from 0.4 to 1.0m BGL at BP1-TP2 and BP1-TP1 respectively. The borrow pit is located well outside the 50m buffer, with the borrow pit being 196m northeast of the nearest mapped stream. The borrow pit will not significantly alter the hydraulic regimes at the site. This is further supported by the absence of any groundwater strikes during drilling the main water inflows to the pit will be from surface water run-off and shallow groundwater flows. Given the recorded permeability of 3.97×10^{-7} m/s the applicant provided for an order of magnitude increase in permeability simulating a worst case scenario the radius of influence of the borrow pits extends from 19m to 60m still well short of the nearest mapped stream at 196m. Given the distances involved and the implementation of best practice mitigation measures there is no potential for significant effects on local watercourses or the sand and gravel aquifer.

Point 3 stated that 'Concerns are raised regarding the complete absence of site investigations at the location of T7. Notwithstanding the rationale provided by the Applicant within the Chapter 9 of the EIAR, the absence of data prohibits an adequate assessment of the potential impacts of the development on both groundwater quality and flow dynamics and surface water flows and quality at this location. Therefore, you are required to undertake further site investigations proximate to the location of T7 to address this issue.'

The applicant has stated that additional investigations have been carried out within 90m of the proposed turbine location number 7 with water strike at 5.5m BGL within

the clay deposits with a more significant strike in 11.5mBGL in the sand and gravel deposits permeability testing shows the material in this location to be highly permeable with permeability within this well returned, 1.79×10^{-4} m/s. This value is expected within the weathered bedrock and is consistent with the overlying sand and gravel deposits. Consequently, the foundations to be utilised at this location will be piled foundations. The applicant further states that given the small footprint of the piles and the high permeability of the local deposits in conjunction with best practice mitigation measures there will be limited potential for impact of groundwater flow dynamics.

Point 4 stated “You are required to provide an assessment pertaining to all potential impacts on surface waters flows and/or groundwater flows as a result of dewatering associated within the excavations for the turbine foundations.”

The applicant asserted that this was covered in the EIAR but provided a summary regarding no impact on surface and groundwater flows as a result of the dewatering. There will be no permanent dewatering at any excavation, with dewatering being a temporary and shallow. Across the windfarm site there may be temporary reduction in groundwater levels during the construction phase, but these are deemed to be transitory in nature. The majority of the development is located on the valley slopes thus not overlapping with the sand and gravel aquifer boundary, the exception being T7 which is located within an area of low permeability subsoils and poor bedrock aquifer which is unproductive. Within the area of the borrow pit borehole 25MW02 did not encounter any significant groundwater strike above 20.5mBGL and as such no significant inflows of groundwaters are expected within the shallow excavations. On the slopes of the valley surface water run-off dominates over infiltration as such groundwaters flows will be short and discharge to the watercourse. The applicant once again asserts that there will be no alteration in groundwater flow. During construction overland flows of precipitation will require treatment via drainage and attenuation system. The volume of this water will be dependent on precipitative conditions. There may be requirement for dewatering and excavation required within the location of T7 this will be temporary with no alteration to groundwater flows with treated waters being

returned to the aquifer.

It is not envisaged that there will be significant inflows of groundwaters requiring dewatering given the topographic setting and local hydrogeological regime. This in conjunction with best practice mitigation measures there will be limited potential for significant impact of surface water or groundwater flow dynamics.

Point 5 states “It is noted that the crossing of the Tullaroan Stream and some access roads are proposed to be located within a flood zone (National Indicative Fluvial Mapping). In addition, there is a history of flood events immediately downstream of the site within the village of Kilmanagh. In this regard, you are required to submit an updated Flood Risk Assessment (FRA) which includes detailed site-specific hydraulic modelling of the Tullaroan Stream which would examine the potential impact on the existing floodplain or on flood risk elsewhere downstream. The updated FRA shall also have regard to the alterations that have been undertaken to the Tullaroan Stream within the boundaries of the site.”

The applicant refers to additional site-specific hydraulic flood modelling along the Tullaroan stream carried out to address the issues raised in the further information, this is further supported by the findings of the original flood risk assessment. In this document channel alterations and watercourse crossings were assessed as part of the modelling. This additional assessment concluded that there would be no significant changes to flood waters or flood extents between baseline and future flood scenarios which included the subject development. In the Flood risk assessment in the form of qualitative and quantitative assessment already submitted, also concluded that there would be no significant increase in flood risk. In addition to this the proposed mitigation measures would remove any residual risks.

Discussion regarding the adequacy of the site investigations addressed in the appeal and the applicant’s response to further information.

In regard to the adequacy of the trial pitting carried out across the site. The geotechnical investigations including trial pitting and boreholes are a widely accepted methodology for the characterisation of the baseline environment. Given the geological consistency across the site the extent of the investigations does capture the mapped conditions across the site, this is further borne out by my own desk top study of the site described earlier in this report. I am of the opinion that the applicant has given a robust description and assessment of the ground conditions both geologically and hydro-geologically and that the methodology utilised is sufficient to provide an accurate assessment across the site.

Discussion regarding the concerns were raised regarding the extent of site investigations undertaken for the proposed borrow pit given its proximity to the aquifer and nearby watercourse onsite.

The location of the borrow pit is specifically located within an area where bedrock is of low permeability and transmissivity essentially a poorly productive aquifer. In addition to this, the borrow pit is not located within the sand and gravel aquifer. This is telling us that the borrow pit will not have an impact on ground waters in the area with the risk from the borrow pit being from surface water run-off. In addition to this, the applicant has applied a conservative value to the materials based on permeability test being carried out in the well and even at this simulating a worst case scenario, the radius of influence of the borrow pits extends from 19m to 60m, still well short of the nearest mapped stream located some 196m distant. I am of the opinion that the applicant has carried out sufficient and robust assessment with regard to the potential impacts of the borrow pit and the groundwaters.

Discussion regarding the absence of site investigations at the location of T7 and the provision of additional assessment within this area.

An additional borehole well was drilled within 90 metres of T7, and the findings demonstrate a highly permeable weathered bedrock consistent with sand and gravel

deposits. The applicant is proposing piling at this location and asserts that given the small footprint of the piles and the high permeability of the local deposits in conjunction with best practice mitigation measures there will be limited potential for impact of groundwater flow dynamics within the area of T7. I am in agreement with this position and I am satisfied that the applicant has addressed the concerns raised.

Discussion regarding all potential impacts on surface waters flows and/or groundwater flows as a result of dewatering associated within the excavations for the turbine foundations.

The majority of the turbines are to be located on the valley slopes. In essence here, the potential for impact will be on surface waters given that surface water run-off will dominate over infiltration on the valley slopes thereby removing the risk to groundwaters. Dewatering will be limited to and largely dictated by precipitative conditions. Near the borrow pit the borehole showed significant water strikes at 20.25m BGL essentially telling us that no significant flows would be expected above this level given the depths of the foundations will range between 4-4.5m BGL. I am satisfied that the applicant has addressed the concerns raised and that in addition to the investigations, the mitigation measures as proposed will remove the likelihood of significant effect.

Discussion regarding an updated Flood Risk Assessment (FRA) which includes detailed site-specific hydraulic modelling of the Tullaroan Stream.

The applicant has submitted an updated flood risk assessment which includes additional site-specific hydraulic flood modelling. The additional modelling further corroborates the findings of the original flood risk assessment.

I have had regard to the comments made by Dr. Pamela Bartley in her critique of the updated flood risk assessment and the flooding observed at the Graigue Ballycallan GAA grounds. None of the turbine bases or the spoil management areas are located

within the indicative flood maps on flood maps.ie with regard to both fluvial and pluvial flooding. The reviewed FRA was designed to assess the potential for fluvial (river based) flood risk downstream of the subject development. Dr. Bartley references incidences here the GAA ground which would appear to be located partially on the flood plain having been flooded during Storm Babet in October 2023 & November 2025 (which was ranked as the 5th wettest November in 85 years, where 136% of the long term average rainfall fell). In this regard localised accumulations of precipitation were likely exacerbated by saturated ground from prolonged antecedent rainfall, i.e. the rainfall that would have fallen prior to any storm event. The updated report does state that in Q100cc and Q1000cc events that the GAA pitch would not be inundated the photos would appear to contradict this. The soils across the GAA pitch are of a similar arrangement to that further upstream with Alluvial materials along the river, glaciofluvial sands and gravels and surface and groundwater gleys on the slopes.

I am of the opinion that the applicant has adequately addressed the concerns as raised under further information with regard to the potential for the development site to impact or alter flood risk downstream of the development.

2.3 Response to 3rd Party submissions.

The common trend among the 3rd party submissions surrounds the following areas.

- **Potential impact on a vulnerable aquifer,**

Reasoned conclusions were provided by the applicant based on the topographical arrangement of the site and hydrogeology of the site. In my opinion the findings with regard to the potential impact on the vulnerable aquifer have been adequately addressed and are consistent with my own opinion with regard to the potential impact on the vulnerable aquifer. In line with the findings from initial and subsequent site investigations and the implementation of widely accepted mitigation measures relating to hydrocarbons, cement-based products and wastewater I am satisfied that the applicant has robustly addressed this concern.

- **Potential impacts on local drinking water sources**

Reasoned conclusions were provided by the applicant based on the topographical arrangement of the site and hydrogeology of the site. In my opinion the findings with regard to the potential impact on the vulnerable aquifer have been adequately addressed and are consistent with my own opinion with regard to the potential impact on the vulnerable aquifer. In line with the findings from initial and subsequent site investigations and the implementation of widely accepted mitigation measures relating to hydrocarbons, cement-based products and wastewater I am satisfied that the applicant has robustly addressed this concern.

- **Potential increased flood risk**

Additional hydraulic modelling for the Tullaroan stream has corroborated the findings of the original flood risk assessment. Hydraulic modelling results states that's there will not be any significant change in flow rates downstream of the windfarm post development. The footprint of the site is 0.22% of the catchment north of Kilmanagh and as such the potential for the site to impact downstream flows is limited. This potential increase is being offset by the use of conservative parameters within the modelling which allows for a 20% increase attributable to climate change. In addition, mitigation measures as proposed will allow for all waters from the drainage network for the site to leave at existing greenfield run-off rates. In my opinion I am satisfied that the applicant has adequately addressed this issue.

- **Inadequate site investigations**

As referenced earlier in my report my comments in this regard remain as follows. The geotechnical investigations including trial pitting and boreholes are a widely accepted methodology for the characterisation of the baseline environment. Given the geological consistency across the site, the extent of the investigations

accurately captures the conditions across the site. This is further borne out by my own desk top study of the site described earlier in this report. I am of the opinion that the applicant has given a robust description and assessment of the ground conditions both geologically and hydro-geologically and that the methodology utilised is sufficient to provide an accurate assessment across the site.

- Adequacy of the mitigation measures

The mitigation measures as proposed are widely accepted and can only be described as best practice, as referenced earlier in this report.

Conclusion.

Given the evidence submitted and the mitigation measures proposed I am satisfied that the applicant has submitted sufficient evidence regarding the potential for environmental impact to support the development as proposed. I am satisfied that, in my opinion, no reasonable scientific doubt remains regarding the proposal.