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EDF RENEWABLES IRELAND LIMITED

KELLYSTOWN WIND FARM CO. LOUTH

VOLUME I NON-TECHNICAL SUMMARY (NTS)

November 2024

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KELLYSTOWN WIND FARM, CO. LOUTH

NON-TECHNICAL SUMMARY

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1 NTS.1 INTRODUCTION

This Non-Technical Summary (NTS) summarises the Environmental Impact Assessment Report (EIAR) which accompanies the application for planning permission for Kellystown Wind Farm (The Project) which is situated approximately located 8.3km north of Drogheda, 23.6km South of Dundalk and 50km North of Dublin.

The Applicant seeking planning permission is EDF Renewables Ireland.

EDF Renewables Ireland is part of one of the world's largest electricity companies and their investment and innovation in renewable energy projects is reducing costs for consumers and bringing significant benefits to communities.

EDF Renewables Ireland's team has a wealth of experience in bringing complex development projects to fruition, across onshore and offshore wind, solar PV and battery storage technology, and is supported by more than 400 colleagues in the UK.

In 2020, EDF acquired 50% of Codling Wind Park, a major offshore wind farm which will be located off the coast of Wicklow and have also entered into a 50:50 partnership to develop the Emerald and Western Star floating offshore wind farms, to be located off the coasts of Cork and Clare, respectively. Together, these three projects could power over two million homes across Ireland.

In 2023, EDF energised three of Ireland's first grid-scale solar farms and have announced plans for five onshore wind farms across Ireland. In total EDF will have an Irish onshore development pipeline of almost 1GW.

In the UK, EDF Renewables has an operating portfolio of 36 wind farms and two battery storage units (together totalling more than 1.5GW) and a development pipeline of 14GW across wind, solar and battery storage. EDF Renewables operates in more than 20 countries around the world and is part of one of the world's largest electricity companies and their investment and innovation in renewable energy projects is reducing costs for consumers and bringing significant benefits to communities.

Planning permission is being sought by the Developer for the construction of 5 wind turbines, a Permanent Met Mast, 38kV on-site substation and all ancillary works and the construction of an underground Grid Connection to Drybridge 110kV Substation.

The Environmental Impact Assessment Report (EIAR) presents information on the identification and assessment of the potential significant environmental effects of the Project and reports the findings of the Environmental Impact Assessment (EIA) which has been undertaken in accordance with the Planning and Development Act 2000, as amended, and the Planning and Development Regulations 2001, as amended. The EIAR comprises the following documents:

- This Non-Technical Summary (Volume I)
- The Main EIAR Report (Volume II)
- Supporting Figures (Volume III)
- Supporting Appendices (Volume IV)

These documents inform the readers of the nature of the Project, likely environmental effects and measures proposed to protect the environment during each phase of the development.

The Project will comprise the following phases:

- Construction of the Project
- Operation of the Project
- Decommissioning of the Project

2 NTS.2 ENVIRONMENTAL IMPACT ASSESSMENT

EIA is required where there are likely to be significant effects on the environment due to the nature, size or location of a new development. Wind farms of the scale of the Project legally require an EIA to be carried out.

The EIAR has been prepared following a systematic approach to an EIA and project design, with knowledge of the potential effects being used to change the design so as to reduce those effects. The main EIA stages are:

- Scoping consultation (process of asking relevant organisations what they think should be included in the EIA) and how these topics are addressed
- Technical environmental assessments - baseline studies (understanding what the existing environmental conditions are), asking what potential significant environmental effects might occur, informing the design evolution and identification of measures to reduce undesirable effects
- Writing up the findings to include in the EIAR
- Submission of the planning application and the EIAR

Scoping and Community Engagement

Scoping and pre-application consultation is important to the development of a comprehensive and balanced EIAR. Requests for Scoping Opinions were submitted to the prescribed bodies and key consultees from July 2023 to August 2024. The requests were accompanied by a Scoping Report which described the Project, the proposed EIA methodology and the key areas to be 'scoped in' or 'scoped out' of any further assessment. Scoping Opinions received are included as **EIAR Appendix 1.2**.

Initial community engagement commenced in October 2022. An information leaflet was distributed to all homes with 2km of the Project site, to introduce the Project, provide details of its scope, and encourage positive two-way dialogue from an early stage. The EDF teams also went door to door to all homes within 1km of the site, to speak with local residents while providing the information and answer to any questions they may have.

In July 2023, following the progression of the various site and environmental surveys, an update was shared on the project's progress since its initial launch. A new information leaflet containing detail of the project's achievements to date and illustrating a preliminary turbine layout was again distributed to all homes within 2km of the site, and the EDF team again went door to door to all homes within 1km, to share information and answer residents' questions. In addition to these events, the team continued to respond to queries received via the website or project mailbox, and Community Liaison Officers carried out home visits when requested to discuss the project with members of the local community in more detail.

Subsequently, a public exhibition was held at the Drumshallon Forge Heritage Centre on 1 December 2023 from 2-7pm. The purpose of this event was to present detailed project information (Appendix D) to the local community, explain the findings of the various studies carried out as part of the Environmental Impact Assessment, and show the newly revised layout of the proposed wind farm with accompanying photomontages to help the community assess visual impact. The exhibition also featured an updated project timeline, information on the proposed Community Benefit Fund, and on other aspects of wind energy. In addition, a leaflet discussing biodiversity at the site (Appendix E) was created and made available to attendees. Members of the EDF Renewables project team and project environmental consultants, Jennings O'Donovan, were in attendance on the day. There was no requirement to register in advance and all were welcome to attend.

Environmental effects have been assessed in chapters of the EIAR, broadly with one chapter per technical discipline, generally representing a type of receptor of potential effects (e.g., birds). The assessments in each chapter follow a similar, systematic approach, to

identify any effects that may be significant in the context of the EIA Regulations. The approach includes establishing the “baseline”, this being the current state of the environment, to which the Proposed Development will be added. This identifies the key receptors, including how sensitive they are to the sort of change that might be caused by the Project. The potential size (or magnitude) of change caused by the Proposed development is then assessed, and the sensitivity and magnitude are considered together to form a conclusion on significance. Effects can be desirable (or “positive”, or “beneficial”), or undesirable (or “negative”, or “adverse”). Mitigation is proposed where possible to prevent significant undesirable effects. The final, proposed effects are those after mitigation has been applied and are the “residual effects”.

In accordance with the EIA Regulations, the assessment considered 'cumulative effects'. These are effects that result from cumulative changes caused by past, present or reasonably foreseeable actions together with the Project.

3 NTS.3 PROPOSAL FOR THE KELLYSTOWN WIND FARM

The layout of the Project is shown on **Figure NTS-1**. The Project will consist of the following:

- The construction of 5 no. wind turbines with the following parameters:
 - a) Total tip height range of 179.5m – 180m,
 - b) Rotor diameter range of 149m – 163m,
 - c) Hub height range of 98m to 105m,
- Construction of turbine foundations, crane hardstand areas and assembly areas;
- All associated wind farm underground electrical and communications cabling connecting the turbines and meteorological mast to the proposed onsite electrical substation including cabling in the public road corridor in the townlands of Gallstown and Kearneystown;
- Construction of 1 no. permanent 38kV electrical substation compound including a single-storey control building with welfare facilities, all associated electrical plant and equipment, security fencing, gates, all associated underground cabling, wastewater holding tank, and all ancillary structures and works in the townland of Piperstown.
- A Battery Energy Storage System within the 38kV electrical substation compound;
- All works associated with the connection of the proposed wind farm to the national electricity grid which includes 5 no. of water crossings (3 no. bridges and 2 no. culverts). The provision of joint bays and associated communication chambers along the underground electrical cabling route via underground 38kV electrical cabling predominantly within the public road corridor, from the onsite substation in the townland

of Piperstown to the existing Drybridge 110 kV Substation located in the townland of Tullyallen;

- Reinstatement of all road and track surfaces above cabling trench along existing roads and tracks in public lands;
- Provision of new site Access Roads and upgrade of existing site tracks/roads to facilitate access to all onsite infrastructure this includes 3 no. water crossings, passing bays and all associated drainage;
- The provision of 2 no. new permanent site entrances for construction and operational access from the local road L6274 in the townlands of Kearneystown and Gallstown;
- The permanent realignment of 1 no. existing entrance for construction and operational access to the 38kV electrical substation compound from the local road L2275 in the townland of Piperstown;
- Use of 1 no. existing site entrance for construction, operational access to the permanent met mast on a private road off local road L2275 in the townland of Drumshallon.
- The construction of 1 no. new temporary track in the townland of Castletown at the R162 / L-6274-0 Junction to facilitate the delivery of the turbine components during construction. This track will be temporarily re-installed as required during the operational phase;
- 3 no. Temporary Construction Compounds with associated temporary offices, staff facilities parking and security fencing in the townlands of Gallstown, Piperstown and Stonehouse;
- 1 no. permanent meteorological mast of c.36m in height, and associated foundation and hard-standing area in the townland of Drumshallon;
- The provision of 2 no. permanent spoil storage areas;
- Tree felling to facilitate the construction and operation of the Proposed Development;
- Operational stage site signage;
- All ancillary apparatus and site development works above and below ground, including soft and hard landscaping and drainage infrastructure.

A 10-year planning permission and 35-year operational life from the date of commissioning of the entire wind farm is being sought. However, part of the substation and all of the grid connection will be handed over to ESB networks to own and operate. As part of the national grid infrastructure, their life can extend beyond the life of the wind farm. Accordingly, permission is sought for the grid connection and substation in perpetuity.

The Grid Connection consists of one 38 kV substation (to include one control building with welfare facilities, all associated electrical plant and equipment, security fencing and gates,

all associated underground cabling, wastewater holding tank, and all ancillary structures and works) and a 38 kV cable to connect to Drybridge 110 kV Substation.

Permission is not being sought for temporary modifications to the existing public road infrastructure to facilitate delivery of abnormal loads and turbine delivery. These works will be carried out at the following locations: Galway Docks, Monivea Rd, Junction Galway, Junction on the R339, N6, Lucan Roundabout, N4 joining the M50, M50, Hill of Rath Roundabout and Rosehall Roundabout.

All the above works are located in the townlands of Ballymakenny, Brownstown, Carntown, Carstown, Cartanstown, Castletown, Drumshallon, Gallstown, Groom, Kearneystown, Keverstown, Killineer, Mell, Newtown Monasterboice, Piperstown, Stonehouse, Swinestown, Tullyallen, Tullyard and Tullyeskar, Co. Louth.

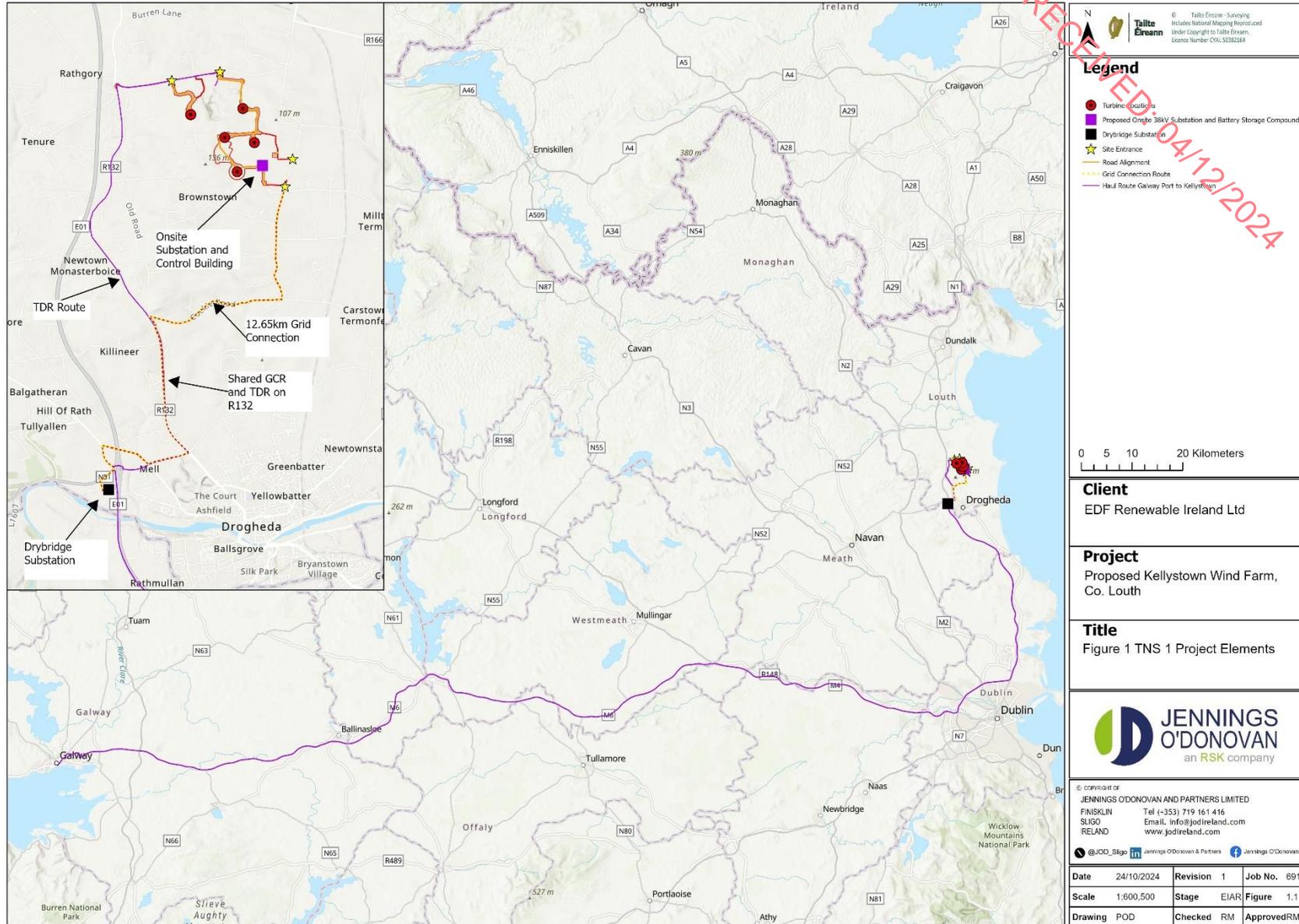


Figure NTS-1: Project Elements

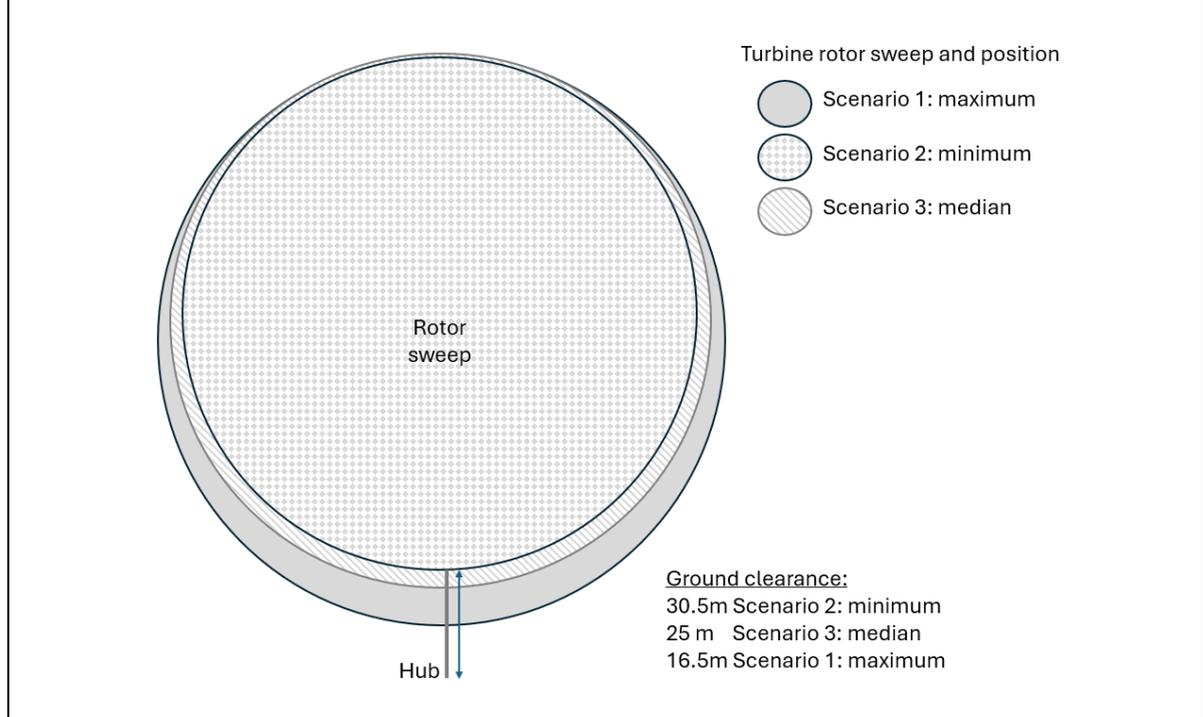
3.1 Design Flexibility

The Applicant obtained an opinion on design flexibility from Louth County Council (**EIAR Appendix 1.5**). This opinion sets out the details of the wind turbine dimensions that can be confirmed after the Application has been determined. These parameters which have been agreed with Louth County Council as flexible parameters are outlined below in **Table 3.1**. The final wind turbine type will be chosen at the pre-construction stage, following a competitive tender process with eligible turbine suppliers. The dimensions of the chosen turbine will fall within the range specified below. The final turbine dimensions will be confirmed with the Council at least 2 weeks prior to the erection of the turbines at the site.

Table 3.1 Wind Turbine Parameters

Turbine Parameter	Scenario 1: Maximum	Scenario 2: Minimum	Scenario 3: Median
Tip Height (m)	179.5	179.5	180
Rotor Diameter (m)*	163	149	155
Hub Height (m)	98	105	102.5
Foundation Diameter (m)	27.2	27.2	27.2
Hardstand Dimensions (m ²)	3,700	3,700	3,700

*Illustration: Comparison of candidate turbine rotor sweep and position



The range of the parameters are based on three scenarios and categorized by the rotor sweep with the largest rotor sweep candidate representing the maximum scenario and the smallest rotor sweep candidate representing the minimum scenario. A third median scenario was also selected for the purposes of assessments of the EIAR.

3.2 Wind Turbines

The five (5 No.) turbines will have a height from base to tip ranging from 179.5m to 180m inclusive.

The final choice of turbines will be guided by an assessment of the wind conditions and will take account of the available technology at the time of construction. The megawatt output for the wind farm is anticipated to be within a range of 28.5 - 36MW. Notwithstanding certain details have not yet been confirmed, the environmental impacts across the range of relevant parameters for each such detail has been fully considered and documented in the EIAR.

The turbines will be of a typical modern, three blade, horizontal axis design, white or light grey in colour and the finish of the tower and blades will be semi-gloss and semi-matt respectively.

Turbines are typically of a variable speed type, so that turbine rotor speed will vary according to the energy available in the wind. Turbines of the size proposed typically have a rotational speed of between 11.2 and 12.6 times per minute, depending on variations in wind speed, generating power for all wind speeds between c. 4 metres per second (m/s) (approximately 8 miles per hour) and c. 25 m/s (approximately 50 miles per hour). At wind speeds greater than c. 25 m/s, which are very unusual, the turbines will temporarily turn off to prevent any damage occurring.

The turbines are computer controlled to ensure that at all times, the turbine faces directly into the wind to ensure optimum efficiency. The rotors of all turbines will rotate in the same direction relative to the wind direction.

Each wind turbine needs an area of compacted stone adjacent to the turbine base, known as a hardstanding. This is used principally by the crane and to accommodate turbine components when erecting the turbine.

3.3 Access to the Development

The Proposed Development will be accessed via four site entrances to facilitate the construction, operational and Decommissioning phases of development. Two of which will be new site entrances; one existing entrance will be realigned and upgraded for the substation and associated infrastructure. Another existing entrance will be used for the permanent met mast. The site entrances are shown on **Figure NTS-1**.

A new site entrance (No.1) will be constructed at the north-west of the site on the Local Road L-6274-0. Proposed works to this entrance consists of the removal of existing vegetation to achieve visibility splays. This entrance will facilitate the delivery of construction materials to the site and will remain in-situ for the operational stage of development.

A new site entrance (No.2) will be constructed at the north of the site on the Local Road L-6274-0. Proposed works to this entrance include the removal of hedgerow and existing vegetation to achieve visibility splays. This entrance will facilitate the delivery of construction materials to the site and will remain in-situ for the operational stage of development.

The Turbine Delivery Route and the Construction Haul Routes will utilise Site Entrances 1 and 2 for the construction stage of development.

The existing site entrance (No.3) will be realigned and upgraded this site entrance is located at the east of the site on the Local Road L2275-24. Proposed works to this entrance will consist of the removal of existing vegetation to achieve visibility splays. This entrance will facilitate the delivery of construction materials to the site and will remain in-situ to facilitate access to the substation for the operational stage of development.

The existing site entrance (No.4) is located on a private road, off the Local Road L2275-24, to the east of the site. No road upgrades are envisioned. The proposed works to this entrance will be the removal of existing vegetation to achieve visibility splays. This entrance will facilitate the delivery of construction materials to the site and will remain in-situ to access the Permanent Met Mast during the operational stage of development.

3.4 Grid Connection

Underground cabling will link the turbine transformers to the proposed onsite substation. This will provide a connection point between the wind farm and the grid connection point at the existing Drybridge 110kV Substation. The overall length of the underground grid connection between the onsite substation and the existing Drybridge substation is 12.65km, of which 900m is within the Site. The remaining 11.75 km is located in the local road network. The grid connection route can be seen in **Figure NTS-1**.

3.5 Construction Phase

The construction phase of the Project will take approximately 16 - 24 months in total. In general, working hours for construction activity will be from 07:00 to 19:00 throughout the week, with reduced working hours at weekends, from 08:00 to 13:00 on a Saturday. It

should be noted that, during the turbine erection phase, operations will need to take place outside those hours, with concrete pours commencing at 05:00 and continuing till 16:00, to facilitate Turbine Foundation construction and so that lifting operations are completed safely. Hours of working for turbine foundation construction will be agreed with Louth County Council prior to the commencement of Turbine Foundation construction.

The turbines will be located within an area of livestock and pasture farmland and forestry, however the land taken by the turbines and other infrastructure is a very small proportion of this, and substantial efforts have been made to re-use existing infrastructure rather than using new land. The total land-take required for the Wind Farm Site, including the Site Access Roads, Turbine Hardstands, Turbine Foundations, Turbine Delivery Route widening node and substation is 15.6ha. The Wind Farm Site is 64.5ha, therefore, the total land take is 24.2% of the Site. The proposed Site Access Roads and upgrade to existing roads will improve access for surrounding agricultural use.

The Project will appoint a Civil Contractor who will have overall responsibility for management, including environmental management on the construction site. The Civil Contractor will ensure that construction activities are carried out in accordance with the mitigation measures outlined in the EIAR and as required by the planning permission, such as the Construction Environmental Management Plan (CEMP) included in **EIAR Appendix 2.1**. The services of specialist advisors will be retained as appropriate, such as an archaeologist and ecologist, to be called on as required to advise on specific environmental issues.

3.6 Habitat Restoration

A Biodiversity Enhancement Management Plan (BEMP), included as **EIAR Appendix 6.1**, has been prepared to mitigate for the potential ecological effect of habitat loss as a result of the Project. The habitat enhancement areas are shown on **Figure NTS-2**.

The BEMP is focused on the restoration to:

- Preserve and enhance existing wetland habitat, rated as of National Importance, by removal of grazing and control of spread of gorse scrub to offset the loss of wet grassland.
- Offset the loss of c. 550 hedging (c.301m hedgerow and 249m bat buffers) by a tree and shrub planting programme.
- Enhance habitat for bats and to offset loss of hedging and forest edge due to implementation of bat buffers at turbines.

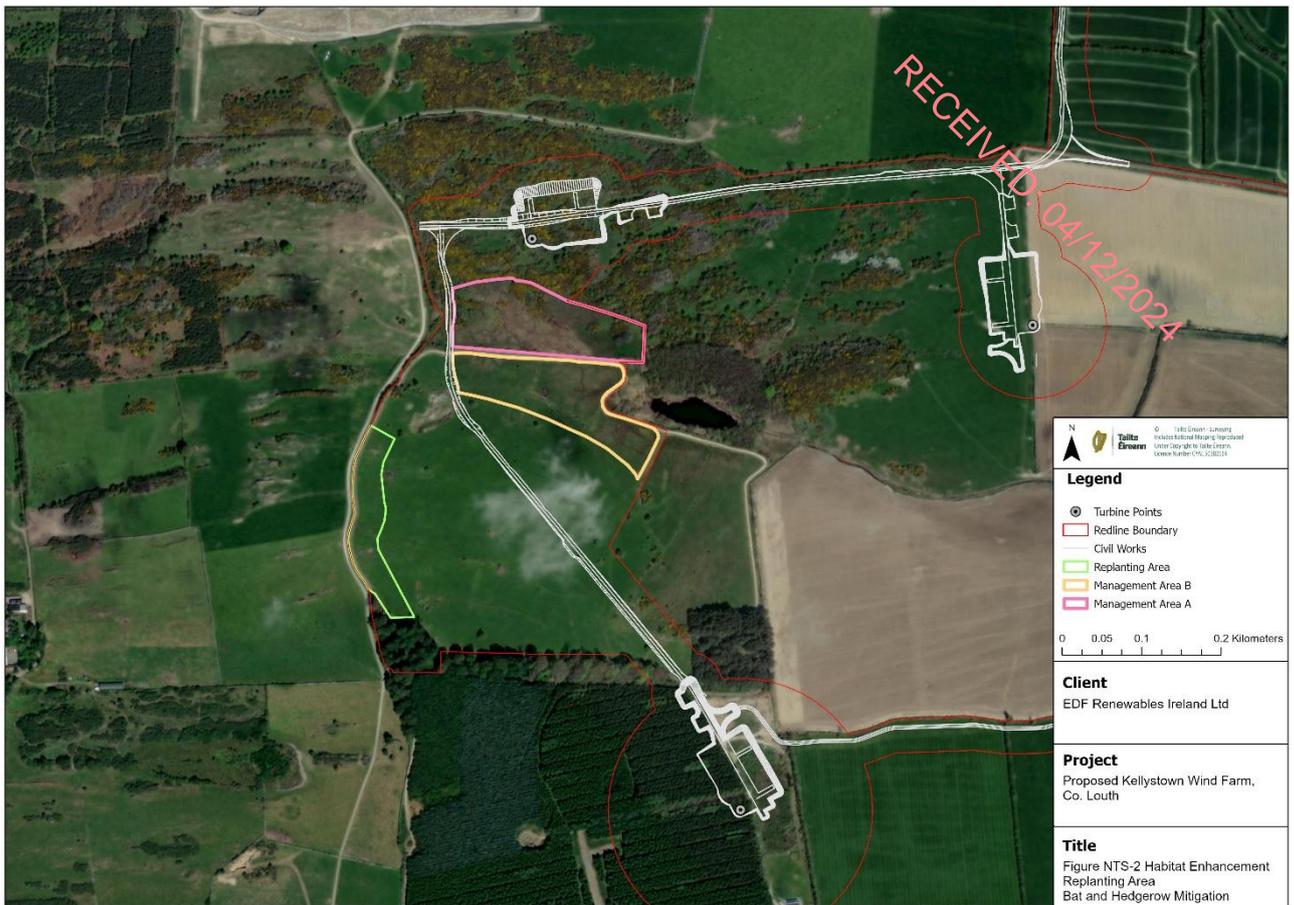


Figure NTS-2: Habitat Enhancement Areas

3.7 Operational Phase

The operational lifespan for the Project is 35-years. During the operational phase, turbine and infrastructure maintenance will be ongoing and regular. The Proposed Development will create approximately 10-12 jobs during the operational phase, across several disciplines. During the operation phase of the wind farm, the operation and reliability, maintenance (turbines, civil works and electrical infrastructure) finance, ongoing compliance with permissions and permits, safety, security, community relations and benefits and land-owner agreements must be continually managed. These requirements are widely distributed over various employment sectors and are an integral part of the ongoing operation of the Proposed Development and will provide continuous employment for the lifetime of the wind farm. In addition to this, employment will be created in the areas of finance, ongoing compliance with permissions and permits, safety, security, community relations and benefits and land-owner agreements.

4 NTS.3 SITE SELECTION AND DESIGN

The site selection process involves two phases:

Phase 1 – Screening

This stage in the selection process sought to identify lands within Ireland, with the least likelihood of resulting in negative environmental effects in the long-term, and suitable for the development of the wind farm.

Phase 2 – Proximity to National grid

As part of the site selection process, areas identified in Phase 1 screening are assessed in terms of accessibility to electricity transmission and distribution grids.

The Wind Farm Site's designation as 'Preferred Areas' and 'Open to Consideration' for wind farm developments underlines its suitability for this type of project. This designation implies a recognition of the potential for wind energy development in the area, balanced against environmental, social, and economic considerations. The low population density of the proposed Wind Farm Site and surrounding area provides a sufficient area of unconstrained land to accommodate a windfarm development allowing for a greater number of turbines to be constructed while maintaining appropriate setback distances from dwellings as set out in the Draft 2019 Wind Energy Development Guidelines. This set back distance minimises the potential disturbance to residential amenity which may be caused as a result of construction activities, as well as visual impacts, and noise during the operational phase.

The Proposed Development site is located on agricultural land, which allows the site to utilise existing access roads (which will be upgraded) and highlights the suitability of the Proposed Development site as it can make sustainable use of these established items of infrastructure potentially reducing the impact upon the land, soils and local biodiversity.

The Proposed Development site is not within or adjacent any areas designated as a Special Area of Conservation (SAC), Special Protected Area (SPA) or Natural Heritage Area (NHA). The proximity of the turbines to Kilsaran quarry consolidates land use by facilitating compatible neighbouring industries to efficiently make use of the area. The wind farm also has reasonable access to the National Electricity Grid which is located a viable distance from the Proposed Kellystown Wind Farm site.

The site layout design evolved through a series of changes, to avoid or minimise potential effects, including effects on views, hydrology, ecology, fisheries, ornithology, noise and archaeological features. Technical criteria such as wind speed, prevailing wind direction,

existing infrastructure, topography and ground conditions were considered during the design process, in addition to relevant guidance documents, survey findings and responses from consultees. Overall, it is considered that the Project represents an optimum fit within the technical and environmental parameters of the Site.

5 NTS.4 LEGAL AND POLICY FRAMEWORK

The Project has had regard to the National Planning Framework, the Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Regions and the Louth County Development Plan 2021-2027. These documents are relevant to the determination of the planning application by Louth County Council. A detailed assessment of the Planning Policy and Legislative Framework is provided in the Planning Statement which accompanies the planning application.

The Climate Action Plan 2024 set outs a roadmap for meeting the ambitious and legally binding targets for Ireland viz to halve Irelands emissions by 2030 and to reach net zero no later than 2050. This plan also outlines the intention of the government to meet up to 80% of electricity demand from renewable power by 2030. The Project will contribute towards meeting the (Climate Action Plan 2024) target of 9 GW of onshore wind energy generation by 2030.

6 NTS.5 POPULATION AND HUMAN HEALTH

The potential effects of the construction and operation phases of the Project on socioeconomics, tourism and recreation and land use were identified and assessed in EIAR Chapter 5: Population and Human Health following desk-based collection of data and consultation with local stakeholders. Four (4 No.) geographical Study Areas were outlined for this assessment, namely:

Study Area 1: The Wind Farm Site and Environs –Electoral Divisions (EDs) Mullary and Clogher

Study Area 2: County of Louth

Study Area 3: County of Meath

Study Area 4: Ireland

Population and Settlement Patterns: The settlement patterns and social patterns may be of benefit to the region in terms of the ability to provide electricity to industry and business in a high-quality supply. This will lead to the region becoming more attractive to business with the subsequent benefit of increased employment opportunities in the region. A renewable energy supply could potentially be attractive for companies looking to develop in County

Louth and be located in the vicinity of the Site. The predicted effect on the immediate settlement patterns and social patterns during the construction and decommissioning phase is short-term, slight/ not significant/ imperceptible. For the operational phase, the impact is considered to be neutral, long-term, slight.

Economic activity: Economic activity is expected to benefit from all phases of the Project, through the local sourcing of materials, for example, ready-mix concrete and crushed stone will be sourced from a local supplier, subject to quality and availability and through payments to Louth County Council under the Proposed Development Contribution Scheme and from the annual rate payments. During the construction and decommissioning phase of the overall impact is predicted to be positive, moderate and short-term and positive, moderate and long-term during the operational phase.

Employment is expected to benefit from all phases of the Proposed Development, through direct, indirect and induced employment throughout the phases of the Proposed Development.

It is estimated that between 44 and 61 direct and indirect jobs could be created during the construction phase of the proposed project, through the employment of tradespeople, labourers, and specialised contractors for the construction phase. Indirect employment is also expected to increase through the increased activity in local businesses, such as restaurants, hotels and accommodation, shops and delicatessens. There is expected to be a short-term significant, positive impact on employment in the study area. On-going monitoring and maintenance work is expected to result in a long-term slight positive impact

Land use: The majority of existing land use in the environs of the Wind Farm Site is agriculture, tillage commercial forestry and exposed rock/ disturbed ground (Kilsaran Quarry). These will not be altered significantly by the construction, operation and decommissioning phases of the Project as these activities can continue alongside the Development. The Wind Farm Site is currently used mainly for agricultural use and forestry. To facilitate the construction works and ecological buffers, 9.39ha of forestry will be permanently clear-felled, subject to a felling licence. New appropriate afforestation areas outside the ecological zone of Influence of the Proposed Development will be identified. The impact is predicted to be negative, long-term and slight throughout construction, operational and decommissioning phase of the Proposed Development.

Tourism: Overall effects of the Project with regards to tourism are considered to be short-term, slight, negative during both construction and decommissioning phases. There will be a long-term, slight positive impact during operation.

All other aspects of human Health (Noise, Water, Air quality, Shadow Flicker, EMI and Traffic) are taken into account under NTS sections for: Noise, Hydrology and Hydrogeology, Air Quality and Climate, Shadow Flicker, Material Assets and Traffic and Transport).

7 NTS.6 BIODIVERSITY

This chapter assesses the likely significant effects of the Proposed Development on terrestrial ecology, and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified. Baseline ecological surveys were carried from 2022 to 2024. All surveys followed best practice guidance and there were no survey limitations.

The Boyne Coast and Estuary SAC and the North-West Irish Sea SPA are the closest designated sites to the Wind Farm Site, both at a distance of approximately 7.0 km. There are no NHAs within 15km of the Wind Farm Site. The closest pNHA is Blackhall Woods pNHA located 2.5km east of the site.

The Wind Farm Site is dominated by improved agricultural grassland, arable land and conifer plantation - these are widespread habitats throughout Ireland and are rated as of Negligible to Local Importance (lower value). Also rated of low value are gorse dominated scrub, rush dominated wet grassland, stone walls and disturbed ground. The site supports stands of broadleaved woodland, hedgerows and treelines, which are rated as of Local Importance (higher value). The area within the site that is of most ecological interest is Drumshallon Lough wetland complex, comprising lake, marginal swamp vegetation, wet woodland, wet grassland, marsh and transition mire. Transition mire is listed on Annex I of the EU Habitats Directive. At the Drumshallon site, the conservation status and the functionality of the habitat is considered generally good. Drumshallon Lough was labelled as site no. LH119 with a rating of C+ County Conservation and subsequently was given a B National Importance rating (www.wetlandsurveysireland.com). It is identified as a 'Candidate Natural Heritage Area' (cNHA) according to the Louth County Development Plan 2021-2027. Drumshallon Lough was considered as a key constraint and was carefully avoided when commencing the design stage of the Proposed Development. Candidate Natural Heritage Area is the name given to wildlife sites that are proposed by NPWS and by third parties for consideration as NHAs. Prior to designation these sites may require further detailed survey and evaluation for their

conservation value. These sites have no legal protection until they are taken up into the formal NHA designation process.

No nationally rare or legally protected plant species listed in the 2022 Flora (Protection) Order were recorded from within the Wind Farm Site during the surveys nor are there any past records of such species from the study area. Two invasive species were recorded within the site, namely Japanese knotweed and Himalayan balsam.

The Wind Farm Site supports a mammalian fauna of mixed agricultural land and coniferous plantation. The Irish hare, badger and red squirrel are protected under the Wildlife Acts, as are other expected species on site such as pygmy shrew, hedgehog, Irish stoat and pine marten. While some evidence of otter presence was found on the Drumshallon Lough Stream, the watercourse is too small to support breeding otter. All mammal species recorded within the Wind Farm Site, or expected to occur, are listed as 'Least Concern' on the Irish Red List. The common frog and the common lizard occur on site and are protected under the Wildlife Acts.

The Grid Connection Route is entirely along public roads apart from the section within the wind farm site. The local roads typically are lined with low hedgerows and grassy verges. The Turbine Delivery Route (TDR) is entirely along existing public roads.

The Proposed Development site is not within or adjacent any areas designated as a Special Area of Conservation (SAC), Special Protected Area (SPA) or Natural Heritage Area (NHA). The Project is not located within any area designated for ecological protection. The nearest Natura 2000 site, i.e., SPA or SAC to the Project are the Boyne Estuary SPA (ID: 004080), which is located approximately 7km south-east of the Proposed Development and the Clogher Head SAC (ID: 001459), which is located approximately 8km west of the Proposed Development. The Natura Impact Statement (NIS) concludes that no European Site will be adversely effected by the Proposed Development.

There are no Natural Heritage Areas (NHAs) within a 15 km radius of the Proposed Wind Farm Site. The closest NHA is the Skerries Islands NHA (Site Code: 001218), which is located approximately 28km south-east.

The Proposed Development will result in the loss of a limited amount of habitat of significant ecological importance in a local context, namely sections of hedgerow/treeline (c. 550 m) and, to a lesser extent, scrub. Part of the losses will be from implementation of bat buffer zones at the turbines. These habitats are of value for a range of local wildlife. Sensitive

design has avoided the Drumshallon Lough wetland system, other than minor encroachment by a new track at the extreme western end where an area of approximately 500m² will be affected. One location along the TDR will require the removal of c. 150 m of hedgerow, which will be later replanted (temporary loss). In the absence of mitigation, there is risk that contaminated run-off from construction works could flow towards the Drumshallon Lough wetland and potentially have Significant Adverse effects.

The loss of habitats as a result of the Project will be offset through a Biodiversity Enhancement and Management Plan (BEMP). The BEMP comprises the following: (i) the enhancement of existing wetland habitat to the south and west of Drumshallon Lough (3.52 ha), and (ii) the planting of an area of broadleaved woodland (0.52ha).

Significant adverse effects are not predicted on the mammal, amphibian and reptile species associated with the site. However, other populations downstream of the site could be affected should contaminated runoff enter watercourses during the construction phase. With mitigation measures implemented in full, it is considered that the significance of the predicted impact on terrestrial mammal species and amphibian and reptile species as a result of the Proposed Development will be Not Significant.

With the implementation of mitigation through avoidance principles, pollution control measures, surface water drainage measures and other preventative measures which have been incorporated into the project design and into the construction, operational and decommissioning phases in order to minimise potential significant adverse impacts on water quality within the zone of influence of the Proposed Development, it can be concluded that the Proposed Development will not adversely affect the integrity of local watercourses and ultimately any European or National designated site.

With the implementation of the Biodiversity Enhancement Management Plan, it is considered that the terrestrial ecological interests of the site will increase during the operational phase of the Proposed Development, i.e. likely long-term Positive effect.

Pre-construction ecological surveys will be carried out as required following standard guidance. An Ecological Clerk of Works (ECoW) will be employed by the Developer and an Environmental Manager will be employed by the Contractor for the duration of the construction phase and will ensure that all mitigation measures relating to ecology described in this report and contained within the planning permission are implemented.

Post-construction monitoring will focus mainly on the BEMP to ensure that the objectives of the Plan are being achieved.

8 NTS.7 BATS

This chapter assesses the potential impact of the Proposed Development on bat species populations, considering how construction, operational and decommissioning activities of the Development might affect bat populations. The turbine models described in **Table 3.1** have been assessed throughout the chapter. Mitigation and compensation measures are identified to avoid or reduce potential negative impacts.

The assessment has identified that during the construction stage of the Proposed Development, impacts will be the temporary disturbance to bats in the form of habitat removal, the potential for the use of artificial lighting during hours of darkness and noise. The assessment has also identified that there will be no direct disturbance to bats as there will not be no removal of roosts or identified roost features. Foraging habitat will be impacted due to the removal of scrub and plantation forestry to install the bat turbine buffer measure to reduce collision risk.

During the operational phase, the assessment has determined the direct effect on bats would be the potential for collision or barotrauma. Indirect impacts have been identified as disturbance from artificial lighting (specifically at the substation and battery energy storage system (BESS) location). Another operational impact considered was potential displacement and attraction effects that wind turbines can have on some bat species.

During the decommissioning phase, the same effects assessed during the construction phase were assessed to occur in terms of potential surface impacts to bat foraging and roosting habitats.

The following measures will be put in place to minimize the following impacts on bats:

- **Habitat loss:** Habitat loss during the construction phase of the Proposed Development will be mitigated by the improvement of areas outside the stand-off buffers required for turbines in areas which are already determined to be of importance to bats. This is detailed further in the Biodiversity Enhancement & Management Plan (BEMP).
- **Light disturbance:** During construction (if required outside of daylight working hours) and during operation at the substation and BESS location the following measures will be implemented to reduce/avoid disturbance on foraging habitat of light sensitive bats:

- Motion sensors / timer triggers used where possible i.e. no continuous lightning at night at the substation or at the BESS substation.
- Column heights kept to a minimum as practicable.
- Lighting directed only to areas where lighting is needed (avoid unnecessary light spill);
- Luminaires used to prevent light spill.
- Warm colour temperatures used where possible (2700K or less);
- Cows, louvres, hoods or baffles used to direct lighting; and
- No upward facing lighting.
- **Noise disturbance:** Noise disturbance during construction and decommissioning will be mitigated by the following standard measures as outlined in Chapter 13 Noise and Vibrations. While it is understood the measures are implemented to reduce impacts to humans, they are also effective in reducing/avoiding impacts to bat species.
 - All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.
 - Machines will be shut down between work periods (or when not in use) or throttled down to a minimum.
 - Regularly maintain all equipment used on site, including maintenance related to noise emissions.
 - Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and
 - All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided.
- **Collision and barotrauma:** The potential for collision and barotrauma will be reduced/avoided by installing buffer zones between turbines and the nearest habitat features used by bats. In some instances the bat buffer zones exceed standard guidance based on the assessed quality of foraging habitats for bats. Where turbines were assessed as having higher levels of bat activity curtailment plans have been assigned for the associated species and weather conditions and seasons during which bat activity was high. This will be phased to a Turbine Integrated Mortality Reduction (TIMR) model based on nacelle mounted detector recordings after 3 years.
- **Displacement and attraction:** Displacement from foraging habitats such as scrub and plantation will be mitigated by the improved habitat planting detailed in the BEMP. Potential for attraction to turbine locations has been reduced during operation by implementing a bat buffer during construction and maintaining this during operation.

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With the implementation of the proposed mitigation measures and compensation measures, the Development is not expected to have a residual significant effect on bat populations in the area.

9 NTS.8 ORNITHOLOGY

Chapter 7 of the EIA Report evaluates the effects of the Proposed Development on bird species of conservation concern and their supporting habitats.

Two years of Baseline Ornithology Surveys were completed between 2021 and 2023. The survey programme comprised the following: Vantage Point Surveys were carried out between September 2021 and September 2023 (inclusive), throughout the survey period, Breeding Bird Surveys during the 2022 and 2023 breeding seasons (including additional crepuscular surveys), targeted surveys for breeding raptors during the 2022 and 2023 breeding seasons, Winter Walkover Surveys and Wintering Waterbird Surveys during the 2021/22 and 2022/23 non-breeding seasons, and Hen Harrier Roost Surveys during the 2021/22 and 2022/23 non-breeding seasons. The results of these surveys, together with an ornithology Desk Study, were used to identify those bird species and designated sites that would potentially be affected by the Development.

Several statutory sites were identified within 20km of the Site as part of the Desk Study, including several with connectivity to the Proposed Development: River Nanny Estuary and Shore SPA and Ramsar site (which is designated for several wader and gull species), the Dundalk Bay SPA (which is designated for several breeding waders, waterbirds and gulls) and the North West Irish Sea SPA (which is designated for several seabird species).

During Vantage Point Surveys, a total of 1,551 flights by 18 target species were recorded (1,048 flights in 2014-15 and 503 in 2015-16). Flight activity was markedly higher during Year 1 surveys.

During Breeding Raptor Surveys, three target raptor species and two secondary raptor species were recorded, of which four species were potentially or confirmed to be breeding within the Survey Area. A single wader species, snipe, was confirmed to have bred within the Breeding Bird Survey Area. During non-breeding season surveys there were records of foraging gull species, of which a small number of records were within 500m of the Proposed Development. There were no records of hen harrier during any baseline surveys.

A detailed assessment of potential effects on statutory sites and sensitive bird species during all phases of the Proposed Development (construction, operation and

decommissioning) was completed. This included potential effects due to habitat loss, disturbance/displacement, barrier effects and collision risk. The combined effects of the Proposed Development together with other developments in the wider area were also considered.

The Wind Farm Site design accounted for ornithological sensitivities and reduced potential effects on birds. A Bird Protection Plan will be produced to ensure that all breeding birds and any protected roosting species are protected during construction and decommissioning of the Proposed Development as well as during any major works required during the operational phase. In addition, specific mitigation will be implemented to ensure that protected bird species are not disturbed during any works associated with the Proposed Development. Following full implementation of this mitigation, no significant effects of the Proposed Development on statutory sites or sensitive bird species are predicted.

A programme of ornithological monitoring will also be completed during and post-construction to identify whether observed effects on key species are in line with those predicted, and to determine the impact of habitat management on birds.

10 NTS.9 AQUATIC ECOLOGY

An assessment of the potential effects on aquatic ecology are presented in Chapter 9 of the EIAR. The aquatic ecology receptors considered include fisheries, biological water quality, protected aquatic species and habitats within the Red Line Boundary and in the vicinity of the project. The ecological features considered important and potentially affected by the project, were assessed through a desk study and field surveys.

The approach to assessing effects arising from the project is consistent with EIA requirements and additionally followed guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018) and Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, Environmental Protection Agency (2022).

The study areas for the desk study and field surveys were identified through considering the nature of the project, the size and location of the project and the ecological features likely, or known, to be present.

The desk study collated available existing ecological information, including identifying records of protected or notable habitats and species that may potentially be affected. Inland

Fisheries Ireland (IFI) data was accessed for information on fisheries data. Other online sources available from Agency (EPA), geological survey of Ireland and Office of Public Works (OPW) were accessed for other environmental information.

The field surveys, completed in June 2023, surveyed seven locations for a) water quality physico-chemical measurements including water samples; b) macroinvertebrate surveys; c) fish habitat walkover surveys to identify suitable habitat for the key fish species and life stages of importance.

The impact assessment process established aquatic features that could potentially be affected by the project. No potential effects were identified for the following features and these were not taken forward for detailed assessment:

- Water quality - Whilst differences in water quality were recorded between the surveyed sites no consistent pollution patterns were observed and the water quality results correlated with the macroinvertebrate results. Based on this degraded status, and thus likely absence of significant negative impact from the project, further detailed assessment is not considered necessary.
- Macroinvertebrates - The results indicate that all sites sampled are moderately polluted. No sites were found to contain notable numbers of any sensitive taxa and overall the project area displays a degraded ecological quality. Based on this degraded status, and thus likely absence of significant negative impact from the project, further detailed assessment is not considered necessary.

The following receptors were taken forward to the assessment stage:

- Fish and Fish Habitat - Historical records of protected species including lamprey, European eel and salmon have been found 5 - 8.5 km downstream of the project in Hammondstown Stream.

Direct effects upon fish and fish habitat during the **construction phase** are considered to have the potential to be Significant Negative and Temporary (less than 1 year) at County scale in the absence of mitigation measures.

Indirect effects upon juvenile and spawning lamprey species during the **construction phase** are considered to have the potential to be Slight Negative and Temporary (less than 1 years) at a Townland/ Local Lower scale in the absence of mitigation measures. Potential Indirect effects upon salmonid species and habitats is considered to be Not Significant and Temporary (less than 1 years) at a Townland/ Local Lower scale in the absence of mitigation measures.

The frequency of potential effects are limited to the construction phase and effects are predicted to be reversible.

Direct effects upon fish and fish habitat during the **operational phase** are considered to be Imperceptible in the Long-term (15 to 60 years) at a Local Lower scale in the absence of mitigation measures.

Indirect effects on watercourses resulting from the **operational phase** is considered Imperceptible in the Long-term (35 years) at a Local Lower scale in the absence of mitigation measures.

The frequency of potential effects is limited to the duration of the operational phase and effects are assessed as reversible. Thus, the Operational phase of the project is not considered to pose a significant impact on the aquatic ecology in the immediate and wider area.

Effects during the **decommissioning phase** will be similar to the potential effects during Construction. The potential **Direct effects** is considered to be Significant Negative and Temporary (less than 1 years) at the Local Lower scale in the absence of mitigation measures. **Indirect effects** are considered to have the potential to be Imperceptible and Temporary (less than 1 years) at a Townland/ Local Lower scale in the absence of mitigation measures. The frequency of potential effects is limited to the duration of the decommissioning phase and effects are assessed as reversible.

Construction phase mitigation and monitoring measures for aquatic ecology predominantly involve the preservation of water quality. The measures adopted within the CEMP will ensure effective protection of aquatic ecological interests downstream of the project, particularly the habitats supporting sensitive aquatic species and/ or with hydrological connectivity to any designated sites.

Following the incorporation of mitigation and monitoring measures for the potential effects of the project, a review of proposed and active developments which may have sources and pathways effecting the same receptors was completed and several developments were taken forward for potential cumulative effects consideration. None of the developments were identified as potentially having a cumulative effect on aquatic ecology in conjunction with the project.

EIAR Chapter 9 assessed that the project, due to the embedded mitigation measures and the implementation of a CEMP, the potential for all effects was not significant in terms of the EIA Regulations in relation to aquatic ecology.

11 NTS.10 GEOLOGY

Chapter 10 of the EIAR evaluates the effects of the Proposed Development arising from the construction, operation and decommissioning phases on Soils and Geology. The geological assessment for the Proposed Development was based on desk studies and site surveys.

The process outlined in the EIAR Chapter 10 identified soils and geology receptors that could potentially be affected by the Proposed Development. No potential effects on peat soils were identified, with the following receptors and scenarios taken forward to the assessment stage:

- Effects caused by Earthwork Activities
- Effects caused by Vehicular Movement
- Ground Stability and Slope Failure;
- Soil and Groundwater Contamination
- Effects caused by Quarry Blasting
- Sites of Geological Heritage
- Sites of Designated Importance
- Effects caused by Introduction Of / Generation Of Waste Materials

During the construction, operation and decommissioning phases with the implementation of well managed mitigations measures and best practice as described in the IWEA and Scottish Best Practice Guidelines is followed on site it is expected that effects associated with the Proposed Development will not be significant.

12 NTS.11 HYDROLOGY

An assessment of the potential effects of the Proposed Development on the water environment has been undertaken by McCloy Consulting Ltd.

The assessment of potential effects involved a combination of desktop investigations, field surveys, and consultation with various stakeholders including; the Environmental Protection Agency, Uisce Éireann (Irish Water), and Louth County Council.

Where constraints were identified during the assessment, they were reported to the design team at the early stage of design development and avoided as far as possible within the proposed layout.

The water environment assessment identifies the potential effects on hydrology (movement of surface water), water quality, abstractions, the potential for pollution of watercourses, and risk of flooding. It summarises the relevant legislation and guidance and provides appropriate baseline information enabling potential effects to be identified. The assessment determined that the current hydrology in the vicinity of the main elements of the Proposed Development (i.e., wind turbines and associated foundations and hardstanding areas, site access tracks, battery energy storage system, and electrical substation etc.) consists of a number of natural source watercourses, small streams, and artificially modified agricultural and forestry drainage ditches. The Proposed Grid Connection Route (GCR) and Turbine Delivery Route pass in the vicinity of larger streams and rivers.

All of the surface watercourses within the Proposed Development boundary drain either to the east within the Burren or Boyne catchments, or to the west within the Dee catchment, all of which eventually drain to the Irish Sea. Where the watercourses drain to Irish Sea the waters are designated / protected as the Boyne Coast and Estuary Special Area of Conservation (SAC), the Seapoint Bathing Water Area, and the Dundalk Bay SAC.

The Proposed Development boundary spans across three groundwater bodies; the Louth groundwater body, the Wilkinstown groundwater body, and the Drogheda groundwater body.

Aspects of the design, construction, operation, and decommissioning of the Proposed Development that may impact on the receiving water environment have been identified and the pathways of potential effects assessed. Mitigation measures integrated as part of the design of the Proposed Development, and others to be implemented throughout its lifetime to minimise potential adverse effects, include:

- Design of site elements to minimise effects on the water environment (e.g., careful consideration of the positioning of wind turbines, foundations, and areas of hard standing); Avoidance of significant water features based on baseline constraints

mapping (i.e., establishing zones around watercourses where construction works are to be avoided); Careful management of water features where they come into contact with new infrastructure or upgraded access tracks

- Implementation of a comprehensive permanent (operational phase) surface water management plan comprising the use of SuDS (drainage) and temporary (construction phase) silt management to prevent pathways for pollution reaching the wider environment as well as reducing any increased risk of flash flooding downstream; and
- Establishing pollution prevention procedures to minimise the risk to the wider environment posed by construction, operation and decommissioning-phase activities (e.g., accidental spillage of oils or chemicals).

Implementation of the mitigation proposed would result in no significant residual effects to the receiving water environment as a result of the Proposed Development. Monitoring the effect of the Proposed Development on the water environment will be provided through water quality monitoring.

The effects of the Proposed Development on the water environment were also considered should existing environmental conditions change during the lifetime of the development, for example, due to the predicted effects of climate change. It was concluded there are no likely significant effects on the water environment arising from the Proposed Development in the event of predicted environmental changes.

An assessment of cumulative impacts was also undertaken, and it was concluded that there are no predicted significant effects to the water environment arising from the Proposed Development in conjunction with any other pre-existing or consented development.

13 NTS.12 LANDSCAPE AND VISUAL

Chapter 12 of the EIAR presents a Landscape and Visual Impact Assessment (LVIA) for the Proposed Wind Farm. This has been carried out by a qualified and experienced landscape architect to identify the landscape and visual impacts of the proposed development, and whether any are considered significant. The LVIA considers separately the effects on landscape and visual receptors, as well as the cumulative effect of the Development in combination with other windfarm developments.

The LVIA Study Area covers a radius of 20 km in accordance with the Wind Energy Development Guidelines (2006 – Draft Revised 2019). Notwithstanding the full 20km extent, the LVIA placed a proportionate focus on receptors and effects within the 'Central Study

Area', taken to be that area up to 5km from the wind turbines, due to the increased potential for significant impacts to occur.

The landscape assessment considers potential effects on the receiving landscape with reference to a range of Landscape Character Areas (LCAs) and criteria published in various technical documents. The visual assessment considers effects upon visual receptors (as agreed with consultees through the EIA Scoping process) including scenic amenity designations, centres of population, transport routes and local community views using 25 Viewshed Reference Points from representative / sensitive visual receptor locations. Photomontages have been prepared from each of these locations, with accompanying figures that include a wireline of the proposed development on its own and a wireline that shows the proposed development together with all other cumulative developments.

The site is located at an elevation of approximately 110m AOD, and forms part of a comparatively elevated plateau. At a local level, the landform has an undulating character with local high points, but at a wider scale, this land falls to the north and east towards the coast, and south towards Drogheda and the Boyne Valley. The landform to the west is defined by a series of rolling hills.

The landscape comprises a rural, productive, working, inhabited landscape that is underpinned by agricultural activities and exhibits a great deal of variety in terms of vegetation cover and land use. In no location within the Study Area is the landscape devoid of human influence, and where it has stronger natural qualities and characteristics, this is influenced by extensive signs of human influence.

The site is located adjacent to Kilsaran Quarry, and the immediate landscape is also informed by commercial forestry and areas of rough grassland/scrub. At a wider level, the landscape is influenced by major road and rail corridors that traverse the Study Area, the urban area of Drogheda, as well as existing wind turbine development, which whilst not extensive across the Wider Study Area, are present in the landscape to the west of the site, together with other vertical features such as telecommunications masts.

It could reasonably be described as an anthropogenic landscape, and in this regard the wider Study Area is notable. From an archaeological and cultural heritage perspective, the Study Area containing numerous features of national and international archaeological importance, These assets collectively demonstrate the longstanding human influence in the landscape and contribute to a tangible sense of time depth in certain locations. Correspondingly the landscape of the Study Area is noted for its recreation and tourism

function, with promoted routes such as the Boyne Valley Drive, and the Tain Trail passing through it visiting the most notable of these sites.

The landscape of the Study Area is also noted for its scenic value. In the context of the Central Study Area, there are broad views over the coastal landscape, and towards the distant rolling landscape and uplands from a variety of locations, with these locations afforded a comparatively high scenic value. However, in the great majority of locations both within the Central Study Area and the wider Study Area, the presence of successional belts of vegetation act to restrict longer-range views and retain a focus on the immediate landscape, where the scenic value is considered comparatively reduced. In many cases, the primary scenic values and views are not directly associated with views towards the site, many orientating in the opposite direction to the site, or with other features/aspects of the landscape away from the site. In the case of the coastal landscape, for instance, the primary scenic value and landscape experience relates to the broad coastal panoramas available, rather than inland views towards the site.

Reference has been made to the Louth County Development Plan (2021-2027) and the Meath County Development Plan (2021-2027). In respect of landscape and visual designations and sensitivities, whilst the wider Study Area contains areas of sensitivity including Areas of Outstanding Natural Beauty, and Areas of High Scenic Quality, the site is not covered by any designation that recognises a specific landscape or visual importance. The site and much of the Central Study Area are contained within the 'Uplands of Collon and Monasterboice' LCA, which is classified as having 'Regional' Importance, and described as having 'quite high' landscape quality, and 'high scenic quality value'. With regard to 'areas suitable for Wind Development' identified in Chapter 10 of the Louth County Development Plan, the site straddles areas defined as 'Open to Consideration' and 'Preferred Areas' in relation to wind energy development. This implies a recognition of the potential for wind energy development in the area, albeit balanced against environmental, social, and economic considerations.

Whilst the landscape is recognised for its scenic and archaeological values, these values reflect the longstanding human interaction with this landscape over time, rather than being explicitly informed by naturalistic qualities and values. The presence of archaeological and cultural heritage sites is set in the context of a working landscape, influenced by urban development, transport infrastructure, forestry and mineral activity, and extensive productive rural landscape activities and land uses. The Central Study Area is considered to be a robust landscape with a medium sensitivity to wind energy development. The wider Study Area is considered to have an underlying Medium sensitivity, increasing in parts of

the wider landscape which are designated for their outstanding natural beauty, or relate to highly sensitive landscapes associated with sites of archaeological and cultural heritage importance.

Mitigation measures focus on early-stage site selection and design rather than traditional on-site measures, adhering to minimum setback distances, with agreements in place where reduced set back distances are applied. The layout was designed in accordance with the siting and design criteria outlined in the Wind Energy Development Guidelines (2006) guidance on wind farms.

The turbines present in a legible manner and are well spaced across the wider view, allowing a high degree of visual permeability between the turbines. Their regular spacing corresponds with the scale of the underlying field pattern, and it occupies a relatively small spatial extent relative to the scale of this landscape and its plateau location. In terms of their height, the turbines are considered to be consistent with the broad scale of this relatively elevated plateau landscape and to the scale of the surrounding agricultural, quarrying and commercial forestry context. Whilst they appear prominently in close proximity views, they do not appear over-scaled in relation to the topography of the receiving landscape.

In terms of physical landscape effects, the Proposed Development will have a modest physical impact on the landscape within the site as none of the Proposed Development features have a large 'footprint' and land disturbance/vegetation clearing will be relatively limited. All areas damaged during construction will be reinstated to their original condition, with the exception of the long-term infrastructure required for the proposed wind farm.

The influence of the proposed development on landscape character will inherently be most notable at the immediate landscape level, where the scale and form of the turbines have the potential to generate considerable change to the character of the landscape. The influence of the proposed turbines on the perceived landscape character will progressively lessen with distance as they become incrementally small and partially visible features in a wider landscape context.

Within the Central Study Area, the significance of landscape impact is deemed to be Substantial-Moderate within the site and its immediate environs (within approximately 1km), reducing to Moderate with increasing distance. Beyond the Central Study Area, the significance of landscape impact is deemed to be Slight, and no greater than Moderate-Slight where this relates to more sensitive parts of the landscape, where the residual level

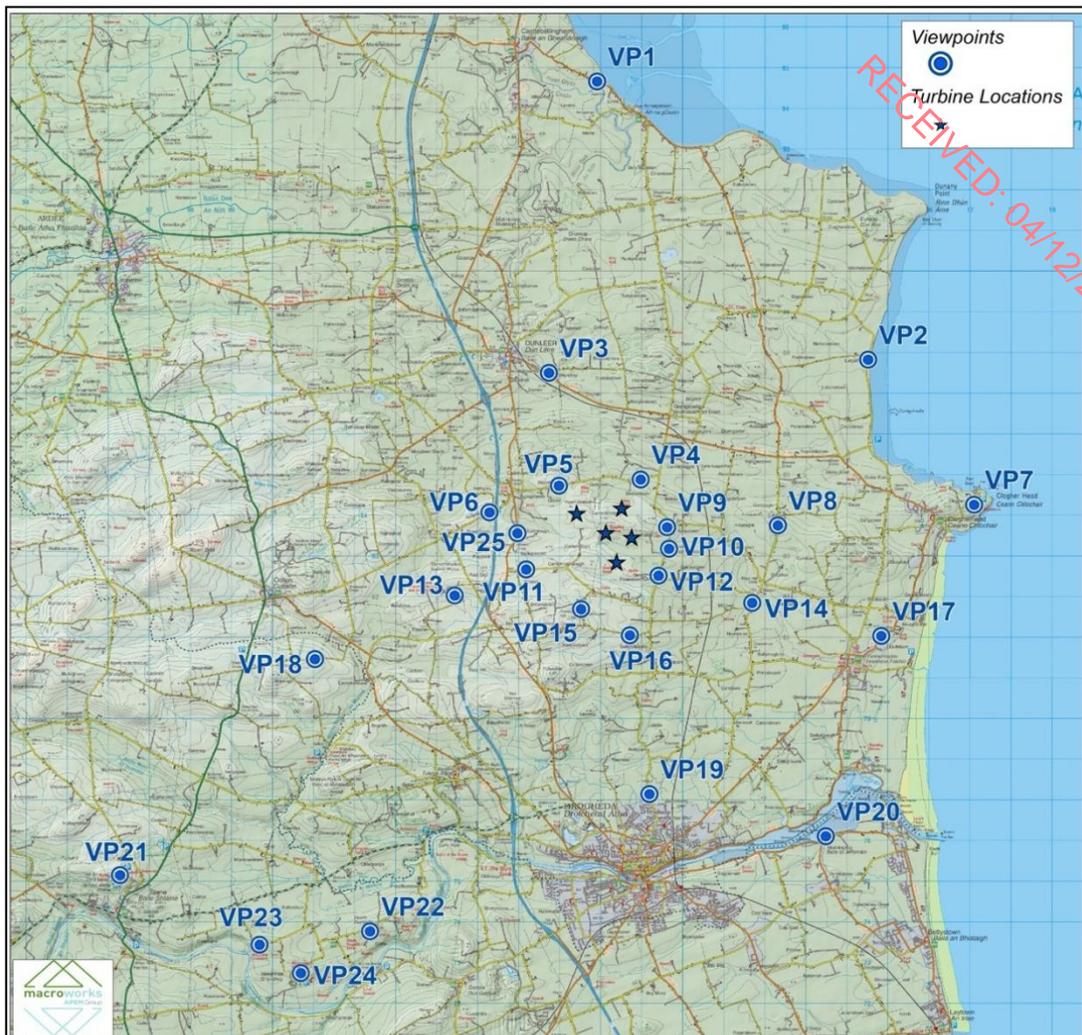
of effect is influenced by the inherent sensitivity of the landscape, rather than the magnitude of change.

For the visual impact assessment, the 25 Viewshed Reference Points (Viewpoints) are grouped and summarised in Chapter 12 in terms of receptor type. The representative viewpoints are seen in Table 2 below and in Figure NTS-3.

Table 2 – Viewshed Reference points (Viewpoints)

VP No.	Location
VP1	Scenic Route SR18 at Linns along R166
VP2	Scenic Route SR18 at Lurganboy along L2244
VP3	R170 at Skibbolmore, Dunleer
VP4	Local road north of site at Rokeby
VP5	Local road north of site at Stonehouse
VP6	Local road west of site at Priest Town
VP7	Clogherhead Hill
VP8	L2278 east of site at Garrolagh
VP9	The Brambles at Drumshallon, east of site
VP10	Drumshallon Forge Heritage Centre
VP11	Local road southwest of site at Kircock
VP12	Local road east of site at Piperstown
VP13	Monasterboice Cemetery carpark
VP14	L2278 at Milltown
VP15	Local road at Fieldstown
VP16	Ballymakenny Road
VP17	Scenic Route SR18 at Duffsfarm along R166
VP18	Irish Military Museum at Starinagh
VP19	Local road at Yellowbatter, north of Drogheda
VP20	Scenic View VP75 along R151
VP21	Hill of Slane
VP22	Dowth Passage Tomb
VP23	Knowth Passage Tomb
VP24	Newgrange Passage Tomb
VP25	R132 at Roxborough

Figure NTS 3 – Viewshed Reference Point (Viewpoint) location plan



The proposed wind farm will give rise to a range of effects when considered in relation to different receptor types, which each have different levels of sensitivity. Key differentials in terms of visual receptor sensitivity relate to the occupation of the visual receptor and whether views of the surrounding landscape are an inherent part of the experience. Static residential receptors are considered generally more susceptible to changes in views over those where views are experienced transiently by those travelling through the landscape.

The rural qualities and pleasant agrarian aesthetic that underpin the character of the wider Study Area reflect the longstanding human intervention that characterises views over the landscape, and contributes to its scenic qualities. The sensitivity of visual receptors ranges between Medium and Medium-low, and heightened to High and Very-High where visual receptors are at important heritage sites, such as the iconic passage tombs of Bru na Boinne.

Whilst the proposals represent a new and relatively unfamiliar feature in the landscape, the broad plateau has a utilitarian character as a result of working rural land uses such as agriculture, commercial forestry, mineral extraction, and residential development, and the

broad scale of its plateau location helps to moderate the type of scale conflict that can occur in more intricate landscape areas. Although the proposed development will influence the scenic properties of the landscape by merit of their presence, the spacing afforded between the turbines allows a high degree of visual permeability that ensures that views through the array remain possible and that the underlying features and characteristics of the landscape remain legible.

Higher-ranging visual impacts (Substantial-Moderate visual impact significance) is identified in relation to local community views and visitors to Drumshallon Forge where these are experienced at close proximity (within 1km). Visual impacts of this nature are reflective of the proximity at which the turbines will be seen and the slightly uphill nature of views. Whilst the turbines will appear prominently at this distance, the degree of visual permeability ensures that they do not generate any strong sense of overbearing in this broad elevated setting.

Mid-range visual impacts (Moderate visual impact significance) are identified for visual receptors within approximately 1.8km, beyond which the visual impacts experienced by visual receptors within other parts of the Central Study Area are at the lower end of the spectrum (Moderate-Slight).

Visual impacts experienced by receptors beyond the Central Study Area are considered to be lower-ranging, (Slight to Imperceptible visual impact significance), as the wind farm becomes a proportionately smaller component of the overall landscape fabric, and other features and characteristics prevail in their influence on views. Where impacts are assessed as being of Slight visual impact significance beyond the Central Study Area, the residual level of impact is primarily attributed to the inherent sensitivity of the location and the visual receptor rather than the magnitude of change.

The consideration of cumulative landscape and visual impacts was placed principally on the existing wind energy developments located in the landscape over 7km to the west of the proposed site. Where visible in combination or sequentially, the respective turbine developments would be at such distances that they would appear as distinctly separate clusters and would have minimal influence on the other. Consideration has also been given to the cumulative impacts of a single turbine over 19.5km to the north of the site, albeit it is not considered to have the potential to generate any notable influence or perceivable sense of being surrounded by turbines. It is considered that the proposed wind farm will contribute to cumulative impacts in a very minor way.

It is important to note that in terms of the duration of landscape and visual impacts, the lifespan of the project is 35 years, after which time it will be decommissioned, and the landscape will be reinstated to prevailing conditions. Whilst the impacts of the proposed development will be long-term, they are not permanent and are therefore considered reversible. It is expected that the decommissioning phase will be completed within one year and that within approximately 2-3 years there will be little evidence that a wind farm was present.

Based on the landscape, visual and cumulative assessment detailed within the chapter, whilst the proposed Kellystown Wind Farm will result in noticeable landscape and visual changes, particularly within its immediate vicinity, it is not considered to have the potential to generate significant landscape, visual or cumulative effects during construction, operation or decommissioning.

14 NTS.13 NOISE

A noise and vibration assessment was undertaken to determine the likely significant effects from the construction, operational and decommissioning phases of the Proposed Development, at nearby noise sensitive receptors (residential properties).

A comprehensive background noise survey was undertaken at seven noise monitoring locations. The data was analysed in conjunction with onsite measured wind speed data.

Predicted construction noise levels at the nearest noise sensitive receptors during all months of construction are below the Daytime and Night-time Category A threshold values within BS 5228 and that predicted levels would be short term. Construction vibration would also likely be at low levels and would be short term. Therefore, the effect from construction noise and vibration is deemed to be not significant. Activities related to decommissioning would use similar plant to that used for construction activities and would occur at the same locations, as such noise level output during the decommissioning phase is expected to be no higher than the construction phase.

For the operational noise assessment, noise limits were derived in relation to background noise levels and other applicable criteria in accordance with the Wind Energy Development Guidelines (WEDG) 2006.

Predictions of wind turbine noise were made in accordance with good practice guidance using three candidate wind turbines with serrated trailing edge blades, a 149-163 m rotor diameter range and a hub height of 98.5-105 m. Predicted operational noise levels from the

Proposed Development indicate that for noise sensitive receptors neighbouring the Proposed Development, wind turbine noise would meet the WEDG 2006 Noise Limits at all Noise Assessment Locations (NAL) and are therefore deemed to be not significant.

The three candidate wind turbine models were chosen in order to allow a representative assessment of the noise impacts. Should the Proposed Development receive planning permission, the final choice of wind turbine would be subject to a competitive tendering process. The final choice of wind turbine would, however, will have to meet the noise limits determined and contained within any condition imposed.

Predicted BESS noise levels have been assessed in accordance with BS4142 which indicates no adverse impacts. As a result, **no significant effects** are anticipated and therefore no mitigation is suggested.

15 NTS.14 MATERIAL ASSETS AND OTHER ISSUES

Chapter 14 of the EIAR (Environmental Impact Assessment Report) considers a number of other issues associated with the Proposed Development, including potential effects on land use, forestry, telecommunications, electricity networks, aviation and utilities.

15.1 Land Use

The site is characterized as being generally improved grassland and scrubland landscape which is currently being used for intensive agriculture, forestry and livestock grazing. There are also a number of residential properties in a ribbon development pattern surrounding the Wind Farm Site. There will be two turbines located on agricultural lands. This will result in the change of use of some agricultural pastureland to wind farm use. This will have a long-term, slight, negative impact on agricultural land use due to the removal of grazing lands for the duration of the Project during construction and operation phases.

Two turbines (and associated access roads for one of these turbines) are located within forestry. As a result, 9.39ha (66.7%) of the 14.1ha commercial forestry lands within the Wind Farm Site will require change of use from forestry to wind farm use, having a permanent slight, negative impact on the existing forestry land use during the construction, operation and decommissioning of the Project.

However, no significant impacts are predicted on agricultural or forestry land use.

15.2 Telecommunications

Operators of microwave communication links were contacted during the EIA process, resulting in concerns raised by RTE (2rn is the trading name of RTE) and by Vodafone network.

To address the concern of a potential risk of interference with two 2rn transmission links (Drogheda and Clermont Carn Transmitters), the developer has committed to signing a protocol agreement with 2rn prior to construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed development.

To address the concern of the likely risk of two turbines potentially interfering with an existing link (Fresnel link) on the Vodafone network, these two turbines (of seven under initial consideration) were removed from the proposed design layout. No further interference to the Vodafone network is anticipated.

The implementation of embedded mitigation/ mitigation measures will ensure no interference with communication links. Therefore, no significant effects are predicted on telecommunications or radio reception as a result of the Project.

15.3 Electricity Networks

The nationwide electricity transmission system allows for the transport of large volumes of electricity from generation stations, including wind farms, to bulk supply points near the main population centres where it interconnects with the distribution system.

The Grid Connection will be 12.65 km in length and will be predominantly along the public roads corridor, with c.900m of the Grid Connection Route (GCR) in site access tracks within the Redline Boundary.

Connection will be sought from the grid system operator by application to EirGrid. The substation will connect via underground 38kV cables. At the existing Drybridge 110kV substation, the cable will connect into existing infrastructure within the confines of the substation and its compound. The Grid Connection will be constructed to the requirements and specifications SPEC-171213-AXS (Functional Specification the installation of ducts and ancillary structures for 38kV underground power cables and associated communication cables for contestable projects).

The Project will contribute directly and in the long term to the electricity network by strengthening it through additional renewable energy generation.

15.4 Air Navigation

Operating wind farms have the potential to cause a variety of effects on aviation. For example, the physical height of turbines can cause obstruction to aviation and the overall performance of communications, navigation and surveillance equipment.

As standard, all structures over 150m in height are required to have lighting to warn aviation traffic. Consultation with aviation operators was undertaken and with the Irish Aviation Authority (IAA). The IAA have requested an obstacle warning light system for the Project, the provision of coordinates of each turbine and tip height, and to notify them 30 days prior to any crane operations commencing. An aeronautical lighting scheme for the Proposed Development will be agreed and installed in consultation with IAA and Department of Defence. The turbine locations will be added to aviation maps prior to construction, and all requests from the Aviation Authority carried out to ensure aviation safety protocols are followed.

Concerns raised in the consultation process with the relevant aviation organisations led to an aviation study being undertaken by Aviation Planning Consultants (O'Dwyer and Jones) on behalf of the developer, to consider if the proposed Wind Farm Site met the conditions and requirements laid down by the Civil Aviation and Irish Aviation Authority and the Department of Defence and Air Corps. The study concluded that the Proposed Wind Farm site was not in conflict with any current aviation requirements and not in conflict with clearance required for visual flying routes for Helicopters. Therefore, the potential effects of the Proposed Development on air navigation are considered as not being significant.

15.5 Utilities

A high pressure gas network line runs along the east side of proposed infrastructure of the Wind Farm Site approximately 246m east of the nearest turbine. The location of this gas network line has been carefully considered throughout the project's development, ensuring that any proposed excavation works will not take place within 10m of this gas network line. All work in the vicinity of a Gas Transmission Pipeline will be completed in compliance with the 'Gas Networks Ireland (GNI) Code of Practice for Working in the Vicinity of the Transmission Network', Procedure No: AO/PR/127 with guidance from Gas Networks Ireland Guidelines 'Safety advice for working in the vicinity of natural gas pipelines Guideline' No: HSQE/GU/016. Gas Networks Ireland will be consulted prior starting works, to allow early engagement in this project and an Electrical Interference Assessment will be undertaken pre-construction. The potential effects of the Proposed Development on all utilities are considered not significant.

16 NTS.15 CULTURAL HERITAGE

Chapter 15 of the EIAR presents a baseline study of and impact assessment on, the cultural heritage of the Site and an associated defined 1km and 10km Study Area. The assessment was based on a series of site inspections and a programme of desktop research which were carried out to identify and record any archaeological, architectural and cultural heritage receptors that may be affected by the Proposed Development.

The significance of effect on a receptor is considered by establishing its value/sensitivity, and how (and to what extent) it may be impacted based on the proposed design of the Proposed Development.

There are two recorded SMR archaeological sites located within the Redline Boundary but both are sited outside the Proposed Development footprint. These sites comprise two standing stones: LH021-013--- and LH021-013---, direct impact on both of which have been avoided by design.

The Proposed Development will not result in any predicted direct negative impacts on any known archaeological monuments or designated architectural heritage structures. However, there is potential for direct impact at areas of heightened cultural heritage sensitivity, with respect to proximity (and hitherto unknown sub-surface extent or survival) of known receptors.

There is direct impact in part on one undesignated feature, a relict field system CH09. This feature will be subject to advance works site investigation, together with other identified areas of archaeological potential and the design footprint, via geophysical survey and test trenching.

Any confirmatory archaeological investigations will be undertaken by licence, issued by the National Monuments Service, and will be carried out by a suitably qualified archaeologist. In the event that any sub-surface archaeological remains are identified during site investigations, they will be cleaned, recorded and left to remain in situ within cordoned off areas while the National Monuments Service are notified and consulted in relation to appropriate future mitigation strategies, which may entail preservation in situ, by avoidance, or preservation by record by archaeological excavations.

Ground works during the construction phase will also be subject to archaeological monitoring by a suitably qualified archaeologist under licence by the National Monuments

Service. A systematic advance programme of archaeological field-walking surveys will also be carried out within Proposed Development areas in forestry plantations following tree felling.

The Proposed Development will result in a range of long term, indirect negative impacts on the wider setting of Cultural Heritage receptors within the environs of the Wind Farm Site.

This is particularly relevant to the following Cultural heritage receptors:

- There is predicted indirect, negative and long-term Very Significant significance of effect at operational stage on Standing Stones LH021-013---, LH021-014---.
- There is indirect negative and long-term Significant significance of effect on Standing Stone LH021-015---;
- There is indirect negative and long-term Significant significance of effect on Rokeby House and demesne (RPS Lhs018-018);
- There is indirect negative and long-term Significant significance of effect on Stonehouse (RPS Lhs021-006),
- There is indirect negative and long-term Significant significance of effect on Stonehouse cottage (RPS LHS021-005)
- There is indirect negative and long-term Significant significance of effect on Piperstown House (RPS Lhs021-015).

It is also noted that there is a Significant cumulative impact on each of the three standing stones LH021-013---, LH021-014--- and LH021-015--- including their inherent grouping value.

There are no mitigation measures to ameliorate these indirect operational stage impacts on setting, however it is noted that these three standing stones are not publicly accessible, the duration of same is long-term and the effect is reversible following decommissioning of the site.

17 NTS.16 TRAFFIC AND TRANSPORT

Chapter 15 traffic and Transport assesses the potential effects of traffic associated with the Proposed Development on the public road network and on sensitive receptors in the vicinity of the Proposed Development, describes the existing public road and junction network, identifies whether there is any potential for significant effects to arise (both in isolation and in combination with other developments) and outlines the mitigation measures that will be implemented to negate any potential significant effects that might arise. The assessment

evaluates the potential effects of traffic generated by the Proposed Development during the construction, operation and decommissioning.

The assessment evaluates the potential effects of traffic associated with the construction of the Proposed Development infrastructure, the Grid Connection in the public road network between the Onsite Substation and Control Station and the existing 110kV substation at Drybridge and the transportation of turbine components on the public road network between the Port of Galway and the Proposed Development.

The assessment has been carried out in accordance with EPA Guidelines 2022 and is supported by a Traffic and Transport Assessment (TTA), Traffic Management Plan (TMP) and Turbine Delivery Route Assessment. The environmental effects of Proposed Development traffic have been assessed in Chapter 18: Air Quality and Chapter 13: Noise and Vibration.

The estimated timescale for the construction of the Proposed Development is 18 months, it is estimated that during the wind farm construction, a total of 5,541 loads of material and building supplies will be delivered and removed from the site. The majority of HGV movements to and from site will occur during the first ten months of the construction period and will be associated with site road construction, turbine hardstand construction and turbine foundation construction. The number of staff on site will vary according to the phase of the construction, peaking at approximately 61 at the height of the construction period.

The proposed Development will have an operational life of 35 years and will generate approximately 230 trips per year. Traffic during the decommissioning period will be similar to the construction period.

The traffic analysis carried out in the Traffic and Transport Assessment shows that drivers will experience short delays due to increased traffic volumes during the wind farm construction and decommissioning periods. In 2035 vehicles joining the R132 from the L6274 will experience a delay of 14 seconds without development construction traffic and a delay of 17 seconds with the additional traffic generated by wind farm construction. In 2070 vehicles joining the R132 from the L6274 will experience a delay of 21 seconds without development decommissioning traffic and a delay of 28 seconds with the additional traffic generated by wind farm decommissioning. The effects of the additional traffic volumes are assessed as slight and temporary with a duration of 18 months.

The effect of the works on pedestrian safety is assessed to be medium sensitivity for a short-term duration. Pedestrian facilities may be altered for short periods during the transportation of turbine components. During these periods mitigation measures will be put in place for pedestrians.

Enabling works on the public road network will be carried out using traffic management and temporary traffic signals at locations where it is not possible to maintain two-way traffic. Analysis carried out in the Traffic and Transport Assessment shows that vehicles will experience delays of approximately 75 seconds when the lights are in place on the R132 and the L6274. The effects of the additional traffic volumes are assessed as slight and short term.

The delivery of turbine components will take place outside peak traffic periods to avoid disruption on the public road network. The haul route for the transportation of turbine components consisting of dual carriageway and motorway will have unrestricted passing opportunities and no delays to public road users are expected. There is potential for momentary delay to public road users in the urban areas of Galway City, at M1 junction 14, N51 roundabouts at the Hill of Rath and Rosehall, R132 slip road during contraflow manoeuvre, R132 / L6274 junction and at the Proposed Development entrances on the L6274. Following assessment, it is concluded that delays to traffic due to turbine delivery will be imperceptible and momentary in duration.

The construction of grid connection works on public roads will require road closures on local roads where the road width is too narrow to support traffic flows. The road closures will result in delays to public road users and increased journey times. Following assessment, it is concluded that these effects will be slight and short term.

No long-term significant effects have been predicted as part of the Proposed Development, however mitigation measures have been incorporated into the design to maintain the highest standard of road safety, minimise delay and disruption to all public road users, and to comply with statutory regulations.

The results of the traffic analysis have shown that the existing public road network can accommodate the increased traffic volumes generated by the Proposed Development. Works on the public road network will be carried out using an approved traffic management plan and site entrances will be signposted in accordance with chapter 8 of the Traffic Signs Manual published by the Department of Transport. Visibility at site entrances will be maintained in accordance with the Louth County Council Development Plan 2021-2027.

There is likely to be a slight residual effect on the condition of road surfaces at the site entrances due to vehicles turning and on the grid connection route prior to final road reinstatement. Following final road reinstatement, there will be no residual effects associated with the construction of the Proposed Development.

There will be no residual effects on the public road network during the operational phase of the Proposed Development. The results of the traffic analysis have shown that the existing public road network can accommodate the operational traffic generated by the Proposed Development when combined with predicted public traffic growth beyond 2070. The interface between the Proposed Development and the public road network has been designed to eliminate residual risk with visibility splays, signs and road markings, vehicle dwell areas and access gates setback from the carriageway edge to allow vehicles to pull off the road when entering the Site.

The results of the traffic analysis have shown that the existing public road network can accommodate the increased traffic volumes generated by the Proposed Development during decommissioning. There is likely to be a slight residual effect on the condition of road surfaces at the site entrances due to vehicles turning. The decommissioning will be subject to a separate traffic management plan as the destination for recycled turbine parts may differ from the port of origin.

Following assessment of the quality of effects on the public road network, it has been concluded that the quality of effects will be neutral with increased traffic flows during the construction and decommissioning of the Proposed Development with no permanent changes to the geometry of the public road network and its associated junctions. Grid connection works on the local road network requiring road closures have been assessed as negative due to the short-term disruption to public road users resulting from road closures and driver delay resulting from temporary traffic lights and traffic diversions.

Following assessment, it has been concluded that the significance of the effects on the public road network where traffic management / two-way traffic flows can be maintained during works has been assessed as slight. The significance of the effects has been assessed as moderate / significant on local roads where road closures will be required to carry out the grid connection works.

Following assessment, it has been concluded that the duration of effects relating to increased HGV traffic flows in the vicinity of the Site have been assessed as Temporary and may last between 12 and 18 months during the construction and decommissioning of

the Proposed Development. The maximum effects from increased HGV traffic flows will occur on a total of 5 days during the 18 month construction period during the construction of turbine foundations (one day per turbine foundation).

Following assessment, it has been concluded that the duration of effects relating to grid connection works, enabling works on the Turbine Haul Route and delivery of turbine components have been assessed as short-term lasting less than one year.

During the construction period the magnitude of the effects associated with Proposed Development traffic have been assessed as low to medium with a temporary / short term duration. The significance of effects has been assessed as Slight to Significant.

During the operation period the magnitude of the effects associated with development traffic have been assessed as negligible with a long-term duration. The significance of effects has been assessed as Not Significant.

During the decommissioning period the magnitude of the effects associated with development traffic have been assessed as Low with a temporary / short-term duration. The significance of effects has been assessed as Slight.

The assessment has identified that the potential effects of the Project on traffic and transport are considered to be Slight to Moderate, given the mitigation measures embedded in the design and proposed for the implementation of the Project.

18 NTS.17 SHADOW FLICKER

Chapter 17 of the EIAR contains a Shadow Flicker analysis. Shadow Flicker is the effect of light levels in a sunlit room noticeably varying as a result of the shadow of a turbine blade passing a window, causing a nuisance. Industry standard software was used to model the potential for shadow flicker to occur, based on the proposed turbine locations and dimensions and the locations of residential properties.

The study area was defined based on the 2006 Wind Energy Development Guidelines, which specify properties within 10 rotor diameters (assumed to be 1,550m as a worst-case scenario and 2,000m for completeness). A total of 375 sensitive receptors were identified within 2km of the proposed turbines. This includes dwellings and a local school.

The nearest surrounding wind farm, Dunmore Wind Farm (2 turbines), located 11.4 km west of the Site, is operational and will have no cumulative impacts. Additionally, there are no wind farms within 2 km of the development, so no cumulative effects are expected

The results of the shadow flicker assessment predict that Kellystown Wind Farm has the potential to result in shadow flicker at a maximum of 227 receptors surrounding the site. The Applicant is committed to ensuring that shadow flicker from the Proposed Development will not significantly impact the residential amenities of surrounding properties. As standard across all projects, EDF implement mitigation measures to cease operation of the turbines during periods of potential shadow flicker to ensure that no significant residual shadow flicker effects are experienced at any sensitive receptor within 10 rotor diameters of a turbine. In that regard, the Proposed Kellystown Wind Farm will comply with the recommended limits of 30 hours per year and 30 minutes per day detailed within the Wind Energy Development Guidelines (2006) and the zero shadow flicker policy as set out in the Draft Revised Wind Energy Development Guidelines (2019).

19 NTS.18 AIR AND CLIMATE

Chapter 18 assesses the effect of the Proposed Development on air quality, given the potential for dust emissions, and the likely carbon dioxide reduction effects of the Proposed Development in operation.

For nuisance dust (larger dust particles) receptors situated within 100m the Wind Farm Site infrastructure is defined as sensitive receptors. Mitigation measures for the reduction of dust are outlined in the **EIAR Chapter 18: Air and Climate Section 18.4.7**.

After mitigation the Proposed Development has been assessed as having the potential to result in slight, negative and temporary/short-term effects on Air Quality during construction and decommissioning.

The layout of the Proposed Development has been designed to minimise the potential environmental effects of the wind farm while utilising the maximum energy yield from the site's wind resource. The selection of breaking new ground and impacting on natural habitat has been kept to a minimum.

The Proposed Development does not contain any element, which will produce GHG emissions or odorous emissions in operation. Indeed, the Proposed Development will contribute to a net national reduction in the emissions of greenhouse and other gases resulting from the combustion of fossil fuels.

Savings of carbon dioxide arise principally from the generation of electricity from the Proposed Development, such that generation from other sources (which emit carbon dioxide) are offset. The estimated savings depend on the assumption of which source of electricity is displaced and the savings range from 29,010 to 36,645 tonnes of carbon dioxide per annum.

Ireland aims to reduce overall greenhouse gas emissions by 51% by 2030 and achieve net-zero emissions by 2050. By 2030, the country targets generating 80% of its electricity from renewable sources. The proposed development will contribute between 28.5MW and 36 MW of installed capacity. The cumulative effect with other Irish renewable generation is considered to be a fundamental change in the climate effects of Ireland's energy supply, which is a major, positive effect, that is significant under the EIA Regulations and will contribute to Ireland's binding emission reduction targets. The Project has been assessed as having a slight, positive, long-term effect in terms of helping Ireland meet its international obligations to reduce GHG emissions.

20 NTS.19 MAJOR ACCIDENTS AND NATURAL DISASTERS

Major accidents or natural disasters are hazards which have the potential to affect the Project and consequently have potential impacts on the environment. These include accidents during construction, operational and decommissioning caused by operational failure and/or natural hazards. The assessment of the risk of major accidents and/or disaster considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., population and human health, biodiversity, land, soil, water, air and climate and material assets, cultural heritage and the landscape.

A desk-study has been completed to establish the baseline environment for which the proposed risk assessment is being carried out. This will influence both the likelihood and the impact of a major accident or natural disaster. Local and regional context has been established prior to undertaking the risk assessment to develop an understanding of the vulnerability and resilience of the area to emergency situations.

The risk of a major accident and/or disaster occurring during the any phase of the Project is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010). The scenario with the highest risk score (a score of 4; low) in terms of a major accident and/or natural disaster during the construction, operation and decommissioning phase of the Proposed Development is identified below:

Industrial Accident - Fire/Gas explosion

There is a potential risk of gas disruption due to the presence of a transmission gas pipeline line to the east of the proposed infrastructure. A risk score of 4 was attributed to this 'Industrial Accident', during the construction and the operational phase. During the construction phase, the gas line is most at risk due to the excavation works and earthworks required during this phase.

The risk of a gas explosion has been minimised through the careful design of the Proposed Development and will be further limited through the implementation of the best practice construction control. Further to the health and safety guidelines and regulations outlined in Section 19.3.8, GNI code of practice for Working in the Vicinity of the Transmission Network¹ and GNI Safety guideline for working in the Vicinity of Natural Gas Pipelines² will be strictly adhered to. Electrical Interference Assessment will be undertaken pre-construction. As a confirmatory measure during the pre-construction stage, GNI will be consulted to confirm the location of the gas pipeline and wayleave. A temporary fence will be erected to protect the wayleave during construction. The layout has been designed to avoid excavation work within any wayleave where possible. However, a small area of the met mast communications cable is located within the wayleave. Prior to construction GNI consent is required in the form of a valid Excavation Permit.

The risk of fire or gas explosion is 'very unlikely' to occur as adherence to the CEMP mitigation measures will be required and will have 'limited' consequences should it do so, representing a 'low-risk scenario' during the construction, operation and decommissioning phases.

Contamination

There is a potential risk of contamination from site activities during the construction, operational and decommissioning phases from potential release of hydrocarbons. The risk of contamination was given a risk score of 4. However, as outlined in **Chapter 2: Description of the Proposed Development, Appendix 2.1: Construction Environmental Management Plan (CEMP)** and **Chapter 1: Hydrology and Hydrogeology**, measures are proposed and will be put in place to reduce the risk of accidental spillage and contamination

¹ GNI 2021, Code of Practice for Working in the Vicinity of the Transmission Network, Procedure No: AO/PR/127 Rev 3 <https://www.gasnetworks.ie/docs/business/safety-in-the-business/GNI-Code-of-Practice-for-Working-in-Vicinity-of-Tx-Network-2021.pdf> [Accessed 20/08/24]

² GNI 2020, Safety advice for working in the vicinity of natural gas pipelines Guideline No: HSQE/GU/016 Rev 2 Date: November 2020 https://www.gasnetworks.ie/docs/business/safety-in-the-business/Safety-Advice-for-working-in-the-vicinity-of-Gas-pipes-2021_.pdf [Accessed 20/08/24]

of pollution risk to groundwater, surface water and associated ecosystems, and to terrestrial ecology.

The risk of contamination is 'very unlikely' to occur as adherence to the CEMP mitigation measures will be required and will have 'limited' consequences should it do so, representing a 'low-risk scenario' during the construction, operation and decommissioning phases.

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21 NTS.20 INTERACTIONS AND INTERRELATIONSHIPS

Any potential impact on one element of the environment as a result of the Project may also impact on another. **Chapter 20** of the EIAR provides a summary of the interactions and interrelationships between environmental aspects of the Project. This includes significant effects from each EIAR chapter and also summarises the mitigation measures proposed to reduce either the likelihood or magnitude of these effects to an acceptable level.

Table 20.1 below outlines the different environmental aspects which have potential to interact because of the Project. Interactions have been clearly identified in the early stages of the Project and where the potential exists for interaction between environmental impacts, the EIAR specialists have taken the interactions into account when making their assessment. Potential interactions (both positive and negative) have been considered for the construction, operational and decommissioning phases of each of the different environmental aspects of the Project.

All environmental factors are interrelated to some extent. Having studied the interaction of potential impacts during the construction, operational and decommissioning phases of the Project, it has been determined that no amplification effect is anticipated. The Project will have some positive impacts on an international, national, regional and local level. It is important to note that the landscape and visual impacts are almost entirely reversible upon decommissioning of the Development.

Table 20.1 Summary matrix of Interactions of Impacts during Construction, Operational and Decommissioning Phases (Source: Adapted from EIAR Guidelines, 2022)

	Population & Human Health		Planning Policy		Biodiversity		Bat Ecology		Ornithology		Soils & Geology		Hydrology and Hydrogeology		Noise		Landscape & Visual		Material Assets		Cultural Heritage		Traffic & Transportation		Shadow Flicker		Air And Climate		Major Accidents & Natural Disasters	
	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper
Population & Human Health																														
Planning Policy																														
Biodiversity																														
Bat Ecology																														
Ornithology																														
Soils & Geology																														
Hydrology and Hydrogeology																														
Noise																														
Landscape & Visual																														
Material Assets																														
Cultural Heritage																														
Traffic & Transportation																														
Shadow Flicker																														
Air And Climate																														
Major Accidents & Natural Disasters																														

Note: Const. = Construction phase; Oper = Operational phase Decom. = Decommissioning

 Interaction or inter-relationship

 No interaction or inter-relationship

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