NON-TECHNICAL SUMMARY

1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by MKO on behalf of Lemanaghan Wind Farm DAC (the Applicant), which intends to apply to An Coimisiún Pleanála (ACP) for planning permission for the construction of a wind energy development and all associated infrastructure within the Lemanaghan Bog and adjacent townlands, near Ferbane, Co. Offaly.

The proposed project will be known as the Lemanaghan Wind Farm and for the purposes of this EIAR:

- Where the 'Proposed Project' is referred to, this encompasses the entirety of the project for the purposes of this EIA in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.
- Where the 'Proposed Wind Farm' is referred to, this refers to turbines and associated foundations and hard-standing areas, meteorological mast, internal roads, amenity track, temporary construction compounds, underground cabling, peat and spoil management, borrow pits, site drainage, biodiversity mitigation and enhancement, turbine delivery route and associated junction accommodation works, and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Chapter 4 of this EIAR.
- Where the 'Proposed Grid Connection' is referred to, this refers to the onsite 220kV substation wind farm control building, associated temporary construction compound, 2 no. gantry structures, 2 no. crane pads, 2 no. tower pads, 4 no. steel masts, telecommunications tower, temporary access track, and overhead line (OHL) connecting to the existing Shannonbridge-Maynooth 220kV OHL, and all ancillary works and apparatus. The Proposed Grid Connection is described in detail in Chapter 4 of this EIAR.
- Where the 'Proposed Project site' or 'site' is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown on Figure 1-1 of the EIAR and encompasses an area of approximately 1,258 hectares.

The application meets the threshold for wind energy set out in the Seventh Schedule of the Planning and Development Acts 2000 to 2024, on foot of a notice issued by ACP on 3rd of March 2026 and is therefore being submitted directly to ACP as a Strategic Infrastructure Development (SID) in accordance with Section 37E of the Planning and Development Act 2000, as amended. Please note, the planning application will encompass all elements of the Proposed Project, including the 220kV grid connection infrastructure and associated works.

This EIAR, along with a Natura Impact Statement ('NIS'), will accompany the planning application for the Proposed Project which will be made to ACP. Both the EIAR and NIS contain the information necessary for ACP to complete the Environmental Impact Assessment and Appropriate Assessment as required for this planning application.

Both the EIAR and NIS take into account the combined impacts identified across the various EIAR disciplines of the Proposed Project. For clarity, in this EIAR all elements of the Proposed Project will be assessed cumulatively and in combination with other projects to aid the competent authority in carrying out an EIA.

Description of the Proposed Project

The Proposed Project will comprise the construction of 15 No. wind turbines and all associated works, including an onsite 220kV substation and all associated works and apparatus. The full description of the Proposed Project is detailed in Chapter 4 of this EIAR.

The development description for the current planning application as it appears in the public notices is as follows:

(i) *15 no. wind turbines with the following dimensions:*
   a. *A total tip height of 220m;*
   b. *Rotor diameter of 150m;*
   c. *Hub height of 145m.*

(ii) *Permanent turbine foundations, hard-standing and assembly areas;*

(iii) *Underground electrical and communications cabling connecting the 15 no. wind turbines to the proposed 220kV onsite electrical substation;*

(iv) *A new permanent 220kV electrical substation compound (c. 9611m²) in the townland of Cooldorragh consisting of 1 no. Gas Insulated Substation (GIS) building, 1 no. Independent Power Producer (IPP) control building, 2 no. gantry structures, all associated electrical and communications plant and equipment, welfare facilities, 2 no. foul water holding tank, 2 no. bored wells, access roads, security fencing and gates, lightning masts, signage, landscaping, drainage infrastructure and all other ancillary works;*

(v) *A permanent telecommunications tower with a height of 36m and associated foundation and hard-standing area;*

(vi) *The permanent installation of c. 800m of 220kV overhead line, 4 no. new steel masts, temporary tower build areas, temporary tower crane pads and associated hard-standing areas to facilitate the new 'loop-in/loop-out' connection into the existing 220kV Shannonbridge to Maynooth line;*

(vii) *The new permanent overhead line grid connection will require the decommissioning / removal of 1 no. existing steel mast and c. 75m of existing 220 kV line;*

(viii) *A meteorological mast with a height of 145 metres and associated foundation and hard-standing area;*

(ix) *The permanent upgrade of c.1.14km of existing internal site roads/tracks and the provision of c.17.1 km of new permanent internal site access roads, passing bays and a layby area;*

(x) *The permanent upgrade of c.1.8km of existing tracks and the provision of c.3.9km of new permanent tracks for the purposes of amenity, seating areas, and amenity signage;*

(xi) *The provision of temporary access track off the L7001 local road during the construction phase;*

(xii) *Removal of an existing agricultural shed to accommodate the new temporary access track off the L7001 local road;*

(xiii) *2 no. new gated site entrances off the L7002 local road;*

(xiv) *Upgrade of 3 no. existing site entrances off the N62 national road, R436 regional road and L7001 local road;*

(xv) *A temporary access track from the N52 national road to the N62 national road at Kennedy's Cross in the townland of Ballindown to facilitate the delivery of turbine components and other abnormal loads;*

(xvi) *5 no. temporary construction compounds with temporary offices, containers and staff facilities;*

(xvii) *3 no. permanent amenity car parks each including 15 no. spaces for private vehicles, 3 no. spaces for accessible parking, parking for buses and bicycle rack facilities;*

(xviii) *4 no. temporary borrow pits;*

(xix) *5 no. temporary security cabins;*

(xx) *2 no. clear span watercourse crossings;*

(xxi) *Peat and Spoil Management;*

(xxii) *Site Drainage;*

(xxiii) *Removal of c.1.02ha of immature woodland and c.0.64 hectares of scrub;*

(xxiv) *Biodiversity management and enhancement measures;*

(xxv) Operational stage site signage; and
(xxvi) All ancillary apparatus and site development works above and below ground, including hard and soft landscaping and drainage infrastructure .

This application is seeking a 10-year permission and 35-year operational life from the date of commissioning of the wind energy development.

Current and future wind turbine generator technology will ensure that the wind turbine model, chosen for the Proposed Project, will have an operational lifespan greater than the 35-year operational life that is being sought as part of the planning application.

Modern wind turbine generators currently have a potential generating capacity in the 4 to 7 MW range, with the generating capacity continuing to evolve upwards as technology improvements are achieved by the turbine manufacturers. For the purposes of this EIAR it is assumed that the wind turbine model installed as part of the Proposed Project will have a generating capacity of 6MW. Therefore, on this basis, the proposed 15 no. wind turbines would have a combined generating capacity of 90MW.

Applicant

From August 2020 to March 2024, BnM was the sole applicant. In March 2024 BnM and SSE Renewables entered into a joint venture. Therefore, the applicant for the Proposed Project is Lemanaghan Wind Farm DAC representing the joint venture between SSE Renewables and BnM.

SSE Renewables

SSE Renewables is a leading developer and operator of renewable energy generation, focusing on onshore and offshore wind farms, hydro-electric power and flexible storage technologies. It is part of electricity infrastructure company SSE plc, a FTSE-100 company with operations across the UK and Ireland, and a presence in carefully selected international markets. SSE Renewables delivers clean power assets to increase SSE's operational renewable generation capacity as part of the company's five-year investment plan to 2030. This includes delivery of the world's largest offshore wind farm in construction, the 3.6GW Dogger Bank Wind Farm. SSE Renewables operates some of the leading onshore wind farms in Ireland including the 174MW Galway Wind Park in Connemara and the 73MW Slieve Kirk Wind Park outside Derry City.

Bord na Móna

Bord na Móna plc trading as BnM is a publicly owned company, originally established in 1946 to develop and manage some of Ireland's extensive peat resources on an industrial scale, in accordance with government policy at the time. BnM's lands extend to approximately 80,000 hectares in total and are located mainly in the Irish midlands. BnM currently manages and operates a portfolio of thermal and renewable assets, namely Edenderry Power Plant, a peat/biomass co-fired electricity generating unit, Cushaling peaking plant, Cloncreen, Bellacorick, Mountlucas, Bruckana and Oweninny wind farms, Derrinlough wind farm (under construction), Timahoe North solar farm and the Drehid landfill gas facility.

In 2015, BnM published its 'Sustainability Statement 2030', which sets out the company's commitment to transition to peat-free electricity generation by 2030. Renewable energy generation, including solar power, biomass and wind power, is a key component of this transition. In October 2018, BnM announced its strategy to decarbonise, accelerating moves away from its traditional peat business into renewables, resource recovery and new sustainable businesses. BnM's target is for an 80% reduction in carbon emissions by 2030 based on 2015 levels and to accelerate the development of renewable energy by providing up to 2GW of renewable energy generating assets by 2030 in support of national climate and energy policy targets.

BnM has a long track record of developing energy projects, dating back to the development of the first generation of peat-fired power stations. In recent times, the business has gone through radical change, announcing the new "Brown to Green" strategy, committing to the cessation of peat harvesting, and focusing on developing climate solutions in renewable energy, sustainable waste management, carbon storage and biodiversity conservation. A key objective of this strategy involves using the land to continue to underpin Ireland's energy independence by developing green, sustainable energy sources to assist with Ireland's commitment to achieve 70% renewable electricity by 2030.

Need for the Proposed Project

Ireland faces significant challenges to its efforts to meet EU targets for renewable energy by 2030 and its commitment to transition to a low-carbon economy by 2050.

The Proposed Project provides the opportunity to capture an additional part of County Offaly's valuable renewable energy resource. If the Proposed Project were not to proceed, this opportunity to harness the wind energy resource of County Offaly's valuable renewable energy resource would be lost, as would the opportunity to further contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would also be lost.

Economic Benefits

The Proposed Project will have both long-term and short-term benefits for the local economy including additional income to local landowners, job creation, work opportunities for local businesses and service providers, local authority commercial rate payments and a Community Benefit Scheme.

Additional commercial rate payments from the Proposed Project will be provided to Offaly County Council each year, which will be redirected to the provision of public services within Co. Offaly. These services include provisions such as road upkeep, fire services, environmental protection, street lighting, footpath maintenance, etc., along with other community and cultural support initiatives.

It is estimated that the Proposed Project has the potential to create 100-120 jobs during the construction phase and 3-4 jobs during operational and maintenance phases. During construction, additional indirect employment will be created in the region through the supply of services and materials. There will also be income generated by local employment from the purchase of local services, i.e., travel, goods and lodgings. Further details on employment associated with the Proposed Project are presented in Chapter 5 of this EIAR: Population & Human Health. This will provide a long-term benefit to both the local community and visitors to the area.

In addition to the economic and environmental benefits of the Proposed Project, there will be potential social and recreational benefits associated with the Proposed Project. The Proposed Wind Farm creates a unique opportunity to develop an amenity area for use by members of the local and wider community alike, as well as tourists. The peatland habitat within the bogs is attractive to both locals and visitors to the area because of its history and variety of vegetation. The Proposed Wind Farm roads, and dedicated amenity track, will be open to the public for walking and cycling. The Proposed Project will also facilitate linkages to the wider area and to both existing and proposed amenity walkways as part of the Midlands Trail Network. Interpretation and orientation signage will be strategically located throughout the Proposed Wind Farm to guide, inform, and maximise enjoyment of the Proposed Wind Farm for all users.

Purpose and Scope of the EIAR

The purpose of this EIAR is to document the current state of the environment on and in the vicinity of the site and to quantify the likely significant effects of the Proposed Project on the environment. The

compilation of this document served to highlight any areas where mitigation measures may be necessary in order to protect the surrounding environment from the possibility of any negative impacts arising from the Proposed Project. This EIAR uses the grouped structure method to describe the existing environment, the potential impacts of the Proposed Project thereon and the proposed mitigation measures. Background information relating to the Proposed Project, scoping and consultation undertaken and a description of the Proposed Project are presented in separate sections.

The EIAR project team comprises a multidisciplinary team of experts with extensive experience in the assessment of wind energy developments and in their relevant area of expertise. Each chapter of this EIAR has been prepared by a competent expert in their subject matter. The chapters of this EIAR are as follows:

1. *Introduction*
2. *Background to the Proposed Project*
3. *Site Selection and Reasonable Alternatives*
4. *Description of the Proposed Project*
5. *Population and Human Health*
6. *Biodiversity*
7. *Birds*
8. *Land, Soils and Geology*
9. *Water*
10. *Air Quality*
11. *Climate*
12. *Noise and Vibration*
13. *Cultural Heritage*
14. *Landscape and Visual*
15. *Material Assets (including Traffic and Transport & Telecommunications and Aviation)*
16. *Major Accidents and Natural Disasters*
17. *Interactions of the Foregoing*
18. *Schedule of Mitigation and Monitoring Measures*

A Natura Impact Statement has also been prepared in line with the requirements of the Habitats Directive and accompanies this planning application.

2 Background to the Proposed Project

Chapter 2: Background to the Proposed Project presents the relevant policies and objectives which have been put in place at the international, national, regional and local level in relation to planning, renewable energy and climate change. It also summarises the scoping, pre-application and community consultations undertaken and sets out the cumulative impact assessment process. This chapter should be read in conjunction with the Planning Report which accompanies the planning application.

The Proposed Project is being brought forward in response to international, national, regional and local policy regarding Ireland's transition to a carbon-neutral and climate-resilient society, a key objective of the Revised National Planning Framework (NPF). The Revised NPF has identified post-industrial peatlands as a key opportunity area for the development of renewable energy. The Eastern and Midlands Region is allocated a target of installing an additional 1,966MW of onshore wind energy by 2030.

The need to decarbonise the economy and reduce emissions has always been imperative, however in recent years the urgency involved has become clearer to all stakeholders. The latest Climate Action Plan 2025 (CAP25) sets out the detail for taking action to deliver the decarbonisation required under the carbon budgets and sectorial emissions ceilings. Central to this are the measures set out to increase the proportion of renewable electricity to up to 80% by 2030 and a target of 9GW from onshore wind.

The Climate Action and Low Carbon Development Act 2015 (as amended) ('the Climate Act') commits Ireland to a legally binding target of net-zero emissions no later than 2050, and a cut of 51% by 2030 (compared to 2018 levels). To ensure that climate targets are met, Section 15 of the Climate Act requires all public bodies to exercise their functions in a manner consistent with, in so far as practicable, the national climate objective and the latest climate policy. Renewable energy projects such as the Proposed Project are key to helping Ireland achieve these legally binding climate targets.

Failure to meet binding EU targets will expose Ireland to financial penalties, increased carbon credit costs, and continued dependence on fossil fuel imports—posing serious risks to energy security and economic stability. Furthermore, Ireland's national interest requires the rapid expansion of renewable energy, making this a matter of strategic economic and social importance. National interest is identified as a matter of regard during planning determination in Section 143(1b) of the Planning and Development Act 2000 (as amended) ('the Planning Act'). Every viable renewable energy project plays a crucial role in meeting Ireland's climate targets. The approval of well-planned, appropriately located renewable energy projects, such as the Proposed Project is not just beneficial—it is imperative. Without decisive action to facilitate renewable energy deployment, Ireland risks missing national and EU commitments, incurring financial penalties, and undermining energy security.

The application for the Proposed Project is covered by the provisions of the Renewable Energy Directive III (Directive 2023/2413) and the planning application is subject to a completeness check under section 37JA of the Planning and Development Act 2000, as amended by the European Union (Planning and Development) (Renewable Energy) Regulations 2025.

Local Planning Policy

It is considered that the Proposed Project is consistent with the policies and objectives of the Offaly County Development Plan 2021-2027 (OCDP). The OCDP outlines the overall strategy for the proper planning and sustainable development of County Offaly. The CDP and accompanying documents (including the Offaly Wind Energy Strategy 2021-2027 (WES)) set out the key policy context for the development of wind energy in County Offaly.

The OCDP and associated WES fully recognises the importance of tackling climate change through the increased supply of renewable energy. Furthermore, there is a range of policies in place which support the development of renewable energy.

The layout of the Proposed Wind Farm has been strategically developed, with the Proposed Wind Farm turbines being located in an area classified as 'Areas Deemed Open for Consideration for Wind Energy Developments' within the WES, with the exception of T05 which is located on the border of an area designated 'Not Deemed Suitable for Wind Energy Developments'. The overlap of T05 with the border of the 'Areas Not Deemed Suitable for Wind Energy Developments' is minor and as demonstrated by this EIAR, will not give rise to any significant effects on the environment. When assessed in accordance with the Development Management Standard 109 within the OCDP, the Proposed Project is found to be in compliance. Accordingly, the Proposed Project is considered to be compliant with the relevant provisions of the OCDP and represents proper planning and sustainable development in the functional area of the Offaly County Council.

Wind Energy Development Guidelines

The relevant considerations under the 'Wind Energy Development Guidelines for Planning Authorities'(Department of the Environment, Heritage and Local Government (DoEHLG), 2006) ('the DoEHLG 2006 Guidelines') have been taken into account during the preparation of the EIAR.

The DoEHLG 2006 Guidelines were the subject of a targeted review. The proposed changes to the assessment of impacts associated with onshore wind energy developments were outlined in the document Draft Revised Wind Energy Development Guidelines (Department of Housing, Planning and Local Government (DoHPLG), 2019) ('the Draft DoHPLG 2019 Guidelines'). At time of writing, the Draft DoHPLG 2019 Guidelines have not yet been adopted, and the relevant guidelines, remain to be the DoEHLG 2006 Guidelines. Notwithstanding this, however, due to the timelines associated with the planning process for renewable energy projects it is possible that the Draft DoHPLG 2019 Guidelines may be adopted during the consideration period for the current planning application. Should the Draft DoHPLG 2019 Guidelines be adopted in advance of a planning decision being made on this application, the Proposed Wind Farm will be capable adhering to the relevant noise and shadow flicker standards.

While the final updated Guidelines have not yet been published it should be noted that noise and shadow flicker are controllable and are discussed further in Chapter 12 and Chapter 5 of the EIAR, respectively. The Proposed Wind Farm achieves the recommended distance of 4 times turbine tip height from proposed turbines to third party sensitive receptors, which has become a recognised standard for the purposes of protecting residential visual amenity, as currently outlined in the Draft DoHPLG 2019 Guidelines.

Planning History

A planning search was carried out through the National Planning Application Database and ACP online planning portals in February 2026 for relevant planning applications lodged within the past 10 years that fall within the red line boundary of the Proposed Project.

The Proposed Project site was subject to industrial-scale peat extraction which was permanently ceased in June 2020; decommissioning activities as required by Condition 10 of the IPC Licence are currently ongoing. The ongoing decommissioning and maintenance activities will ensure compliance with BnM's IPC Licence (Ref P0500-01). An application for substitute consent was submitted to ACP (Case Ref: SU19.323676) on 12th September 2025, for peat extraction and ancillary works from July 1988 to June 2020 that were carried out within Lemanaghan Bog.

A planning search was carried out to establish proposed, permitted and operational wind energy developments within 25km of the Proposed Wind Farm turbines. In total, 17 no. applications relating to wind energy were identified within 25km of the proposed turbines, 5 no. of which relate to single turbine developments and a further 5 no. of which relate to amendments to permitted developments.

Scoping and Consultation

An EIA scoping report, providing details of the Proposed Project, was prepared by MKO and circulated in May 2021 and March 2025. MKO requested the comments of the relevant personnel/bodies in their respective capacities as consultees with regards to the EIAR process. As part of the constraints mapping process telecommunications operators were contacted in November 2020 (and again in October 2024 and March 2025) in order to determine the presence of telecommunications links either transversing the site or in close proximity to the Proposed Wind Farm site. Chapter 2 includes a list of scoping consultees and responses received, with full copies of all scoping responses received set out in Appendix 2-1 of the EIAR.

Pre-planning meetings were undertaken with Offaly County Council under the provisions of Section 247 of the Planning Act, and ACP under the provisions of Section 37B of the Planning Act. A letter received from ACP dated the 3rd March 2026 stated that under Section 37B (4)(A), it is the opinion of ACP that the Proposed Project falls within the scope of the paragraphs 37A(2)(a) and (b) of the Planning Act. This confirmed that the Proposed Project constitutes Strategic Infrastructure Development.

Community engagement has been undertaken by the Applicant, details of which can be found in Appendix 2-2 of this EIAR. The Applicant has carried out consultation in relation to the Proposed Project with local residents surrounding the proposed Wind Farm site and interested parties in the wider community. The objective of the consultations was to ensure that the views and concerns of all were considered as part of the Proposed Project design and EIA process. The development of the Proposed Project will provide an enduring economic benefit to the communities surrounding the Proposed Project, through the potential community benefit package for residents and community groups, employment during the construction and operation of the Proposed Project and through the annual rates payable to the Local Authority.

Cumulative Impact Assessment

The EIA Directive and associated guidance documents state that as well as considering any direct, indirect, secondary, transboundary, short, medium, and long-term, permanent and temporary, positive and negative effects of the project the description of likely significant effects should include an assessment of cumulative impacts that may arise.

To gather a comprehensive view of cumulative impacts on these environmental considerations and to inform the EIAR process being undertaken by the consenting authority, each relevant chapter within the EIAR includes a cumulative impact assessment where appropriate. The potential for cumulative impacts arising from other projects and land uses within the cumulative study area has therefore been fully considered within the EIAR.

The Proposed Project has been designed to avoid and mitigate impacts on the environment, and a suite of mitigation measures is set out within the EIAR. A detailed cumulative impact assessment for each discipline within the EIAR is provided in each impact assessment chapter detailing the potential significant cumulative effects arising and, where appropriate, the specific suite of relevant mitigation measures proposed. The mitigation measures set out in the EIAR will ensure that significant cumulative effects do not arise during the construction, operational or decommissioning phases of the Proposed Project. A long list of all plans and/or projects considered by each of the different disciplines in their cumulative impact assessment are included in Appendix 2-3 of the EIAR.

3 Site Selection and Reasonable Alternatives

Chapter 3: Site Selection and Reasonable Alternatives of the EIAR introduces the reasonable alternatives studied by the Applicant which are relevant to the Proposed Project and its specific characteristics and an indication of the main reasons for the option chosen, taking into account the environmental effects. The consideration of alternatives typically refers to alternative design, technology, location, size and scale. A 'Do-Nothing Alternative' i.e., an outline of what is likely to happen to the environment should the Proposed Project not be implemented, has also been considered.

Alternative Site Locations

In order to identify sites within its landbank which might be suitable for wind energy development, BnM conducted a two-stage assessment process. The first stage comprised the identification of a number of candidate sites via desk studies and on-site surveys of the landbank. Known constraints, derived from various industry and regulatory guidelines, available GIS datasets and on-site surveys (carried out as part of the peat extraction activity), were then applied to the dataset, including:

- Planning Policy Context;
- Proximity to Sensitive Receptors;
- Proximity to the national electricity grid;
- Proximity to National and European Designated sites and onsite Environmental Sensitivities;
- Peat depths, and;
- Suitable wind speeds.

The second stage of the assessment was used to select the sites with the best potential to deliver a successful wind farm project by 2030 to be further developed.

Due to its relatively low potential for environmental effects and the close proximity of its potential grid connection which would provide environmental and project viability benefits Lemanaghan Bog was progressed for detailed assessment and planning consideration.

Alternative Renewable Energy Technologies

To achieve the same maximum estimated electricity output from solar energy as is expected from the Proposed Wind Farm (c. 90MW), a larger development footprint would be required. As detailed in Section 1 above, the site encompasses an area of approximately 1,258 hectares. The permanent footprint of the Proposed Project measures approximately 34.3 hectares, which represents approximately 3% of the site. For a solar PV array of the scale necessary to provide the same electricity output as the Proposed Wind Farm, it would require a footprint of approx. 114 hectares or 11% of the site.

Although the screening exercise was based on identifying lands for onshore wind development; another alternative source of renewable electricity generation would be offshore wind energy. However, it is considered that due to delays with the regulatory process for offshore development, a combination of both onshore and offshore wind farm development will continue to be required to deliver on the ambitious renewable energy targets set out under CAP25 which include focusing on onshore wind energy developments to reach the 2025/2030 renewable energy targets. As such, the Applicant's primary focus is on onshore wind farms, and the Applicant will continue to explore potential development offshore in tandem with delivering suitable sites onshore such as the Proposed Project.

Alternative Turbine Numbers and Model

It is proposed to install 15 no. turbines at the Proposed Project site which will have an estimated installed capacity of 90MW. Such a wind farm could also be achieved on the site by using smaller turbines (for example 2.5MW machines). However, this would necessitate the installation of approximately 36 turbines to achieve a similar output. The use of smaller turbines would not make as efficient use of the wind resource available at higher elevations above ground level, having regard to the nature of the site and would result in the wind farm occupying a greater footprint within the site, with a larger amount of supporting infrastructure being required (i.e., roads, steel, etc.), thus increasing the potential for negative environmental impacts to occur.

Alternative Turbine Layout and Development Design

The design of the Proposed Wind Farm has been an informed and collaborative process from the outset, involving the designers, developers, engineers, landowners, environmental, hydrological, geotechnical, archaeological, and traffic specialists.

Throughout the preparation of the EIAR, the layout of the Proposed Wind Farm has been revised and refined to take account of the findings of all site investigations and baseline assessments, which have brought the design from its first initial layout to the Proposed Wind Farm layout. The design process has also taken account of the recommendations and comments of the relevant statutory and non-statutory organisations, the local community and local authorities, while still seeking to ensure that a viable project can ultimately be constructed and connected to the national grid.

The final design of the Proposed Wind Farm is based on the results of all site investigations that have been carried out during the EIAR process and the EIA scoping process with statutory and non-statutory consultees. As information regarding the Proposed Project was compiled and assessed, the number of turbines and the proposed layout have been revised and amended to take account of the physical constraints of the Proposed Project site and the requirement for buffer zones as well as wind-take and the separation distance to be maintained between turbines, landscape and visual, cultural heritage, noise and shadow flicker impacts. The EIAR and Proposed Project design process was an iterative process, where findings at each stage of the assessment were used to further refine the design, always with the intention of minimising the potential for environmental impacts.

There were several reviews of the specific locations of the various turbines during the optimisation of the Proposed Wind Farm layout. The initial constraints study identified a significant viable area within the overall study area of the site. The proposed 15-turbine final layout has been refined following feedback from the project team, the local community, and the need to ensure sufficient separation distances are maintained for on-site constraints.

Alternative Grid Connection Options

A key consideration in determining the grid connection method for a proposed wind energy development is whether the cabling is underground or run as an OHL or a combination thereof. While DoEHLG 2006 Guidelines indicate that underground cables are the preferred option for connection of a wind energy development to the national grid, it was determined that due to the proximity of the existing OHL, it was more environmentally prudent to connect the Proposed Wind Farm to the national grid via either OHL or a combination of OHL and underground cable.

The MW output of the Proposed Wind Farm is such that it needs to connect to a substation with voltage capacity of at least 110kV.

The TLI Group was engaged by the Applicant to carry out a preliminary grid route assessment for the Proposed Project, including feasibility of proposed substation locations. A desktop analysis was

undertaken using identified constraints to identify three potential substation locations and associated connection options.

The final Proposed Grid Connection layout comprises the proposed onsite 220kV substation and associate telecommunications tower, 4 no, new steel masts, 2 no. gantry structures, 2 no. crane pads and 2 no. tower pads and all ancillary infrastructure.

The chosen Proposed Grid Connection design was considered to be the most environmentally prudent and practical option for a grid connection.

General Construction and Operational Entrances

The Proposed Project site is currently served by a number of existing tracks and access roads due to its previous use as a commercially harvested bog.

Due to the nature of the Proposed Project, all proposed works will be local to the Proposed Project site and the construction phase will utilise 4 no. site entrance locations for construction material delivery. Of the 4 no. site entrance locations, 3 no. are existing site entrances that will be upgraded, and 1 no. is a proposed new entrance on the northern side of the L7002. An existing agricultural site entrance off the L7001 local road network will be upgraded to facilitate construction phase access to the Proposed Grid Connection infrastructure located under the existing Shannonbridge-Maynooth 220kV OHL. These site entrances will be used throughout the construction, operation, and decommissioning phases of the Proposed Project to enable delivery of materials and turbine components (construction phase), amenity access and maintenance/monitoring (operational phase), and removal of Proposed Project infrastructure (decommissioning phase).

Alternative Amenity Track

The amenity tracks were designed as part of the overall Proposed Project design process and during public consultation. The amenity tracks were designed to take account of the rich cultural heritage on-site and in the local areas, with proposed amenity track being redesigned to avoid a historic connection from a derelict house known locally as Derryvane Cottage in the centre of the Proposed Wind Farm to farmland to the west. The proposed amenity design was further refined during the constraints review with input from the Project Archaeologist.

As part of the amenity proposals for the site, there will be signposts throughout the amenity informing visitors of the rich cultural heritage of the Lemanaghan Bog and focal points of interest. Information on the historical connection detailed above, as well as other cultural heritage monuments and recorded structures within and around the site, will be provided on these signposts.

Alternative Mitigation Measures

Mitigation by avoidance has been a key aspect of the Proposed Project's evolution through the selection and design process. Avoidance of the most ecologically and environmentally sensitive areas of the site limits the potential for environmental effects. As noted above, the site layout aims to avoid any environmentally sensitive areas. Where loss of habitat occurs in the site, dedicated enhancement and mitigation have been proposed, the design of which has been refined through the constraints -led iterative design process.

The best practice design and mitigation measures set out in this EIAR will contribute to reducing any risks and have been designed to break the pathway between the site and any identified environmental receptors. The alternative is to either not propose these measures or propose measures which are not best practice and effective and neither of these options is sustainable.

4 Description of the Proposed Project

Chapter 4: Description of the Proposed Project describes the Proposed Project and its component parts which is the subject of a proposed application for planning permission to An Coimisiún Pleanála (ACP) in accordance with Section 37E of the Planning and Development Act 2000 (as amended). Construction methodologies for the main infrastructural components of the development are also included in this chapter (or its associated appendices) of the EIAR. The development description for the current planning application as appears in the public notices is included in Section 1 above.

The overall layout of the Proposed Project encompasses the Proposed Wind Farm and the Proposed Grid Connection. The Proposed Project has been designed to minimise potential environmental effects, while at the same time maximising the energy yield from the Proposed Wind Farm. Detailed site layout drawings of the Proposed Project are included in Appendix 4-1 to the EIAR.

The proposed wind turbine layout has been optimised using wind farm design software (a combination of WAsP [wind resource assessment software] and WindPro [Computational Fluid Dynamics and WindFarmer]) to maximise the energy yield from the Proposed Project site, while maintaining sufficient distances between the proposed turbines to ensure turbulence and wake effects do not compromise turbine performance and maintain the minimum setbacks from neighbouring properties as set out in the '*Wind Energy Development Guidelines for Planning Authorities'* (DoEHLG, 2006) (hereafter referred to as the 'DoEHLG 2006 Guidelines') and the Draft Wind Energy Development Guidelines (December 2019) (hereafter referred to as the 'Draft DoHPLG 2019 Guidelines). The Irish Transverse Mercator (ITM) Grid Reference coordinates of the proposed turbine locations are listed in Table 1 below.

Table 1 Proposed Wind Turbine Locations and Elevations

Turbine	ITM X	ITM Y	Top of Foundation Levels (mOD)
1	614199	727374	51.5
2	614482	726940	51.9
3	614780	726517	50.6
4	615314	727112	52.7
5	615979	727580	48.1
6	615647	727936	50.0
7	614968	727550	51.3
8	615376	728346	50.6
9	616022	728746	52.3
10	615717	729399	53.7
11	616380	729350	55.7
12	616415	728161	48.5
13	616995	728609	51.8
14	617357	728184	48.9
15	617684	728907	52.2

The proposed wind turbines to be installed for the Proposed Wind Farm have the following dimensions:

- Turbine Tip Height – 220 metres
- Hub Height – 145 metres
- Blade Rotor Diameter – 150 metres

Turbines from the main turbine manufacturers share common appearance and other major characteristics, with minor cosmetic differences differentiating one from another. The wind turbines that will be installed on the Proposed Wind Farm will be conventional three-blade turbines, that will be geared to ensure the rotors of all turbines always rotate in the same direction. For the purposes of this EIAR, a rated output of 6MW has been chosen to calculate the power output of the proposed 15-turbine renewable energy development, which would result in an estimated installed capacity of 90MW.

The Proposed Project makes use of the existing road network insofar as possible. To provide internal access within the Proposed Project site, connecting the wind turbines, proposed onsite 220kV substation, and associated infrastructure, approximately 17.1 kilometres of new internal roads will need to be constructed and 1.14km of existing road will be upgraded. It is proposed to construct passing bays along the proposed site roads in order to allow construction traffic to safely pass each other while travelling in opposite directions. Areas such as wide junctions and proposed hardstands will also be used as passing bays throughout the construction phase of the Proposed Wind Farm.

One meteorological (met) mast is proposed as part of the Proposed Wind Farm. The met mast will be equipped with wind monitoring equipment at various heights.

Each turbine will be connected to the proposed onsite 220kV electricity substation via underground 20kV or 33kV (kilovolt) electricity cabling. Fibre-optic cables will also connect each wind turbine and the met mast to the proposed onsite 220kV substation (i.e., to the turbine control system within the Independent Power Producer (IPP) Control Building). The electrical and fibre-optic cabling connecting the proposed turbines to the proposed onsite 220kV substation compound will be run in cable ducts adjacent to the proposed internal roads and buried directly alongside the internal roads at depths of approximately 1.2m below ground level to the top of the duct.

It is proposed to manage any excess overburden generated through construction activities within the Proposed Project site, in 2 no. peat deposition areas, in linear berms along access roads where appropriate, and landscaping.

As part of the Proposed Project, no commercial forestry felling will occur. However, the removal of immature woodland (hereafter referred to as vegetation removal) will be required within and around development footprint to allow for the construction of the site entrances, access roads, underground cabling, and other ancillary infrastructure.

A Biodiversity Management and Enhancement Plan (BMEP) has been prepared for the Proposed Project and is included as Appendix 6-5 of the EIAR. This plan has been developed to offset the loss of habitats identified within the Proposed Project site and further enhance the biodiversity of the site and its environs.

The Proposed Project site is currently served by a number of existing tracks and access roads due to its previous use of industrial peat extraction. The Proposed Project will upgrade 3 no. existing entrances and facilitate 2 no. new site entrances. The main site entrance is located on the N62 and consists of the upgrade to an existing entrance to facilitate abnormal load delivery; all other site entrances are located on local and regional roads which surround the Proposed Project site.

It is intended to obtain significant volumes of crushed stone that will be required for the construction of the Proposed Project from 4 no. proposed onsite borrow pits. In addition to the gravel, cobbles and boulder material to be extracted from the proposed borrow pits, it is anticipated that engineering fill and higher-quality, surfacing granular fill and sand will be sourced from local, authorised quarries.

A 220kV connection between the Proposed Wind Farm and the national electricity grid will be necessary to export electricity from the Proposed Wind Farm. It is proposed to construct a 220kV electricity substation within the northern section of the site, in the townland of Cooldorragh, with close proximity to the existing Shannonbridge-Maynooth 220kV OHL located approximately 0.4km north of the proposed onsite 220kV substation at its closest point.

Current activities onsite include site management and environmental monitoring as required under Integrated Pollution Control (IPC) Licence P0500-01[1] from the Environmental Protection Agency (EPA). Industrial scale peat extraction was permanently ceased by BnM in Lemanaghan Bog in June 2020. From June 2020 until the end of 2024, all remaining stockpiled peat was systematically removed from Lemanaghan Bog. BnM's statutory duties to discharge the conditions of its Integrated Pollution Control Licence (IPC) Licence (Ref. P0500-01; hereafter "IPC Licence"), from the Environmental Protection Agency (EPA) for the Boora Bog Group, which encompasses Lemanaghan Bog also remain ongoing. These ongoing duties, such as environmental monitoring, do not facilitate the continuation of peat extraction, but rather ensure compliance with BnM's extant IPC Licence. It is also a requirement of '*Condition 10 Cutaway Bog Rehabilitation'* of the IPC Licence that following the decommissioning of use of all or part of their bogs, BnM, prepares (to the satisfaction of the EPA) and implements a Cutaway Bog Rehabilitation Plan. BnM have produced a Draft Rehabilitation Plan for Lemanaghan Bog, and it is the intention of BnM to rehabilitate the bog in a phased approach under IPC Licence. Irrespective of the consenting or construction of the Proposed Project, the measures outlined in the Draft Cutaway Bog Decommissioning and Rehabilitation Plan (Draft Rehabilitation Plan) (Appendix 2-4 to the EIAR) will be implemented by BnM in agreement with the EPA, per the BnM's IPC Licence Obligations.

An important part of a renewable energy development, which the Applicant has been at the forefront of developing, is its Community Fund. The Applicant is endeavouring to develop new ways to direct increased gain towards the local community with particular focus on those living closest to the Proposed Wind Farm. Community gain from significant development proposals, including wind farms, whilst a relatively recent approach, is now a common consideration for developers and, indeed, planning authorities. This approach recognises that, with any significant wind farm proposal, the locality in which the Proposed Wind Farm is situated is making a significant contribution towards helping achieve national renewable energy and climate change targets, and the local community should derive some benefit from accommodating such a development in their locality.

The construction phase is estimated to take approximately 24 to 30 months, and the works can be broken down into three main overlapping phases, 1) civil engineering works: 18 months, 2) electrical works: 18 months, and 3) turbine erection and commissioning: 9 months.

The Proposed Wind Farm is expected to have a lifespan of approximately 35 years. As part of the Proposed Wind Farm planning application, permission is being sought for the full operational life of the Proposed Project. During the operational period, on a day-to-day basis the wind turbines will operate automatically, responding by means of meteorological equipment and control systems to changes in wind speed and direction.

Following the end of their useful life, the equipment may be replaced with a new technology, subject to planning permission being obtained, or the Proposed Wind Farm may be decommissioned fully. The Proposed Grid Connection and proposed onsite 220kV substation will remain in place as it will be under the ownership and control of the ESB Networks and/or EirGrid and will form a permanent part of the national electricity grid. The Decommissioning Plan for the Proposed Project is further detailed in Appendix 4-8 to the EIAR.

[1] *Integrated Pollution Control License PO-500-01 issued by the EPA for the Boora Bog Group. Available at: https://epawebapp.epa.ie/terminalfour/ippc/ippc-view.jsp?regno=P0500-01*

5 Population and Human Health

One of the principal concerns during the development process is that human beings, as individuals or communities, should experience no significant diminution of their quality of life from the direct, indirect or cumulative effects arising from the construction, operation and decommissioning of a development. Ultimately, all the effects of a development impinge on human beings, directly and indirectly, positively and negatively. The key issues examined in Chapter 5 of the EIAR include population, human health, employment and economic activity, land use, residential amenity (including visual amenity, shadow flicker and noise), community facilities and services, tourism, property values, traffic and health and safety.

The Proposed Wind Farm is located 3 km northeast of Ferbane and approximately 2.5 km southwest of the village of Ballycumber in Co. Offaly, from the nearest proposed turbines (T03 and T15, respectively). The Proposed Grid Connection, located in the north of the Proposed Project site, is in the townland of Cooldorragh, Co. Offaly. The land uses within the Proposed Project site are a mixture of natural recolonisation of degraded bog and peat cutting in very small areas of active turbary. The primary surrounding land use within the population study area comprises a mix of agriculture, peat cutting, and low-density residential.

The design, construction, operation and decommissioning of the Proposed Project will provide employment for technical consultants, contractors and maintenance staff. Up to approximately 100-120 jobs are likely to be created during the construction phase of the Proposed Project. The construction phase of the Proposed Project will last between approximately 24-30 months, and the decommissioning phase will likely last approximately 12 months. The majority of construction/decommissioning phase staff will be sourced locally, thereby helping to sustain employment in the construction trade. Where appropriate, engineering fill and higher quality, surfacing granular fill and sand will be sourced from local, authorised quarries.

There is currently no published credible scientific evidence to positively link wind turbines with adverse health effects. The main publications supporting the view that there is no evidence of any direct link between wind turbines and health are summarised in Chapter 5. Similarly, there is insufficient evidence from the scientific literature discussed in Chapter 5 to credibly determine that there is the potential for a significant effect on property values, as a result of the Proposed Project.

Shadow flicker is an effect that occurs when rotating wind turbine blades cast shadows over a window in a nearby property. Shadow flicker is an indoor phenomenon, which may be experienced by an occupant sitting in an enclosed room when sunlight reaching the window is momentarily interrupted by a shadow of a wind turbine's blade. Shadow flicker lasts only for a short period of time and occurs only during certain specific combined circumstances. The DoEHLG 2006 Guidelines recommend that shadow flicker at neighbouring dwellings within 500 metres of a proposed turbine location should not exceed a total of 30 hours per year or 30 minutes per day. It is further noted that at distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low, and therefore the shadow flicker study area is set at 1.50km (10 x 150m rotor diameter). In total, there are 157 properties identified within 1.5 km of the proposed turbines.

WindPRO computer software was used to model the predicted daily and annual shadow flicker levels in significant detail, identifying the predicted daily start and end times, maximum daily duration and the individual turbines predicted to give rise to shadow flicker. The shadow flicker model assumes that daylight hours consist of 100% sunshine. This is a conservative assumption which represents theoretical precautionary conditions. Following the detail provided above on sunshine hours, a sunshine factor of 26.46% has been applied. The predicted shadow flicker levels have been modelled for all 157 no. sensitive receptors located within the shadow flicker study area. The predicted shadow flicker model results indicate:

- 29 sensitive receptors are theoretically predicted to experience zero shadow flicker;

- 128 sensitive receptors are theoretically predicted to experience some shadow flicker;
  - Of the 128 sensitive receptors, 58 sensitive receptors are theoretically predicted to experience shadow flicker that exceeds the DoEHLG 2006 Guidelines thresholds for daily shadow flicker. Please see Table 5-9 in Chapter 5 for details.
  - No sensitive receptors are theoretically predicted to experience shadow flicker that exceeds the DoEHLG 2006 Guidelines thresholds for annual shadow flicker.

Where daily shadow flicker exceedances have been predicted at buildings by the modelling software, a site visit will be undertaken firstly to determine the level of occurrence, existing screening and window orientation. This will determine if the receptor has an actual line of sight to any turbine and actual potential for shadow flicker to occur. Once this exercise is completed and all the potentially affected properties, the following measures will be employed. If it is not possible to mitigate any identified shadow flicker limit exceedance locally using the measures detailed above, wind turbine control measures will be implemented.

It is also noted that the Proposed Project could be brought in line with the requirements of the Draft DoHPLG 2019 Guidelines should they come into force during the planning application process for this development.

For the assessment of cumulative impacts, any other existing, permitted or proposed developments (wind energy or otherwise) have been considered. The potential cumulative effects of the Proposed Wind Farm, Proposed Grid Connection (together forming the Proposed Project) and other relevant developments has been carried out with the purpose of identifying what influence the Proposed Project will have on the surrounding environment when considered cumulatively with regards to employment and economic activity, tourism and amenity, traffic, air (dust), health and safety, property values, shadow flicker, and residential amenity.

Impacts on human beings during the construction, operational and decommissioning phases of the Proposed Project are described in Chapter 5 in terms of health and safety, employment and investment, population, land-use, noise, dust, traffic, tourism, residential amenity, renewable energy production and reduction in greenhouse gas emissions, shadow flicker and interference with communication systems. Where a negative impact is identified, appropriate mitigation measures will be put in place to ensure that there will be no significant health effects on sensitive receptors in the surrounding area. Overall, the construction, operation and decommissioning of the Proposed Project will not have any significant adverse effects on population and human health, following the implementation of the appropriate mitigation measures.

6 Biodiversity

Chapter 6: Biodiversity of the EIAR assesses the likely significant effects (both alone and cumulatively with other projects) that the Proposed Project may have on Biodiversity (excluding birds, which are assessed separately in Chapter 7 of the EIAR). The chapter also sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects identified.

To inform the assessment, a comprehensive desk study, NPWS consultation and a suite of field surveys were undertaken. Desk studies included a review of available ecological records and information in relation to designated sites within the surrounding area. Field surveys were undertaken between 2021 and 2025 and included multidisciplinary walkover surveys, habitat mapping, and dedicated surveys for protected species including bats, otter, badger and marsh fritillary. Aquatic ecology surveys were also undertaken, including fisheries and aquatic macroinvertebrate surveys, to assess the ecological status of watercourses within and downstream of the site.

The surveys were carried out in accordance with TII *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes* (TII, 2008)[2]. The habitats within the Proposed Project site were subject to detailed survey and habitat mapping, undertaken following the classification system set out in '*A Guide to Habitats in Ireland*' (Fossitt, 2000)[3]. Cutover peatland habitats have been categorised according to the guidance set out in Irish Wildlife Manual No. 128[4]. Surveys also included a search for Invasive Alien Species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011.

The Proposed Project is dominated by cutover peatland habitats, predominantly by large areas of bare cutover bog and smaller areas of revegetating bog supporting a mosaic of pioneer heath, poor fen and scrub vegetation. Areas of agricultural grassland are present in the northern and central areas of the Proposed Project site, with treeline and hedgerow field boundaries. Areas of immature woodland are also present within the Proposed Project site. The Lemanaghan Stream passes through the site and ultimately drains to the River Shannon.

As outlined in Section 1 above, the Proposed Project site encompasses an area of 1,268ha. The construction of the Proposed Project will result predominantly in the loss of bare cutover bog habitat, which has been heavily modified through historical industrial peat extraction and drainage. Approximately 60.8 ha of habitat will be lost, the majority of which (approximately 50.6 ha) comprises bare cutover bog of low ecological value. Additional habitat loss includes approximately:

- 3.27 ha of revegetating bog habitat;
- 1.02 ha of immature woodland;
- 0.64ha of scrub;
- 2.45ha of building and artificial surfaces;
- 1.05ha improved agricultural grassland;
- 0.98ha cutover bog / scrub mosaic;
- 0.46ha dry meadows and grassy verges / scrub mosaic;
- 0.29ha dry meadows and grassy verges; and
- 0.017ha of raised bog.

These habitats represent a small proportion of the similar habitats present within the wider site and surrounding landscape and there is no potential for significant effects as a result of habitat loss.

[2] *TII (2008) Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes. Dublin: National Roads Authority.*
[3] *(Fossitt, 2000) A Guide to Habitats in Ireland.*
[4] *Smith, G.F. & Crowley, W. (2020) The habitats of cutover raised bog. Irish Wildlife Manuals, No. 128. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.*

Small areas of degraded uncut raised bog habitat occur at the peripheries of the Proposed Project site. The Proposed Project has been designed to avoid these areas; however, a small area (approximately 0.017 ha) of degraded uncut raised bog will be affected by upgrades to an existing track associated with proposed amenity tracks. This represents a very small proportion of the raised bog habitat present within the site and wider landscape and is not considered significant. There will be no significant hydrological impacts to remnant raised bog habitats within or adjacent to the Proposed Project site.

A Biodiversity Management and Enhancement Plan (BMEP) is proposed as part of the Proposed Project (see Appendix 6-5). The plan includes measures to enhance biodiversity within the site through the planting of approximately 7.8 ha of native woodland, the establishment of approximately 6.5 km of native hedgerow and management measures to enhance suitable marsh fritillary habitat in an area of 6.7ha. These measures are intended to provide long-term biodiversity enhancement within the site.

Bat species composition and activity recorded during detailed bat surveys were typical of the habitats present within the site and surrounding landscape. No bat roosts were identified within the footprint of the Proposed Project. A small soprano pipistrelle bat roost was recorded in an existing structure located more than 340 m from the nearest proposed turbine (T13), and it will be retained and avoided as part of the Proposed Project. With regard to construction impacts, no significant effects are anticipated in relation to the loss of commuting or foraging habitat, the loss or disturbance of roosts, or displacement of bat populations. During operation, there is potential for collision risk with turbine blades. A range of mitigation measures will be implemented including habitat buffers around turbines, turbine blade feathering at low wind speeds, and a post-construction monitoring programme. With these measures in place, no significant residual effects on bat populations are predicted.

No otter holts or resting sites were identified within the Proposed Project site. There are 2 no. new clear-span water crossing structures proposed within the Proposed Project site and no instream works will occur. Pre-construction surveys will be undertaken to confirm the status of otters within the site. No significant effects on otter are anticipated.

One badger sett was recorded within the Proposed Project site, located over 300 m from any proposed infrastructure. The Proposed Project has been designed to avoid this sett. Pre-construction surveys will be undertaken to confirm the status of badgers within the site and appropriate protection measures will be implemented during construction. No significant effects on badger are anticipated.

Evidence of marsh fritillary was recorded within the Proposed Project site in the form of one inactive larval web. The Proposed Project has been designed to avoid areas of suitable marsh fritillary habitat, and no marsh fritillary habitat will be lost as part of the Proposed Project. As a result, there is no potential for significant effects on marsh fritillary populations. The BMEP also includes measures to enhance marsh fritillary habitat within the Proposed Project site.

Aquatic ecology surveys found that the drains and streams within the site are of relatively low ecological value, with limited habitat for fish or other sensitive aquatic species. The main potential impact pathway relates to deterioration in water quality during construction, operation, or decommissioning. A range of best-practice pollution prevention and drainage design measures will be implemented to protect surface water and groundwater quality, and a full hydrological assessment of the Proposed Project is provided in Chapter 9 of this EIAR. With these measures in place, no significant effects on rivers, streams or associated aquatic habitats and species are anticipated.

The Proposed Project is not located within any European Sites or nationally designated sites. The Ferbane Bog SAC, Mongan Bog SPA, River Shannon Callows SAC and Middle Shannon Callows SPA have been fully assessed within the Appropriate Assessment Screening and NIS that accompanies this planning application. This report has been prepared to provide the competent authorities with the information necessary to complete an Appropriate Assessment screening and an Appropriate Assessment for the Proposed Project in compliance with Article 6(3) of the Habitats Directive. The NIS concludes that the Proposed Project, individually or in-combination with other plans or projects, will not adversely affect the integrity of any European Site.

A cumulative assessment was undertaken to consider the potential for the Proposed Project to interact with other plans and projects in the surrounding area, including other wind farms and large-scale developments. Following this assessment, no significant cumulative effects on biodiversity have been identified.

It is therefore judged that, provided the Proposed Project is constructed and operated in accordance with the design, best practice and mitigation measures described within this application, significant individual or cumulative effects on biodiversity are not anticipated at international, national, county or local scales or on any of the identified Key Ecological Receptors.

7 Birds

Chapter 7: Birds assesses the likely significant effects that the Proposed Project may have on bird species. Firstly, a brief description of the Proposed Project is provided. This is followed by a comprehensive description of the methodologies that were followed in order to obtain the information necessary to complete a thorough assessment of the potential effects of the Proposed Project on bird species. The survey data are presented in full in the Environmental Impact Assessment Report (EIAR) appendices, with a summary of the information presented within this chapter. An analysis of the results is then provided, which discusses the ecological significance of the birds recorded within the study area. The potential effects of the Proposed Project are then described in terms of the construction, operation and decommissioning phases of the development. An accurate prediction of the effects is derived following a thorough understanding of the nature of the Proposed Project along with a comprehensive knowledge of bird activity within the study area. The identification of Key Ornithological Receptors (KORs) and the assessment of effects follow a precautionary approach.

The following KORs were identified: golden plover, whooper swan, crane, hen harrier, kingfisher, merlin, peregrine, barn owl, kestrel, lapwing, snipe, woodcock, buzzard, and sparrowhawk.

The potential for effects on designated sites is comprehensively described in the NIS that accompanies this application. The NIS concluded that where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation and decommissioning of the site will not adversely affect the integrity of any European sites.

Based on the detailed assessment, it is considered that the potential effects of the Proposed Project upon birds will not be significant. Effects associated with habitat loss, disturbance displacement, barrier effect, collision risk and cumulative effects have been assessed to be no greater than long-term slight negative effect (EPA, 2017) and low effect significance (Percival, 2003). The only exceptions are kingfisher, wintering whooper swan and breeding lapwing for which moderate habitat loss effects were predicted in the absence of mitigation.

Consequently, a robust mitigation and enhancement plan has been proposed to reduce the magnitude of the effects, proposals are outlined in the BMEP (Appendix 6-5). Significant residual effects, following the implementation of measures outlined within the BMEP, on the KORs with regard to direct habitat loss, disturbance/displacement, barrier effect or collision mortality are not anticipated.

An assessment of potential cumulative effects was also undertaken, taking into consideration other extant planning applications and existing and proposed wind farms within 25km. No residual additive, antagonistic or synergistic effects have been identified with regards to habitat loss, displacement, of collision mortality for any of the identified KORs. No significant cumulative impacts are predicted. Following consideration of the residual effects (post-mitigation), it is concluded that the Proposed Project will not result in any significant effects on any of the identified KORs. No significant effects on receptors of International, National or County Importance were identified. Provided that the Proposed Project is constructed, operated and decommissioned in accordance with the design, best practice mitigation and enhancement measures that are described within this application, significant individual or cumulative effects on the identified KORs are not anticipated.

8 Land, Soils and Geology

Chapter 8: Land Soils and Geology has been prepared by Hydro-Environmental Services (HES) and assesses the likely significant effects that the Proposed Project may have on land, soils and geology and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified.

The land, soils and geology of the site have been characterised using a combination of desk study and site investigation data. Several walkover inspections of the site have been completed as well as peat probing, gouge coring, shear vane testing, trial pit excavations, and laboratory analysis of recovered soil samples.

The Proposed Project site consists predominantly of cutover bog comprising of bare peat fields separated by field drains. The existing topography of the Proposed Project site is relatively flat, ranging from approximately 50 to 62mOD. As a result of industrial peat extraction activities and associated drainage works the land and topography of the Proposed Project site has been significantly modified. Industrial peat extraction ceased at the Proposed Project site in June 2020. All stockpiles had been removed from the site by the end of 2024. The decommissioning works relating to the railway network within the Proposed Project site are in the process of being completed.

Based on the peat depth information for the Proposed Project site, peat depths vary between 0 and >6m with an average peat depth of 2m. The peat thickness at the proposed turbine locations ranges from 0.1 to >4.5m. Available site data indicates that at least 80% of the 15 no. proposed turbine locations have a peat depth of ≤3m. Peat depths exceeding 3m were recorded at only 2 no. turbine locations: T15 and T1. The greatest peat depths were recorded in the north of the Proposed Project site, with deep peat encountered at the proposed onsite 220kV substation location (5-5.5m). Where possible the deeper peat areas have been avoided by the Proposed Project layout. The peat deposits at the proposed site are underlain by glacial tills comprising of clay, silts, sands and occasional gravels. The glacial till deposits are underlain by limestone bedrock.

The Proposed Project will involve removal of peat and subsoils (spoil) for the construction of access roads, internal road network, internal cable network, hardstanding emplacement, turbine foundations, proposed onsite 220kV substation, crane hardstands, compounds and met mast foundations.

Estimated volumes of peat and spoil to be excavated are in the region of 438,449m^3. Excavated peat and spoil will also be used for reinstatement and landscaping works as close to the extraction point as possible or stored within the proposed onsite borrow pits. Peat will also be stored in the proposed onsite designated peat deposition areas. The handling and storage of peat and spoil will be done in accordance with the Peat and Spoil Management Plan which is included as Appendix 4-3 to the EIAR.

Storage and handling of hydrocarbons/chemicals will be carried out using best practice methods. Measures to prevent peat and subsoil erosion during excavation and reinstatement will be undertaken to prevent water quality impacts.

A Peat Stability Risk Assessment was undertaken for the site (Appendix 8-1 to the EIAR), and demonstrates an acceptable margin of safety, i.e., the Proposed Project site is suitable for the Proposed Project and is considered to be at low risk of peat failure. A number of control measures are given in the peat stability assessment to manage all risks associated with peat instability.

The Proposed Project has a very small development footprint when compared to the overall area of the Proposed Project site (approx. 3%). Therefore, no significant effects on land will occur during the construction, operation or decommissioning phases of the Proposed Project.

The peat bog at the Proposed Project site is already degraded by the historical industrial peat extraction and drainage. For this reason, and with the implementation of the mitigation measures detailed in this

EIAR and the best practice measures detailed in the Peat and Spoil Management Plan, no significant effects on peat and soils will occur during the construction, operation or decommissioning phases of the Proposed Project.

With the implementation of the mitigation measures outlined in this EIAR, no significant effects on the underlying limestone bedrock geology will occur during the construction, operation, or decommissioning phases of the Proposed Project.

An assessment of potential cumulative effects associated with the Proposed Project and other developments on land, soils and geology has been completed. The Land, Soils and Geology Assessment confirms there will be no significant negative cumulative effects on land, soil and geology as a result of the Proposed Project. The assessment found that the cumulative effect with the draft Cutaway Bog Decommissioning and Rehabilitation Plan (Appendix 2-4 to the EIAR) will result in an overall positive effect on the local land, soils and geological environment.

9 Water

Chapter 9: Water has been prepared by HES and assesses the likely significant effects that the Proposed Project may have on hydrology and hydrogeology and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified.

The surface of the Proposed Project site is drained by a network of drains that are typically spaced every 15 to 20m. Larger arterial drains connect the smaller field drains and gently slope towards perimeter silt ponds and surface water outfalls. Surface water outflows from the site discharge to small streams and drains located in the lands surrounding the bog.

Regionally, the Proposed Project site is located in total of 3 no. surface water catchments. All surface waters draining the site are directed to the River Shannon via the Boor and Brosna rivers and their associated tributaries. The bedrock geology underlying the Proposed Project site is classified as a Locally Important Aquifer. There are no group or public groundwater abstractions in the vicinity of the Proposed Project site with the potential to be impacted by the Proposed Project. The hydrogeological regime at the Proposed Project site is characterised by high rates of surface water runoff and very low rates of groundwater recharge due to the presence of soils and subsoils of low permeability.

Due to the nature of wind farm developments, being near-surface construction activities, effects on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risk to groundwater would be from oil spillage and leakages at turbine foundations or during construction plant refueling. These are common potential impacts to all construction sites (such as road works and industrial sites). These potential contamination sources are to be carefully managed at the site during the construction and operational phases of the development and measures are proposed within the EIAR to deal with these potential minor local impacts.

During each phase of the Proposed Project (construction, operation, and decommissioning) a number of activities will take place at the Proposed Project site, some of which will have the potential to significantly affect the hydrological regime or water quality at or downstream of the Proposed Project site. These significant potential effects generally arise from sediment input from runoff and other pollutants such as hydrocarbons and cement-based compounds.

Surface water drainage measures, pollution control and other preventative measures have been incorporated into the project design to minimise significant impacts on water quality and downstream designated sites. A self-imposed 50m watercourses buffer was used during the design of the Proposed Project, thereby avoiding sensitive hydrological features. The surface water drainage plan will be the principal means of significantly reducing sediment runoff arising from construction activities and to control runoff rates. The key surface water control measure is that there will be no direct discharge of wind farm runoff into local watercourses or into the existing bog drainage network. This will be achieved by avoidance methods (i.e. stream buffers) and design methods (i.e. surface water drainage plan). Preventative measures also include fuel and concrete management and a waste management plan which will be incorporated into the Construction and Environmental Management Plan (CEMP) (Appendix 4-4).

No significant impacts to surface water (quality and flows) and groundwater (quality and quantity, and any local groundwater wells) will occur as a result of the Proposed Project provided the proposed mitigation measures are implemented. This EIAR presents proven and effective mitigation measures to mitigate the release of sediment which will reduce the concentration of suspended solids to acceptable levels. The storage and handling of hydrocarbons/chemicals will be carried out using best practice methods which will ensure the protection of surface and groundwater quality. The Proposed Project drainage system will be designed to slow surface water runoff from the site by providing greater attenuation. This will ensure that the Proposed Project does not alter downstream surface water flows and will not contribute to downstream flooding.

A hydrological assessment of potential impacts on local designated sites was undertaken. The River Shannon Callows SAC/pNHA (Site Code: 000216) and the Middle Shannon Callows SPA (Site Code: 004096) are considered to be hydrologically connected to the Proposed Project site. Following implementation of the appropriate mitigation measures as outlined in the EIAR no significant impacts on this designated site will occur as a result of the Proposed Project.

A Site-Specific Flood Risk Assessment (Appendix 9-1) has been completed for the Proposed Project and concludes that the Proposed Project has no potential to increase the downstream flood risk.

A Water Framework Directive (WFD) Compliance Assessment (Appendix 9-3) has been completed for all waterbodies (surface water and groundwater bodies) with the potential to be impacted by the Proposed Project. With the implementation of the mitigation measures detailed in this EIAR there will be no change in the WFD status of the underlying groundwater body or downstream surface waterbodies as a result of the Proposed Project. The Proposed Project has been found to be fully compliant with the WFD and will not prevent any waterbody from achieving its WFD objectives.

An assessment of potential cumulative effects associated with the Proposed Project and other developments on the hydrological and hydrogeological environment has been completed. With the implementation of the mitigation measures detailed in this EIAR, the cumulative assessment found that there will be no significant effects on the hydrological and hydrogeological environments. The assessment found that the cumulative effect with the Draft Rehabilitation Plan (Appendix 2-4) will result in an overall positive effect as the rehabilitation plans will improve surface water quality and attenuation within the Proposed Project site.

10 Air Quality

Chapter 10: Air Quality identifies, describes and assesses the potential significant direct and indirect effects on air quality arising from the construction, operation and decommissioning of the Proposed Project.

The air quality zone for the site was selected, followed by a review of EPA collated baseline air quality data namely Sulphur Dioxide (SO_2), Particulate Matter (PM_{10}), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO) and Ozone (O_3) for the selected air quality zone to determine the representative levels of such emissions for the Proposed Project.

The EPA has designated four Air Quality Zones for Ireland:

- Zone A: Dublin City and Environs
- Zone B: Cork City and Environs
- Zone C: 16 urban areas within population greater than 15,000
- Zone D: Remainder of the country

These zones were defined to meet the criteria for air quality monitoring, assessment and management as described in the Cleaner Air for Europe (CAFE) Directive. The Proposed Project site lies within Zone D, which represents rural areas located away from large population centres.

The air quality in the vicinity of the Proposed Project is typical of that of rural areas of Ireland, i.e., Zone D. Prevailing south-westerly winds carry clean, unpolluted air from the Atlantic Ocean onto the Irish mainland. The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The most recent report on air quality in Ireland, 'Air Quality in Ireland 2023' was published by the EPA in 2024. The EPA reports provide SO_2, PM_{10}, NO_2 and O_3 concentrations for areas in Zone D.

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2024) was considered in the dust impact assessment. The guidance document outlines an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. This methodology has been used to predict the likely risk of dust as a result of the construction phase works, operational phase activities and decommissioning phase.

The production of energy from wind turbines has no direct air emissions as is expected from fossil fuel-based power stations. Harnessing more energy by means of renewable sources will reduce dependency on fossil fuels, thereby resulting in a reduction in harmful emissions that can be damaging to human health and the environment. Some temporary or short-term indirect emissions associated with the construction of the Proposed Project will include vehicular and dust emissions.

A CEMP will be in place throughout the construction phase (see Appendix 4-4). The CEMP includes dust suppression measures. In addition, turbines and construction vehicles will be transported to the site on specified haul routes only, which will be regularly inspected for cleanliness and cleaned as necessary.

During the construction phase of the Proposed Project and other permitted or proposed projects and plans in the area, there will be exhaust emissions from construction plant and machinery and potential dust emissions associated with construction activities. However, once the mitigation proposals, as outlined in Chapter 10, are implemented during the construction phase of the Proposed Project, there will be no cumulative negative effect on air quality.

Exhaust emissions of carbon dioxide (CO_2), oxides of nitrogen (NO_x), sulphur dioxide (SO_2) or dust emissions during the operational phase of the Proposed Project will be minimal, relating to the use of

operation and maintenance vehicles onsite, and therefore there will be no measurable negative cumulative effect with other developments on air quality. The nature of the Proposed Project is such that, once operational, it will have a long-term, moderate, positive impact on air quality. There will be no measure negative cumulative effect with other developments on air quality.

There will be a net reduction in carbon dioxide (CO_2) emissions from the operation of the Proposed Project. By providing an alternative to electricity derived from coal, oil or gas-fired power stations, the Proposed Project will result in emission savings of carbon dioxide (CO_2), oxides of nitrogen (NO_x), and sulphur dioxide (SO_2). The production of renewable energy from the Proposed Project will have a Long-Term Moderate Positive effect on air quality due to the offsetting of approximately 56,375 tonnes of Carbon Dioxide (CO_2) per annum, or 1,973,125 tonnes of carbon dioxide over the proposed 35-year lifecycle of the Proposed Wind Farm.

11 Climate

This chapter identifies, describes, and assesses the potential significant direct and indirect effects on climate arising from the construction, operation and decommissioning of the Proposed Project.

The production of energy from wind turbines has no direct emissions as is expected from fossil fuel-based power stations. Harnessing more energy by means of wind farms will reduce dependency on fossil fuels, thereby resulting in a reduction in harmful emissions that can be damaging to human health and the environment.

Climate change is one of the most challenging global issues facing us today and is primarily the result of increased levels of greenhouse gases in the atmosphere. These greenhouse gases come primarily from the combustion of fossil fuels in energy use. Moving away from reliance on coal, oil and other fossil fuel-driven power plants is essential to reduce emissions of greenhouse gases and combat climate change.

A methodology for calculating carbon losses was published in June 2008 by scientists at the University of Aberdeen and the Macauley Institute with support from the Rural and Environment Research and Analysis Directorate of the Scottish Government, Science Policy and Co-ordination Division. The document, '*Calculating Carbon Savings from Wind Farms on Scottish Peat Lands'*, was developed to calculate the impact of wind farm developments on the soil carbon stocks held in peat. The tool provides a transparent and easy to follow method for estimating the impacts of wind farms on the carbon dynamics of peatlands.

In addition to the Macauley Institute methodology, where possible, CO_2 emissions or losses associated with embodied carbon of materials used in the construction, operational and decommissioning phase of the Proposed Project have been identified using the Transport Infrastructure Ireland (TII) Carbon Tool (TII 2022)[5]. The TII Carbon Tool is customised for road and light rail projects in Ireland, using emission factors from recognised sources during the construction, maintenance and operation of TII projects in Ireland. Embodied carbon refers to the emissions associated with procuring, mining and harvesting raw materials, the transformation of those materials into construction products, transporting them to site, installation of these materials during a construction phase, and the subsequent replacement, removal, and disposal of these materials upon decommissioning.[6]

The full lifecycle and embodied carbon of the proposed turbines have been taken account of in the Macauley Institute model. The emissions associated with the embodied carbon, along with the construction phase transport movements, of the remaining features of the site are considered within the TII Carbon Tool.

The carbon balance of wind farm developments in peatland habitats has attracted significant attention in recent years. When developments such as wind farms are proposed for peatland areas, there will be direct impacts and loss of peat in the area of the development footprint. There may also be indirect impacts where it is necessary to install drainage in certain areas to facilitate construction, or from the reinstatement of extracted peat. The works can either directly or indirectly allow the peat to dry out, locally, which permits the full decomposition of the stored organic material with the associated release of the stored carbon as CO_2. It is essential therefore that any wind farm development in a peatland area saves more CO_2 than is released. However, the Proposed Wind Farm predominately comprises cutover peatland which has been subject to industrial peat extraction and drainage over several decades and consequently the peatland habitats and hydrology are highly degraded and modified from their original state. As such, the peatland habitat loss would not be as significant as that of an intact peatland.

[5] *Transport Infrastructure Ireland Carbon Tool for Road and Light Rail Projects: User Guidance Document* https://www.tiipublications.ie/library/GE-ENV-01106-01.pdf
[6] *Irish green Building Council – What is embodied carbon?* <https://www.igbc.ie/what-is-embodied-carbon/>

The Proposed Project will result in the loss of 261,360 tCO_2e: the details of these carbon losses are provided in Table 11-5 of Chapter 11 of the EIAR. Please note that in completion of these calculations a number of assumptions have been made under theoretical precautionary conditions; all assumptions are detailed in Appendix 11-2 Carbon Calculations. Therefore, it can be determined that the actual carbon losses associated with the Proposed Project will likely be less than the values provided in Table 11-5 of Chapter 11.

During the construction and operation phase, the lands beneath the Proposed Project footprint will not be available to develop into carbon sequestering habitat. In addition, lands adjacent to the Proposed Wind Farm footprint may also be indirectly impacted through drainage and therefore also not reach their carbon sequestration potential. The permanent infrastructure footprint of the Proposed Project measures approximately 34.3ha, which represents approximately 3% of the site (1,258ha). As such, it is the intention of the BnM to integrate the peatland rehabilitation measures associated with the Draft Rehabilitation Plan (Appendix 2-4) with the Proposed Project.

The Proposed Project will have an export capacity of approximately 90MW and therefore will help contribute towards the achievement of national and international emission reduction targets, provide much needed grid infrastructure, and the capacity to offset 56,375 tCO_2e per annum, or 1,973,125 tCO_2e over the proposed 35-year operational life. Carbon losses to the atmosphere will be offset by the Proposed Project in approximately **56** months (4.6 years) of operation.

Following construction of the Proposed Project, there will be a Permanent, Imperceptible Negative effect on Climate as a result of greenhouse gas emissions from construction plant and vehicles, and embodied carbon associated with the turbines and construction materials. During the operational phase of the Proposed Project, there will be a Long-term, Moderate, Positive effect on Climate as a result of reduced greenhouse gas emissions from the operation of the Proposed Project and the enhancement areas proposed.

12 Noise and Vibration

Chapter 12: Noise and Vibration of the EIAR has been prepared by AWN Consulting to assess the likely significant environmental noise and vibration effects of the Proposed Project. The objective of the noise and vibration assessment is to specify appropriate noise and vibration thresholds and limit values, determine the potential impacts and effects with reference to the '*EPA Guidelines on the Information to be Contained in Environmental Impact Statements*' (EPA, 2022), and, if required, specify appropriate mitigation measures to ensure that the impacts on noise-sensitive receptors are within acceptable threshold values and limits.

To inform the noise impact assessment, an environmental noise survey was conducted to establish the existing baseline and background noise levels in the receiving environment. This was achieved through simultaneous wind measurements and noise monitoring over several weeks, capturing noise levels across a representative set of wind speeds and directions. Typical background noise levels for day and night periods at various wind speeds have been measured in accordance with best practice guidance contained in the Institute of Acoustics document '*A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'* (IOA GPG). The results of the background noise survey have been used to derived appropriate noise criteria for the development in line with the guidance contained in the DoEHLG 2006 Guidelines.

When considering a renewable energy development of this nature, the potential noise and vibration effects on the surroundings must be considered for three stages: the short-term construction phase and decommissioning phases, and the long-term operational phase.

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities will generally control construction noise and vibration by restricting the hours during which activities can take place and may consider noise limits at their discretion. The assessment of construction, operational, and decommissioning noise and vibration has been conducted in accordance with the following best practice guidance:

- *Code of practice for noise and vibration control on construction and open sites*, British Standard BS5228;
- *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*, Transport Infrastructure Ireland (TII);
- *Design Manual for Roads and Bridges* (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2 (National England (now National Highways).
- *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*', Institute of Acoustics (IOA GPG);
- *Supplementary Guidance Notes',* IOA GPG

Subject to good working practices outlined in the CEMP (Appendix 4-4), the assessment has confirmed that noise and vibration from construction and decommissioning activities are not expected to result in any significant effects at any Noise Sensitive Locations (NSLs).

The applicable guidelines for the assessment of noise for wind energy developments are the DoEHLG 2006 Guidelines. The DoEHLG 2006 Guidelines are broadly in line with the recommendations set out in '*The Assessment and Rating of Noise from Wind Farms'*, published by the Department of Trade, and Industry (UK) Energy Technology Support Unit 1996 ETSU-R-97. The ETSU-R-97 document has been used to supplement the guidance contained within the DoEHLG 2006 Guidelines, where appropriate and necessary.

Background noise levels for day and night periods have been derived from noise survey data undertaken at seven locations in the receiving environment surrounding the Proposed Project.

Based on the proposed site layout and the details of turbine noise emissions, hub height, and tip height for the range of turbine types considered in the assessment, turbine noise levels have been predicted at NSLs across a range of operational wind speeds for the Vestas V150 at 145 m Hub Height. While the noise profiles of the Vestas V150 wind turbine have been used for the purposes of this assessment, the exact make and model of the turbine installed on the site will be dictated by a competitive procurement process but will adhere to the specifications and parameters (i.e. Tip Height, Hub Height and Rotor Diameter).

The findings of the assessment, presented in the EIAR has confirmed that the predicted operational noise levels associated with the Proposed Wind Farm will be within best practice turbine noise criteria, inclusive of the DoEHLG 2006 Guidelines, at all locations with no significant cumulative impacts or effects.

Operational noise from the proposed onsite 220kV substation has been assessed and found to be within the proposed criteria based on review of the most appropriate guidelines and standards. It is considered that operational noise from fixed plant associated with the Proposed Project will not result in any significant noise and vibration effects at NSLs.

The Applicant will fully investigate any complaints about unusual or excessive wind turbine noise, including “swishing” sounds (amplitude modulation) or tonal noises, by reviewing conditions at the time and carrying out noise monitoring agreed with local authorities. If excessive amplitude modulation is confirmed, an independent acoustic consultant will assess it using recognised industry methods to reduce it through technical adjustments, operational changes, or, in rare cases, turbine curtailment. Overall, this approach follows best practice to minimise noise impacts as far as reasonably possible.

A commitment has been provided that prior to the commissioning of the Proposed Wind Farm; the Developer will submit a Noise Compliance Monitoring Programme to the planning authority for written agreement. The Noise Compliance Monitoring Programme will include a detailed methodology for the noise measurements, procedures for recording results and locations at which noise is to be monitored. To date there is no clear industry consensus on how AM should be regulated or managed through the planning stage. In the absence of clear policy in Ireland to control AM from wind turbines, AWN have provided a Draft Noise Complaint Management Protocol for addressing AM or tonality presented (Appendix 12-6). A final version of this protocol will be contained within the Noise Compliance Monitoring Programme to be agreed the relevant Local Authority and/or Authorities in the event that a complaint relating to excessive AM is reported.

13 Cultural Heritage

An assessment of the potential effects of the Proposed Project on the Cultural Heritage resource was carried out by Tobar Archaeological Services. Cultural heritage includes archaeology, architectural heritage and any other tangible assets. The assessment was based on desktop research, field surveys, GIS-based mapping, Zone of Theoretical Visibility (ZTV) and was also assisted by representative photomontages and photowire images. A detailed examination of the available baseline data was undertaken in addition to a comprehensive site inspection. The latter comprised a walk-over survey of the Proposed Project site, any proposed infrastructure therein and proposed ecological enhancement areas.

Where potential effects have been identified, such as to potential sub-surface archaeology, appropriate mitigation measures have been recommended in order to minimise any such effects. Proposed mitigation includes pre-development testing where peat depths allow, archaeological monitoring of construction-phase ground works and floating of proposed roads. Direct effects to recorded monuments have been predominantly avoided by design. Where the Proposed Project layout interacts with the recorded monument OF007-350—gravel/stone trackway at 2 no. locations with proposed new road infrastructure, the proposed new road and the associated cable will be floated over the monument. A construction methodology for the proposed road construction has been devised to allow for a horizontal buffer over the recorded monument, see Appendix 4-3: Peat and Spoil Management Plan.

Potential indirect effects on the setting of any United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Sites and those on a Tentative List within 25km, National Monuments within 15km, recorded monuments within 5km and Record of Protected Structures and National Inventory of Archaeological Heritage structures within 5km were included in order to assess potential effects on setting in the wider landscape. The ZTV was utilised to assess the level of theoretical visibility of the proposed turbines from cultural heritage assets within the 5km and 15km study areas. Potential effects on setting are based on the precautionary scenario in that natural screening, boundaries, buildings and vegetation are not taken into account in the ZTV model and, in reality, the potential effect is likely to be less.

Two UNESCO WH Tentative List sites are located within 25km of the nearest proposed turbine (T3 and T15) and comprise the Hill of Uisneach, and Birr Castle and Demesne. The ZTV demonstrates no theoretical visibility of the proposed turbines from Birr Castle and Demesne. While the ZTV demonstrates theoretical visibility of the proposed turbines from the Hill of Uisneach given the distance of the Proposed Wind Farm (c. 24km) to the Core and Buffer Area as defined in the Westmeath County Development Plan, the immediate setting of the Hill of Uisneach or its associated monuments will not be affected by the introduction of the proposed turbines as the visual change as a result of the Proposed Wind Farm is considered small in scale, leading to a low magnitude of change.

The Monastic Complex at Lemanaghan was visited as part of this assessment. As part of the Landscape and Visual assessment (Chapter 14) two photomontages (VP 13 and 14) were also created from the monastic complex illustrating visibility of the proposed turbines from both the church and graveyard (OF015-004003- and OF015-004004-) and from St Mella's Cell (OF015-004006-). Photowires and other visualisations were also produced from the Monastic Complex and are presented in Appendix 13-5. The appendix provides a detailed overview of the Monastic Complex, its potential connectivity with other monuments such as toghers and roadways including the Slí Mhór, and the visitor experience at the complex, and should be read in conjunction with both Chapter 13: Cultural Heritage and Chapter 14: Landscape and Visual. Any physical connection that may once have existed between toghers in Lemanaghan Bog to the north (within the Proposed Project site), in Derrynagun Bog to the east-northeast (OF015-084—) (outside the Proposed Project site) and Lemanaghan Monastic Complex is no longer present. Such connectivity, if it once existed, pertains to the time period in which the Monastic Complex was still functioning as a place of worship and pilgrimage. The landscape around the Monastic Complex and within Lemanaghan Bog has been significantly altered since this time.

Using the distance to the nearest turbine and the number of turbines visible from the Lemanaghan Monastic Complex, a Moderate, Negative, Long-Term effect, which is Not Significant to the wider setting of monastic complex is identified. It should be noted, however, that the immediate setting of the complex will not be affected. Furthermore, the presence of existing vegetative screening both around the monastic site and along the intervening public road will reduce potential visual effects including during the winter months as demonstrated by VP14 in Volume 2: Photomontage Booklet.

An assessment of potential cumulative effects was also undertaken taking into consideration other planning applications, the historical industrial peat extraction at Lemanaghan Bog, and identified cumulative wind farm projects within 25km. No significant cumulative effects have been identified and no cumulative effects to the immediate setting of cultural heritage assets will occur.

No significant direct or indirect effects to the recorded cultural heritage resource as a result of the Proposed Project have been identified. Where potential direct effects to sub-surface archaeology have been identified, appropriate mitigation measures are proposed in order to ameliorate these potential effects.

14 Landscape and Visual

Chapter 14: Landscape and Visual assesses the likely significant landscape and visual impacts arising as a result of the Proposed Project. Although all elements of the Proposed Project are assessed, the Chapter focuses upon the proposed turbines, as they are deemed to be the primary essential aspects of the proposal under assessment from a landscape and visual perspective. The Chapter also assesses the proposed 220kV onsite substation and steel masts that form part of the Proposed Grid Connection. The Chapter describes the baseline landscape and assesses the direct effects on the landscape of the Proposed Wind Farm, as well as effects on landscape character and the impact on sensitive landscape receptors (Areas of High Amenity) and Landscape Character Areas (LCAs). Visibility of the proposed turbines was assessed from receptors within a study area extending 25km from the proposed turbines (i.e., LVIA Study Area); and visual effects were determined from information gathered during multiple site visits as well as other tools such as ZTV mapping, photomontages and photowires.

The Proposed Project site is located within the flat lowland landscape of County Offaly, characterised by an extensive network of open peatlands that are typical of the Irish midland landscape. The character of these peatlands forming the Proposed Project site, is now strongly influenced by the industrial peat extraction practices historically conducted at the site, which now resembles a cutover peatland landscape, with limited scenic or aesthetic qualities pertaining to this landscape. The proposed turbines are located within an area designated with Moderate Sensitivity in the Offaly County Development Plan (OCDP). Cutaway bogs, which comprise the majority of this landscape type and where majority of the turbines are located in area noted in the OCDP as appropriate for "*sensitively designed and located developments including renewable energy (wind farms)*." The Proposed Project site is not located within any protected landscapes within any local landscape policy, and no sensitive landscape designations (Areas of High Amenity) fall within the Proposed Project site itself.

On-site visibility appraisals, ZTV mapping, a Route Screening Analysis and photomontage viewpoint locations determined that visibility of the proposed turbines will be very limited from locations beyond 5 km from the Proposed Project site. Siting of the proposed turbines at low base elevation in an extensively flat landscape with highly vegetated working fields surrounding the Proposed Project site largely restricts visual exposure in the wider landscape. Visibility of the proposed turbines beyond the immediate landscape setting of the Proposed Project site is limited to localised areas of high elevation where open views across the flat and highly vegetated landscape are available from elevated vantage points, which is in general not a common occurrence in the LVIA Study Area. In terms of location, spatial extent, spacing and layout, the siting and design of the Proposed Project adheres to the guidance for the siting of wind farms in Flat Peatland Landscapes as set out in the DoEHLG 2006 Guidelines and the Draft DoHPLG 2019 Guidelines. Residual effects upon the landscape of the proposed turbines are deemed to be 'Long-term', 'Negative' and 'Slight'. On balance, these effects are not considered significant.

Photomontages were used to assess the visual effects arising as a result of the Proposed Project from 20 no. viewpoint locations. The assessment concluded that no 'Profound' or 'Very Significant' effects occurred at any of the 20 photomontage viewpoints. A residual 'Significant' effect occurred at 1 no. viewpoint location (VP11) as the turbines are in relatively close proximity (<1km) to residential receptors. However, in all instances, the Proposed Project exceeds the recommended 500m set back distance in the DoEHLG 2006 Guidelines and also is in line with the 4 times tip height set-back distance (in this case 880m) set out for residential visual amenity prescribed by the Draft DoHPLG 2019 Guidelines. Residual 'Moderate' effects occurred at 8 of the 20 No. viewpoints. All other viewpoints were assessed as resulting in 'Slight' residual effects (8), 'Not Significant' (2), or Imperceptible (1). Cumulative visual effects have greatest potential to arise with other existing, permitted, and proposed developments. However, given the setting of the Proposed Project and limited visibility with the extensive flat landscape, cumulative effects are limited to elevated vantage points within the study area.

The Lemanaghan Monastic Site is the closest sensitive receptor to the Proposed Project (apart from residential receptors); however, as discussed throughout Chapter 14: Landscape and Visual, Chapter

13: Cultural Heritage, and the accompanying appendices, the Proposed Project will not alter the physical fabric or key features of the monuments, and any change will be limited to the wider landscape setting, where the proposed turbines will be seen beyond the immediate visual context of the Monastic Site. Furthermore, the Proposed Project is set back beyond the buffer specifically created to mitigate impacts on the Lemanaghan Monastic Site as set out in local planning policy through the 2021 amended Wind Energy Zoning (as per the Offaly County Council Chief Executive's Report)[7], with the exception of turbine T05, which is located on the boundary of an area designated 'not Deemed Suitable for Wind Energy Developments'.

In conclusion, the LVIA determined that the Proposed Project is located within a landscape that can effectively accommodate a wind energy development of this scale. Only one 'Significant' residual effect occurs at one viewpoint location (VP11) as the turbines are in relatively close proximity (<1km) to this location. The assessments have determined that the landscape of the Proposed Project site is capable of effectively accommodating the Proposed Project.

[7] https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/Chief-Executive-REport-Material-Amendment-Stage-2021.pdf

15 Material Assets

15.1 Traffic and Transport

An assessment of the traffic effects on the local highway network was undertaken for the Proposed Project by Alan Lipscombe Traffic and Transport Consultants. The assessment considers the likely significant effects on the transport delivery routes to the site resulting from the additional traffic movements that will be generated by the Proposed Project during the construction, operational and decommissioning phases.

An assessment of the geometry of the delivery route was also undertaken in order to ensure that the abnormally sized vehicles required to deliver the turbine plant to the site are accommodated.

The construction phase is estimated to take approximately 24 to 30 months, and the works can be broken down into three main overlapping phases, 1) civil engineering works: 18 months, 2) electrical works: 18 months, and 3) turbine erection and commissioning: 9 months. The traffic and transport assessment contained in Chapter 15 has utilised a 24-month programme under a precautionary scenario, i.e., assuming the greatest potential volume of traffic over the shortest potential construction phase.

Traffic Route & Study Area

The Proposed Project is entirely located within County Offaly.

The Turbine Delivery Route (TDR) for the abnormally sized loads transporting the large turbine components commences at Galway Port in Galway City. Turbine infrastructure being imported to Galway Port will be delivered to site via north from the Galway Port through Galway City via the Lough Atalia Road, the R339 Wellpark Road, northwest onto the R336 Tuam Road, before turning west onto the N6 National Road for approximately 3.7km where the N6 joins the M6. The transport vehicles will merge onto the M6 and head east towards to the Proposed Wind Farm. It is proposed that the large wind turbine plant will be delivered via the M6 before turning south onto the N52 at Junction 5 (Tullamore/Kilbeggan). The route follows the N52 south, bypassing Tullamore to the east and passing through the settlements of Blue Ball, Kilcormac and Five Alley. Deliveries will turn right onto the N62 (at the junction known as Kennedy's Cross) and will proceed northwards towards Ferbane for approximately 22km to Site Entrance 1 on the N62. The abnormal loads will be delivered in convoys of 3 vehicles over 40 separate nights, with each convoy accompanied by a Garda escort.

The total length of the turbine delivery route from the exit off the M6 is approximately 68km.

Due to the nature of the Proposed Project, all proposed works will be local to the Proposed Project site and as such, the construction phase will utilise 4 no. site entrance locations. Of the 4 no. site entrance locations, 3 no. are existing site entrances that will be upgraded, and 1 no. is a proposed new entrance on the northern side of the L7002 local road. An existing agricultural site entrance off the L7001 local road network will also be upgraded to facilitate construction phase access to the Proposed Grid Connection infrastructure located under the existing Shannonbridge-Maynooth 220kV OHL. Use of existing road (which will be upgraded) and temporary construction track will be established from the existing entrance off the L7001 local road to the Proposed Grid Connection infrastructure located under the existing OHL. Following the construction of this infrastructure, this temporary track will be covered with a layer of topsoil and reseeded and the existing road and entrance will continue to facilitate agricultural activities.

The operational phase will utilise 4 no. site entrance locations to facilitate maintenance and monitoring activity and amenity access. Of the 4 no. locations, 3 no. are the same as the identified construction phase entrances and 1 no. is a new site entrance that will facilitate amenity access only.

Vehicle types and network geometry

The types of vehicles that will be required to negotiate the local network will be up to 80 metres long and will carry a blade 76 metres in length.

An assessment of the geometric requirements of the delivery vehicles was undertaken on the delivery route (Appendix 4-7). Locations where it was established that the existing road geometry will not accommodate all of the vehicles associated with the Proposed Project have been assessed, with the extent of remedial works identified. In addition to the assessment presented, it is recommended that a dry run is undertaken by the transport company to check vertical and horizontal clearance on the transport route prior to construction.

Traffic impact on local network

For 15 days when concrete is delivered to the Proposed Wind Farm for the construction of the turbine foundations via the identified construction delivery routes, an additional 454 Passenger Car Units (PCUs) will travel to and from the site. During these days it is forecast that the increase in traffic volumes will range from between +2.5% to +9.2% on the N52 between the M6 and the junction with the N62. For the section of the N62 travelling north from Ferbane toward Site Entrance 1 it is forecast that the construction traffic will result in a 5.0% to 5.1% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site Entrance 2 it is forecast that the additional traffic will result in an 11.1% increase on these 15 days. It is forecast that this will have a temporary, slight, negative effect, which is Not Significant, on existing traffic on the construction haul route and at the access junctions on the N62 and R436.

During the 440 days during which the main element of the construction phase of the Proposed Project will occur, an additional 646 PCUs will travel to and from the site via the identified construction haul routes. On these days it is forecast that the increase in traffic volumes will range from between +3.6% to +13.1% on the N52 between the M6 and the junction with the N62. On the section of the N62 travelling north from Ferbane toward Site Entrance 1 it is forecast that there will be a maximum +7.3% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site Entrance 2 it is forecast that there will be a +15.8% increase on these 440 days. During this period, it is forecast that the additional traffic generated by the Proposed Project will have a temporary, slight, negative effect, which is Not Significant, on existing traffic on the construction haul route and at the access junctions on the N62 and R436.

On the 40 days during which a convoy of 3 abnormally sized loads accompanied by an escort provided by An Garda Síochána travel to the site and access via Site Entrance 1 on the N62 it is forecast that the increase in traffic volumes will range from between +0.6% to +2.1% on the N52 between the M6 and the junction with the N62. On the section of the N62 travelling north from Ferbane toward Site Entrance 1 it is forecast that there will be a 1.2% increase in traffic volumes. It is forecast that this will have a temporary, slight, negative effect, which is Not Significant, on existing traffic on the delivery route and at the access junction on the N62.

For 15 days when smaller turbine components will be delivered to the site by standard HGVs an additional 64 PCUs will travel to and from the site via the identified construction haul routes. On these days it is forecast that the increase in traffic volumes will range from between +0.4% to +1.3% on the N52 between the M6 and the junction with the N62. On the section of the N62 travelling north from Ferbane toward Site Entrance 1 it is forecast that there will be a 0.7% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site Entrance 2 it is forecast that there will be a 1.6% increase on these 440 days. It is forecast that this will have a temporary, slight, negative effect, which is Not Significant, on existing traffic on the delivery route and at the proposed access junctions.

During the operational phase, the Proposed Wind Farm will be utilised by 1 to 2 site staff and approximately 20 amenity users per day. The effects of the traffic and transport movements during the operational stage will be imperceptible.

15.2 Telecommunications and Aviation

Wind turbines, like all large structures, have the potential to interfere with broadcast signals, by acting as a physical barrier or causing a degree of scattering to microwave links. The most significant effect at a domestic level relates to a possible flicker effect caused by the moving rotor, affecting, for example, radio signals. The most significant potential effect occurs where the wind farm is directly in line with the transmitter radio path.

During the development of any large project that holds the potential to effect telecoms or aviation, the developer is responsible for engaging with all relevant telecom operators and the relevant aviation authorities to ensure that the proposal will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the developer for each individual project is responsible for ensuring that the necessary mitigatory measures are in place. Therefore, as each project is designed and built to avoid impacts arising, a cumulative impact cannot arise.

Consultation regarding the potential for electromagnetic interference from the Proposed Wind Farm was carried out in 2021 and again in 2025, as identified above, with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators, which confirmed that no turbines are proposed within the areas requested to be left clear of turbines. Therefore, no impacts were identified to telecommunications from the Proposed Wind Farm.

A Telecommunications Impact Assessment (Appendix 15-6 and Appendix 15-7) was carried out by Ai Bridges. These appendices detail the field and desktop surveys undertaken to determine if telecommunications network infrastructure, including those highlighted by Iarnród Eireann, would be impacted by the proposed turbines. The Telecommunications Impact Assessment concludes that the proposed turbines will have no impacts on telecommunications.

There are no airports or aerodromes located within or adjacent to the site. The nearest operational aviation facility is Ballyboy Airfield located approx. 14.5 km south of the Proposed Wind Farm. The next closest facility is Birr Aerodrome located approx. 20.5 km southwest of the Proposed Wind Farm. There are no flying clubs in close proximity of the Proposed Project, with the nearest being the Irish Jet Modellers Flying Club, located c. 8.9 km southwest of the proposed turbine T03. Manna Air Delivery, a drone operator, conducts test flights at Bellair Bog, which is located c. 1 km north of the proposed onsite 220kV substation and 2.6km north of the nearest proposed turbine (i.e., T10).

Consultation regarding the potential for electromagnetic interference and impact on aviation Proposed Wind Farm was carried out which confirmed that no proposed turbines are proposed within the areas requested to be left clear of turbines. Therefore, no impacts were identified to telecommunications or aviation from the Proposed Wind Farm.

There are no electromagnetic interference impacts for telecommunications and aviation assets or operations associated with the construction phase of the Proposed Wind Farm or Proposed Grid Connection and therefore no mitigation is required. The potential for electromagnetic interference from proposed turbines may only occur during the operational phase of the Proposed Project. As per the Telecommunications Impact Assessment carried out by Ai Bridges, detailed above, no impacts were identified to telecommunications from the Proposed Project. While no mitigation measures are required, a standard Protocol Document has been prepared by 2RN for the Proposed Project which will be signed by the Developer prior to construction.

15.3 Other Material Assets

This section of the Material Assets chapter considers other utilities or built services in the area such as electricity supply and transmission, water, gas and underground telecommunications. This section also considers waste management during the construction, operational and decommissioning phases of the Proposed Project.

The Proposed Project has been designed to avoid identified services and utilities insofar as possible. Prior to commencement of construction, detailed site investigations will be carried out to confirm design assumptions and undertake additional surveys to identify any new services and utilities and ensure they will not be impacted by the Proposed Project.

The Shannonbridge-Maynooth 220kV Overhead Line (OHL) runs to the north of the site in a northeast-southwest direction and is located within the site, approximately 0.4 km north of the proposed onsite 220kV substation at its closest point. A break in the Shannonbridge-Maynooth 220kV OHL approximately 0.4 km north of the proposed onsite 220kV substation will facilitate the connection of the Proposed Project to the national grid. In advance of works relating to the Proposed Grid Connection break of the existing OHL, comprehensive consultation and coordination will be carried out with EirGrid/ESB to ensure appropriate outage planning, network management, and contingency arrangements are implemented, to minimise any potential impact on local residents, businesses, and critical services. No other electricity infrastructure is present within the Proposed Project site.

A data request was sent to Gas Networks Ireland in February 2023. The data returned demonstrated that there are no gas pipelines within the Proposed Project site. In addition, GNI supply MKO with their latest infrastructure data on a quarterly basis. The latest data share illustrating all GNI infrastructure was provided to MKO in March 2026. The data indicates that there is no GNI infrastructure is located within or adjacent to the site with the nearest infrastructure being approximately 8.6 km to the east of the Proposed Project.

There are no EPA-licensed or local authority-authorised waste facilities or activities located within the Proposed Project site; please note, Lemanaghan Bog is subject to IPC License due to historical peat extraction activities. This interaction, and associated future plans of Lemanaghan Bog, have been assessed throughout the EIAR. The closest, authorised municipal waste facility is located approximately 9km northwest of the Proposed Project site, near Athlone, Co. Westmeath. A Resource Waste Management Plan (RWMP) has been prepared and forms part of the Construction and Environmental Management Plan (CEMP) in Appendix 4-4 of the EIAR.

With the implementation of best practice measures and all mitigation and monitoring measures set out in Chapter 15, the effects on utilities and waste management listed above will be short-term, negative and slight, which is not significant, for the construction phase and decommissioning phases.

There will be no operational phase impacts or associated effects on built services or waste management associated with the Proposed Project. The Proposed Project will have an estimated installed capacity of 90MW which has potential to produce 275,940MWh of electricity. This would be sufficient to supply approximately 65,700 Irish households with electricity per year during its operational phase. The Proposed Project will therefore have a positive, moderate, long-term effect on built services.

16

Major Accidents and Natural Disasters

Chapter 16: Major Accidents and Natural Disasters of the EIAR describes the likely significant adverse effects on the environment arising from the vulnerability of the Proposed Project as detailed in Chapter 4 to risks of major accidents and/or natural disasters, as well as the potential of the Proposed Project itself to cause potential major accidents and/or natural disasters.

Major accidents or natural disasters are hazards which have the potential to affect the Proposed Project and consequently have potential impacts on the environment. These include accidents during construction, operation and decommissioning caused by operational failure and/or natural hazards. The assessment of the risk of major accidents and/or disasters considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., population and human health, biodiversity, land, soils (peat stability), water, air quality, climate, 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 development an understanding of the vulnerability and resilience of the area to emergency situations.

Chapter 16 outlines the baseline environment of the site, with due regard to the detail outlined in Chapter 11: Climate relating to the baseline environment and future environment relative to climate change. The climate change risk assessments included in the Offaly Local Authority Climate Action Plan (LACAP)[8] detail the major risks posed from climate change to the county as being river flooding, pluvial flooding, severe windstorms, heatwaves, and drought. As outlined in Chapter 11 and Chapter 16, Ireland is experiencing and will continue to experience climate change in line with global trends, with current projections indicating that these effects will intensify in the coming decades. The design of the Proposed Project has considered the potential climate change effects under both the baseline and future environment, and it is considered that the Proposed Project will not be negatively impacted by climate change, nor will it have a negative impact on climate change over its 35-year design horizon.

A wind farm is not a recognised source of pollution. It is not subject to Industrial Emissions Directive regulation or any other Environmental Protection Agency (EPA) environmental regulatory consent. Should a major accident or natural disaster occur, the potential sources of pollution onsite during the construction, operational and decommissioning phases of this type of development are limited and of low environmental risk. Sources of pollution with the potential to cause significant environmental pollution and associated negative effects such as bulk storage of hydrocarbons or chemicals, storage of wastes, management of flammable materials, etc., are limited and so there is an inherent low level of environmental risk associated with major accident or natural disaster impacting the Proposed Project and causing environmental damage.

The scenarios with the highest risk score in terms of the occurrence of major accident and/or disaster during construction, operation and decommissioning, were identified as identified as ‘Fire/Explosion’ and ‘Contamination’. In addition, the next highest score was for ‘Adverse Weather Conditions’, ‘Flooding’, and ‘Major Road Traffic Incident’ during construction, operation, and decommissioning.

The Proposed Project has been designed and built in accordance with the best practice measures set out in this EIAR and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design.

[8] *Offaly County Council, 2023. Climate Change Risk Assessment. Available at:* https://www.offaly.ie/app/uploads/KPMG_OffalyCoCo_LACAP_Final-Report_20230202-1.pdf

The risk of a major accident and/or disaster during the construction of the Proposed Development is considered 'low' in accordance with the '*Guide to Risk Assessment in Major Emergency Management*' (DoEHLG, 2010).

It is considered that when the mitigation and monitoring measures outlined in the CEMP (Appendix 4-4) are implemented and adhered to there will be no significant residual effect(s) associated with the construction, operation and decommissioning of the Proposed Project.

17 Interaction of the Foregoing

Chapter 17 of this EIAR identifies the interactions of the potential significant environmental effects that may occur in terms of Population and Human Health, Biodiversity, Birds, Land, Soils and Geology, Water, Air Quality, Climate, Noise and Vibration, Cultural Heritage, Landscape and Visual, Material Assets and Major Accidents and Natural Disasters, as a result of the Proposed Project. All potential significant effects of the Proposed Project and the measures proposed to mitigate them have been identified in the preceding EIAR Chapters. However, for any development with the potential for significant environmental effects there is also the potential for interaction between these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect. A matrix is presented in Chapter 17 of the EIAR to identify interactions between the various aspects of the environment already discussed in the EIAR. The matrix highlights the occurrence of potential positive or negative impacts during the construction, operational and decommissioning phases of the Proposed Project.

Where any potential interactive impacts have been identified, appropriate mitigation is included in the relevant sections (Chapters 5–16) of the EIAR. The implementation of these mitigation measures will reduce or remove the potential for effects. Information on potential residual effects and the significance of effects is also presented in each relevant chapter. On this basis the effects arising from the identified interactions are Not Significant, with the exception of 1 no. location (VP11) resulting in a Significant interaction between Population and Human Health and Landscape and Visual.

18

Schedule of Mitigation and Monitoring Proposals

Chapter 18: Schedule of Mitigation and Monitoring Proposals provides an easy-to-audit list of all mitigation and monitoring measures relating to the pre-commencement, construction, operational and decommissioning phases of the Proposed Project as set out in the relevant chapters of the EIAR.

All mitigation which will be implemented during the various phases of the Proposed Project are presented in Table 18-1. All monitoring measures which will be implemented during the pre-commencement, construction, operational and decommissioning phases of the Proposed Project are outlined in Table 18-2.

The tabular format in which the information is presented can be further expanded upon during each Proposed Project phase to provide a reporting template for site compliance audits.

The proposals for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as Appendix 4-4 of the EIAR. It is intended that the CEMP will be updated where required prior to the commencement of construction to include all mitigation and monitoring measures, planning conditions and/or alternative monitoring and mitigation measures should they emerge during the course of the planning process and would be submitted to the Planning Authority for written approval prior to the commencement of development.