Planning and Environmental Consultants

Environmental Impact Assessment Report (EIAR)

Ballydermot Wind Farm, Co. Offaly & Co. Kildare

Non-Technical Summary



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1. NON-TECHNICAL SUMMARY

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by MKO on behalf of Bord na Móna Powergen Ltd. (BnM) (the Applicant), which intends to apply to An Coimisiún Pleanála (ACP) for planning permission for the construction of a wind energy development which will comprise of 46 no. turbines and associated infrastructure in the townlands of Ballydermot, Co. Offaly, Lullybeg Co. Kildare and adjacent townlands. The proposed project will also comprise of 220kV grid connection infrastructure to connect to the national grid via loop-in from the existing Maynooth-Dunstown 220kV overhead line in the townland of Killybegs in Co. Kildare.

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

- Where the 'Proposed Project' is referred to, this encompasses the entirety of the project ('Proposed Wind Farm' and 'Proposed Grid Connection' as described below) for the purposes of this Environmental Impact Assessment (EIA) in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.
    - The 'Proposed Enhancement Areas' refers to the areas of the Project Site containing the proposed biodiversity and ornithology management areas for offsetting and enhancement as detailed in Appendix 6-5 (Biodiversity Management Plan (BMP)).
    - The 'Proposed Construction Haul Routes' refers to the construction material haul routes proposed to facilitate the construction of the Proposed Project.
    - The 'Proposed Turbine Delivery Route' refers to the turbine delivery route and associated accommodation works areas.
- Where the 'Project Site' is referred to, this relates to the Planning Application Boundary, as delineated in red, which identifies the area in which the Applicant is applying for planning permission, as shown on Figure 1-1 and Figure 1-2 of the EIAR and encompasses an area of approximately 5,157 hectares.
- Where the 'Proposed Wind Farm' is referred to, this refers to the 46 no. turbines and associated foundations and hardstanding areas, including access roads, underground internal cabling, permanent meteorological masts, temporary construction compounds, peat and spoil areas, relay mast, tree felling, site drainage, operational stage signage, and all ancillary works and apparatus.
    - The 'Proposed Turbines' refers to the 46 no. turbines associated with the Proposed Wind Farm as outlined above.
- Where the 'Proposed Grid Connection' is referred to, this refers to the Proposed Onsite Substation (described below), the Proposed Offsite Substation (described below), the 13.1km 220kV underground cabling connection from the Proposed Onsite Substation to the Proposed Offsite Substation, and overhead line (OHL) connecting to the existing Maynooth-Dunstown 220kV OHL, and all ancillary works and apparatus. The Proposed Grid Connection is described in detail in Chapter 4 of this EIAR.
    - The 'Proposed Onsite Substation' refers to the new proposed onsite electricity infrastructure proposed within Lodge Bog, Co. Kildare comprising one 220kV Gas-Insulated Substation (GIS) building, and one 110kV GIS building, one control building, a 36m telecommunications tower, and the electrical components necessary to consolidate the electrical energy generated by each wind turbine and export that electricity from the wind farm to the national grid.
    - The 'Proposed Offsite Substation' refers to new proposed offsite electric infrastructure proposed within Killybegs, Co. Kildare comprising one 220kV

GIS building, one 36m telecommunications tower, 2 no. steel masts, 2 no. new gantry structures and the associated outdoor electrical equipment necessary to consolidate the grid connection.

The Proposed Project falls within the definition of 'renewable energy development' as listed in the Planning and Development Act 2000, as amended and is therefore subject to the requirements of the Renewable Energy Directive (RED) III transposed into Irish Law by the European Union (Planning and Development) (Renewable Energy) Regulations 2025 (S.I. No. 274 of 2025) subsequent amendments (S.I. No. 426/2025 and S.I. No. 435 of 2025).

The EIAR accompanies the planning application for the Proposed Project submitted to ACP. The planning application is also accompanied by a Natura Impact Statement ('NIS'). Both the EIAR and NIS contain the information necessary for ACP to complete the Appropriate Assessment and Environmental Impact Assessment (EIA) as required for this planning application. Both the EIAR and NIS take into account the combined impacts of the individual elements of the Proposed Project. For clarity in this EIAR, all elements of the Proposed Project will be assessed cumulatively and in combination with other plans and projects to aid the competent authority in carrying out an EIA.

Site Location

The Proposed Wind Farm is located approximately 2.2km south-southeast of Edenderry Co. Offaly, 3.3km west of Allenwood Co. Kildare, 2km north of Rathangan Co. Kildare and 1.7km east of Clonbullogue Village Co. Offaly. The Proposed Wind Farm, Proposed Onsite Substation, and Proposed Enhancement Areas will be located on part the Allen Bog Group which comprises 14 no. bogs. and is located on the border of County Offaly and County Kildare.

The Proposed Grid Connection will traverse through Allenwood, Co. Kildare and Prosperous, Co. Kildare, with infrastructure proposed in the townland of Lullymore and Killybegs, Co Kildare and adjacent townlands.

The Proposed Turbine Delivery Route will exit south off the M6 Motorway at Junction 5 Kilbeggan / Tullamore and travel via national, regional and local roads, as well as the internal site access roads of the existing Cloncreen Wind Farm, to access the Proposed Wind Farm.

Onsite Activities

BnM was granted an Integrated Pollution Control Licence (IPC) Licence (Ref. P0503-01) for industrial peat extraction activities from the EPA for the Allen Bog Group, in May 1999, within which the Proposed Wind Farm and Proposed Onsite Substation are located. The EPA issues licences that contain conditions on how an activity must operate so as to protect the environment from pollution that might otherwise arise. The EPA Act, 1992 specifically prohibits the EPA from granting a licence if emissions from an activity would cause pollution. The EPA has undertaken Technical Amendments of the licence on 27th of September 2012 for the purpose of aligning the operational conditions of the licence to the objectives of National and European environmental protection legislation enacted over the lifetime of the licence.

The current IPC Licence is subject to 14. No. conditions pertaining to the ongoing monitoring and maintenance to ensure any emissions from site activities comply with and not contravene, any of the requirements of Section 83(3) of the Environmental Protection Agency Act, 1992. Conditions 1-4 of the licence outlines the Scope, Management, Interpretation and Notification procedures required. Conditions 5 to 10 pertain to environmental monitoring and management and Conditions 11 to 14 detail the Monitoring (equipment use), Recording and Reporting, Emergency Response and Financial Provisions duties of BnM. The IPC Licence is managed by BnM with a Compliance Officer managing the day-to-day IPC compliance requirements.

In January 2021, BnM formally announced that peat extraction across all bogs within its landholding had ceased, although peat extraction was permanently ceased by BnM in the Allen Bog Group in June 2020. BnM's statutory duties to discharge the conditions of its IPC Licence remains on-going. These ongoing duties -environmental monitoring, decommissioning works and site management - do not facilitate the continuation of peat extraction but instead ensure compliance with BnM's IPC Licence. Further information on the EPA licenced is presented in Section 4.6.7 of Chapter 4

The Peatland Climate Action Scheme (PCAS) is a programme of enhanced peatland rehabilitation measures with the primary aim of optimising climate action benefits of rewetting former industrial peat extraction areas by creating soggy peatland conditions that will allow compatible peatland habitats to redevelop. These measures are separate to those defined by the IPC Licence. Within the Project Site, PCAS has been completed on Lodge Bog, with a total of 365.7 ha being rehabilitated. The works completed for PCAS at Lodge bog include hydrological management, extensive re-wetting and drain blocking, modifying outfalls, creation of berms etc. Further information on the PCAS is presented in Section 4.6.8 of Chapter 4.

Description of the Proposed Project

The Proposed Project will comprise 46 no. wind turbines, 19 no. turbines will have a blade tip height of 200 metres (m) above the top of the foundation and 27 no. turbines will have a blade tip height of 220 metres (m) above the top of the foundation, the Proposed Onsite Substation, and Proposed Offsite Substation, and associated works, including a total of 13.1km of underground 220kV electrical cabling and 0.12km of OHL (comprising 0.06km of loop-in OHL from the Proposed Offsite Substation to the existing Maynooth-Dunstown 220kV OHL) to connect to the national grid. 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) 46 no. wind turbines and 2 no. meteorological masts with a height of 40m, and subsequent decommissioning of the wind turbines and meteorological masts, following a thirty five-year operational life from the date of full commissioning of the wind turbines. The 46 no. wind turbines (18 no. located in Co. Offaly, 28 no. located in Co. Kildare) comprise:
   a. 19 no. wind turbines with turbine tip height of 200m, hub height of 115m, and blade rotor diameter of 170m; and
   b. 27 no. wind turbines with turbine tip height of 220m, hub height of 135m, and blade rotor diameter of 170m.

(ii) Turbine and meteorological mast foundations, hard-standing and assembly areas;

(iii) Underground electrical and communications cabling connecting the proposed turbines and meteorological mast to the proposed 220kV onsite electrical substation;

(iv) An onsite electrical substation compound (c. 25,615m^2) in the townland of Lullymore East, Co. Kildare, consisting of 1 no. 220kV Gas-Insulated Substation (GIS) building (75m x 22m, with a height of 24m), 1 no. 110kV GIS building (51m x 15.88m, with a height of 16.5m), 1 no. Independent Power Producer (IPP) control building (44.4m x 12.8m, with a height of 7.1m), all associated electrical and communications plant and equipment, access roads, security fencing and gates, lightning masts, signage, landscaping, drainage infrastructure and all other ancillary works;

(v) An offsite electrical substation compound (c. 9,307m^2) in the townland of Killybegs, Co. Kildare consisting of 1 no. 220kV GIS building (75m x 22m, with a height of 24m), 2 no. new gantry structures and ancillary apparatus, access roads, security fencing and gates, lightning masts, signage, landscaping, drainage infrastructure and all other ancillary works;

(vi) All works associated with the connection of the wind farm to the national electricity grid, including uunderground electrical (220kV) grid connection cabling, c. 18 no. joint bays, communication chambers and earth sheath links extending for c. 13.1 km primarily located

in the public road corridor connecting the proposed onsite substation to the proposed offsite substation, and all associated site development and reinstatement works;

(vii) A 220kV loop-in grid connection at the offsite substation consisting of c. 120m of new overhead line (OHL) and the decommissioning / removal of 65m of existing OHL, 2 no. new steel masts, temporary tower build areas and crane pads, and associated hard-standing areas to facilitate the connection into the existing 220kV Maynooth–Dunstown 220kV OHL in the townland of Killybegs, Co. Kildare;

(viii) 2 no. telecommunications towers with a height of 36m and 1 no. relay telecommunication mast with a height of 60m and associated foundation and hard-standing areas;

(ix) The upgrade of c.2.8km of existing internal site roads/tracks and the provision of c.60 km of new internal site access roads, passing bays, layby areas and set down areas;

(x) The provision of c.14.4km of new tracks and c. 844m of boardwalk for the purposes of amenity, seating areas, and amenity signage;

(xi) Upgrade to 4 no. existing site entrances (1 no. site entrance on R401 regional road, 1 no. site entrance on L3001 local road, 2 no. site entrances on R414 regional road)

(xii) 8 no. new site entrances (3 no. site entrances on L3001 local road, 3 no. site entrances on L1001 local road, 1 no. site entrance on R414 regional road, 1 no. site entrance on L6002 local road);

(xiii) Widening and upgrade of wind farm access roads within the existing Cloncreen Wind Farm to facilitate the delivery of turbine components and other abnormal loads;

(xiv) Temporary works between the R420 regional road to R402 regional road at Ballina Co. Offaly and along the R402 at Ballingar, Co. Offaly to facilitate the delivery of turbine components and other abnormal loads;

(xv) 10 no. temporary construction compounds with temporary offices, containers and staff facilities;

(xvi) 4 no. permanent amenity car parks comprising 132 no. spaces for private vehicles, 12 no. spaces for accessible parking, parking for buses and bicycle rack facilities;

(xvii) 10 no. temporary Security Cabins;

(xviii) Watercourse crossings;

(xix) Peat and Spoil Areas;

(xx) Site Drainage;

(xxi) Tree felling and vegetation removal;

(xxii) Biodiversity mitigation and enhancement measures;

(xxiii) Operational stage site signage; and

(xxiv) All ancillary apparatus and site development works above and below ground, including hard and soft landscaping and drainage infrastructure.

The applicant is seeking a 10-year planning permission for the development and 35-year operational life from the date of commissioning of the renewable 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 onshore wind turbine generators currently have a typical generating capacity in the 6 to 7.2 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 an output of approximately 7 MW. Therefore, on this basis, the proposed 46 no. wind turbines would have an estimated installed capacity of approximately **322 MW.**

Applicant

The applicant for the Proposed Project is Bord na Móna Powergen Ltd. a subsidiary of Bord na Móna plc trading as BnM.

BnM is an Irish, semi-state climate solutions company helping lead Ireland towards a climate neutral future. Bord na Móna was founded in 1934 and was known as The Turf Development Board, with a remit to enhance national energy security through peat harvesting and to develop and manage some of Ireland's extensive peat resources on an industrial scale, in accordance with government policy at the time. The Turf Development Board became Bord na Móna in 1946.

In January 2021, the company announced its decision to permanently end all peat extraction in line with its change from a traditional peat business into a climate solutions company fully focused on renewable energy generation, peatlands restoration and the development of new low carbon enterprises. Ireland has committed to ambitious climate goals and BnM's climate solutions are helping to achieve them. BnM's vision is to help Ireland reach net zero greenhouse gas emissions by 2050.

Today, 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, Cushaling peaking plant, the Drehid landfill gas facility, Oweninny Wind Farm Phase 1 and Phase 2 in County Mayo, Sliabh Bawn Wind Farm in County Roscommon, and Bruckana Wind Farm situated on the borders of counties Tipperary, Kilkenny and Laois, Derrinlough, Mountlucas and Cloncreen Wind Farms in County Offaly and Timahoe North Solar Farm in County Kildare.

To power a net zero future, BnM are expanding its renewable energy infrastructure. Although they have been constructing and maintaining large-scale infrastructure for decades, the company is now using that experience to build renewable energy developments across the country. BnM's ambition is to build a 5GW renewable energy pipeline, including wind, solar, biomass and biogas projects, safeguarding renewable energy supply, enabling industrial growth and contributing to a sustainable future. These developments are transforming the way the nation generates and consumes energy. Ireland has committed to generating 80% of electricity from renewable sources by 2030 and BnM is working across wind, solar, biomass and biogas to help achieve this target and to provide energy security for future generations.

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.

If the Proposed Project were not to proceed, the opportunity to capture a significant part of County Offaly's, County Kildare's and Ireland's valuable renewable energy resources would be lost. This would reduce the contribution of the Proposed Project towards national and EU renewable energy and climate objectives, as well as the renewable energy, climate action and decarbonisation objectives of the OCDP and the KCDP. Consequently, the associated benefits arising from the displacement of fossil fuel-based electricity generation, including reductions in greenhouse gas emissions and air pollutant emissions, would not be realised.

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 Fund.

Additional commercial rate payments from the Proposed Project will be provided to Offaly County Council and Kildare County Council each year, which will be redirected to the provision of public services within each County. 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 200-250 jobs during the construction phase and 6 - 8 jobs during operational and maintenance phases. 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 the EIAR: Population & Human Health.

In addition to the economic and environmental benefits of the Proposed Project, there will be potential social and recreational benefits associated with the proposed amenity tracks. The Proposed Project includes 55.2 km of amenity track. This includes 13.44km of a new dedicated internal amenity access track, 40km of proposed internal wind farm access road, 844m (0.8km) of amenity board walk and 8.5km of dedicated circular trail for equestrian users only. These amenity tracks will provide amenity access opportunities, facilitate a variety of walking loops, enhance connectivity with local roads and existing off-site amenities, and provide local access to the Proposed Wind Farm. The amenity track proposed will enable the Proposed Wind Farm to provide connectivity to the surrounding settlements and sites / areas of interest. These include the towns / villages of Edenderry, Allenwood, Lullymore, Rathangan and Clonbullogue, as well as to the Killinthomas Wood (to the south), Grand Canal (surrounding the Project Site) and the existing Cloncreen Wind Farm (to the west).

This will provide a long-term benefit to both the local community and visitors to the area.

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 Project 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. *Ornithology*
8. *Land, Soils and Geology*
9. *Water*
10. *Air Quality*
11. *Climate*
12. *Noise and Vibration*
13. *Landscape and Visual*
14. *Cultural Heritage*
15. *Material Assets (including Traffic and Transport & Telecommunications)*
16. *Aviation*
17. *Major Accidents and Natural Disasters*
18. *Interactions of the Foregoing*

19. *Schedule of Mitigation and Monitoring Measures*
20. *Summary of Significance of Effects*

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

Likely Future Receiving Environment and Future Environmental Trends

The existing receiving environment has been established throughout this EIAR informed by the relevant desk studies, field surveys and monitoring undertaken for each environmental factor.

The Project Site is located predominantly on former industrial peat extraction lands within the Allen Bog Group. Industrial peat extraction ceased in June 2020. Since then, environmental conditions across these lands have continued to develop through natural revegetation, alongside ongoing site management, decommissioning works and environmental monitoring undertaken in accordance with IPC Licence P0503-01.

Given the ongoing natural revegetation of lands previously subject to industrial peat extraction, the likely evolution of relevant environmental factors at the Project Site requires consideration in this EIAR.

The established existing receiving environment provides the evidential basis for predicting the Likely Future Receiving Environment and Future Environmental Trends. Where more than one future condition is reasonably foreseeable, the relevant technical assessment adopts an appropriately precautionary scenario for the purposes of assessing likely significant effects.

BnM has prepared Draft Rehabilitation Plans, for the bogs within the Proposed Wind Farm site. The targeted rehabilitation measures set out in the Draft Rehabilitation Plans will be implemented following completion of the Proposed Project construction phase in a phased manner under the IPC Licence, subject to agreement and approval by the EPA. Where the Proposed Project proceeds, implementation of the Draft Rehabilitation Plans will follow the Proposed Project construction phase and occur during the operational phase.

The EIAR therefore distinguishes between:

- the **Likely Future Receiving Environment** at commencement of the construction phase, which reflects natural revegetation and ongoing IPC licence management and monitoring; and
- the **Future Environmental Trends**, which reflects continued natural revegetation and the implementation of the Draft Rehabilitation Plans during the operation phase.

The Draft Rehabilitation Plans are considered within the relevant technical chapters in the context of future environmental trends and are also considered within the Do-Nothing Scenario and cumulative impact assessment.

The Likely Future Receiving Environment and Future Environmental Trends have been considered in greater detail in those EIAR chapters where the evolving condition of the receiving environment has the potential to influence the assessment of likely significant effects.

1.2 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. Chapter 2 should be read in conjunction with the Planning Report which accompanies the planning application.

The Proposed Project is being brought forward in response to local, regional, national and European policy regarding Ireland's transition to a low-carbon economy, associated climate change policy objectives and to reduce Ireland's dependence on imported fossil fuels for the production of electricity.

A gradual shift towards increasing Ireland's use of renewable energy is no longer viable. There is an urgency now to ensure real changes occur without delay. Renewable energy development is recognised as a vital component of Ireland's strategy to tackle the challenges of combating climate change and ensuring a secure supply of energy. The shift from fossil fuels is dependent upon projects such as the Proposed Project which will add c. 322MW of renewable energy to Ireland's renewable energy capacity.

Ireland's Climate Action Plan 2025 (CAP25) sets ambitious yet essential targets for renewable energy, including 9GW of onshore wind capacity by 2030 and an 80% share of renewable electricity by the same year. However, multiple assessments, including the Climate Change Advisory Council (CCAC) Annual Review 2025 and the Environmental Protection Agency (EPA) emissions projections, confirm that Ireland is not on track to meet these targets. Significant gaps remain in renewable energy deployment, particularly in grid capacity expansion, as well as onshore and offshore wind energy development, while continued reliance on fossil fuels threatens national and EU climate commitments.

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, as outlined in Section 143(1) of the Planning and Development Act 2000, as amended (the Act), requires the rapid expansion of renewable energy, making this a matter of strategic economic and social importance. The addition of 46 no. wind turbines, with an estimated electricity generation capacity of c. 322MW, will significantly contribute to Ireland's national targets and support the country in meeting its renewable energy and carbon emission reduction goals at the EU level.

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

The Project Site falls within the administrative areas of Offaly County Council and Kildare County Council, and therefore, is subject to the planning policies and objectives set out in the Offaly County Development Plan 2021-2027 and the Kildare County Development Plan 2023-2029.

The Offaly County Development Plan 2021-2027 (OCDP) was adopted on 10th September 2021 and came in to effect on 20th October 2021. The OCDP and accompanying documents, including the Wind Energy Strategy (WES) set out the key policy context for the development of Offaly County. The Kildare County Development Plan 2023-2029 (KCDP) was adopted by the elected members of Kildare County Council (KCC) on 9th December 2022 and came into effect on 28th January 2023. It has since undergone amendments under variation 1, 2, 3, and 4 which were adopted on 31st March 2025, 23rd February 2026, and 27th April 2026 respectively.

Proposed Turbines located in County Offaly are entirely within an area designated *as 'Areas Deemed Open for Consideration'* for Wind Energy Developments and Proposed Turbines located in County Kildare are entirely within an area designated '*Open for Consideration*'. The Proposed Project is considered to be compliant with the relevant provisions of the OCDP and KCDP and represents proper planning and sustainable development in the functional area of the Offaly County Council and Kildare 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 WEDG 2006') have been taken into account during the preparation of the EIAR.

The WEDG 2006 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 WEDG 2019'). At time of writing, the Draft WEDG 2019 have not yet been adopted, and the relevant guidelines, remain to be the WEDG 2006. Notwithstanding this, however, due to the timelines associated with the planning process for renewable energy projects it is possible that the Draft WEDG 2019 may be adopted during the consideration period for the current planning application. Should the Draft WEDG 2019 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 amenity, as currently outlined in the Draft WEDG 2019.

Planning History

A planning search was carried out through the OCC and KCC online planning portals and ACP's online planning portal in October 2026 for relevant planning applications lodged within the planning application boundary (i.e., the Project Site) of the Proposed Project. In total, 10 no. applications were identified within the planning application boundary of the Proposed Project. 7 no. planning applications relate to the energy industry, 1 no. planning application relates to the Eastern and Midlands Region Water Supply Project, and 2 no. planning applications relate to substitute consent for peat extraction and ancillary works.

It is noted that part of the 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 (Ref. P0503-01) are currently ongoing. An application for substitute consent was submitted to ACP (Case Ref: SU09.324604) on 20th August 2026, for peat extraction and ancillary works from July 1988 to the present day that have been carried out within part of the Project Site. A Remedial Natura Impact Statement (rNIS) and Remedial Environmental Impact Assessment Report (rEIAR) were submitted with the application. The substitute consent application includes all areas of where historical industrial peat extraction occurred within the Project Site. Furthermore, the cumulative impact assessments carried out in each of the chapters of the EIAR consider all potential significant cumulative effects arising from these activities.

A planning search was also carried out to establish proposed, permitted and operational wind energy developments within 25km of the Proposed Wind Farm turbines. In total, 14 no. wind energy projects were identified within 25km of the Proposed Turbines.

Scoping and Consultation

In May 2021 an EIAR scoping document, providing details of the Proposed Wind Farm, was prepared by MKO and circulated to statutory consultees. The scoping document provided details of the Proposed Project and set out the scope of work for the EIAR. Consultees were invited to contribute to the EIAR by suggesting baseline data, survey techniques and potential impacts that should be considered as part of the assessment process and in the preparation of the EIAR. An updated EIAR scoping document was issued to consultees in December 2025 due to time elapsed from when previous scoping was carried out, updates in local and national policy and legislation, updates in relevant EIAR guidance, changes in the environmental baseline and refinement of the Proposed Project layout and design. These update and changes were reflected in the updated scoping document, and consultees were invited to contribute again to the EIAR. Project specific meetings were held with the National Parks and Wildlife Service (NPWS), Inland Fisheries Ireland (IFI), EirGrid, the Department of Defence, Kildare County Council Roads Department and Offaly County Council Roads Department following the December 2025 scoping exercise.

As part of the constraints mapping process, telecommunications operators were contacted by MKO in July 2020 and again by AI Bridges in May 2025 (see Appendix 2-1 and Appendix 15-8) in order to determine the presence of telecommunications links or aviation assets traversing or located in close proximity to the Proposed Project.

Pre-planning meetings were undertaken with Offaly County Council and Kildare 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 12th September 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) if 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 there cumulative impact assessment are included in Appendix 2-3 of the EIAR.

1.3 Site Selection and Reasonable Alternatives

Chapter 3: Site Selection and Reasonable Alternatives of the EIAR contains a description of the reasonable alternatives that were studied by the developer and discipline leads, which are relevant to the Proposed Project and its specific characteristics, in terms of site location and other renewable energy technologies as well as site layout incorporating size and scale of the Proposed Project, connection to the national grid and transport route options to the Project Site. Chapter 3 also outlines the design considerations in relation to the Proposed Wind Farm, the Proposed Grid Connection, the Proposed Enhancement Areas, and the Proposed Construction Haul Routes. It provides an explanation of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

The consideration of alternatives is an effective means of avoiding environmental impacts. As set out in the '*Guidelines on The Information to be Contained in Environmental Impact Assessment Reports' (Environmental Protection Agency, 2022),* the presentation and consideration of reasonable alternatives investigated is an important part of the overall EIA process.

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 BnM landbank. Known constraints, derived from various industry and regulatory guidelines, available GIS datasets and on-site surveys (carried out as part of peat extraction activities that took place within the landbank), 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.

Of the sites assessed, Ballydermot Bog, and surrounding bogs comprising part of the Allen Bog Group, were selected as a site with relatively low potential for environmental effects similar to a number of the other sites on the list that met the relevant criteria.

Alternative Renewable Energy Technologies

To achieve the same maximum estimated electricity output from solar energy as is expected from the Proposed Wind Farm (c. 322MW), a larger development footprint would be required. As detailed in Section 1 above, the site encompasses an area of approximately 5,157 hectares. The permanent footprint of the Proposed Project measures approximately 154 hectares, which represents approximately 2.9% of the Project 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. 515 hectares or 10% of the Project 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 46 no. turbines at the Project Site which will have an estimated installed capacity of 322MW. 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 131 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, traffic specialists, statutory and non-statutory stakeholder and the local communities.

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 initial layout, through an interim layout to the Proposed Wind Farm layout. The design process has also considered the recommendations and comments of the relevant statutory and non-statutory organisations, the local community and local authorities while seeking to ensure that a viable project can 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 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 Project Site. The proposed 46 no. turbine final layout has been refined following feedback from the project team, the local community, statutory consultees, and the need to ensure sufficient separation distances are maintained for on-site constraints.

Alternative Substation and Grid Connection

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 the WEDG 2006 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 13.1 km of underground cable and 0.12km of 'loop-in' overhead line cabling connecting into the existing Maynooth-Dunstown 220kV OHL.

An assessment was carried out by the Applicant on the surrounding grid infrastructure and associated possible connection route options for the Proposed Wind Farm. The grid connections that were potentially viable options were assessed; the results of which identified 5 no. potential connections for the Proposed Wind Farm to the national grid. The assessment concluded that the c. 13.1km underground connection to an offsite substation with an OHL connection into the existing Maynooth-Dunstown 220kV OHL was the best option from an economic, technical, and environmental perspective.

The final Proposed Grid Connection layout comprises the Proposed Onsite Substation and associated telecommunications tower, associated 13.1km of underground electrical cabling, Proposed Offsite Substation and associated telecommunications tower, 0.12km of OHL cabling into the existing Maynooth-Dunstown 220kV OHL, 2 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.

Alternative Enhancement Areas

The Proposed Enhancement Areas were subject to an iterative design process. As outlined in Chapter 6: Biodiversity and Chapter 7: Ornithology of the EIAR, several sensitive habitats as well as floral and faunal species were recorded during surveys of the Project Site and its wider surroundings. Without mitigation, there is the potential to significantly impact these species and habitats if the Proposed Project is built. Consequently, a comprehensive biodiversity management plan (BMP) is presented as Appendix 6-5, outlining measures of mitigating against/and offsetting identified significant effects on these sensitive receptors. Measures to enhance the Project Site are also proposed within the BMP.

Consideration was given to species and habitats of relevance to the Project Site. Specific consideration was given to Key Ecological Receptors (KERs), Key Ornithological Receptors (KORs), and any potential for significant negative environmental effects resulting from the Proposed Project. The final enhancement areas have been refined following feedback from the project team and scoping/consultation with the NPWS, Butterfly Conservation Ireland (BCI), and IFI.

Alternative Turbine Delivery / Haul Routes and Access Options

The Proposed Project 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 Project Site and as such, the construction phase will utilise 7 no. access junctions. Of the 7 no. access junctions there are 12 no. associated site entrances proposed to be used during the construction, operational, and decommissioning phases. Of these site entrances, 4 no. are existing access junctions that will be upgraded, and 8 no. are proposed new site entrances. 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).

Proposed Construction Haul Routes

In order to facilitate the construction of the Proposed Project, all crushed stone, hardcore materials and ready-mix concrete that will be required during the construction phase will be sourced from local, appropriately authorised quarries. The Proposed Construction Haul Routes have been determined based on the identified proposed source of the construction materials and a preliminary assessment of the capacity of the Proposed Construction Haul Routes; the preliminary assessment was conducted in parallel with the assessment of potential site entrances as outlined above.

The preliminary routes were identified as existing travel routes, following national, regional and local roads, from existing local appropriately authorised quarries. The routes were refined via detailed assessments from the project team relating to link capacity, dust emissions, and effects on residential amenity.

The final Proposed Construction Haul Routes were determined to originate at 9 no. existing, authorised quarries, located within 20km of the Project Site.

Proposed Turbine Delivery Route

For turbine transport, cognisance was taken of the haul routes used for other wind farm developments in the Midlands in addition to the general preference to primarily use National and Regional roads where possible with minimal requirements for junction accommodation works. This approach was deemed preferable to using local roads to minimise significant upgrade works to local roads and associated environmental effects.

The assessment of the most suitable delivery routes was conducted in parallel with the assessment of potential site entrances as outlined above. For the delivery of turbine components to the Project Site, the Port of Galway was identified as the most appropriate route for assessment. After site visits were completed and detailed site investigative works were carried out, it was determined that the identified route from the Port of Galway for the purposes of turbine component delivery was appropriate and therefore no alternatives were considered.

Alternative Mitigation Measures

Mitigation by avoidance has been a key aspect of the Proposed Project's evolution through the site selection and design process. Avoidance of the most ecologically and environmentally sensitive areas of the Project Site limits the potential for environmental effects. As noted above, the Proposed Project layout aims to avoid any environmentally sensitive areas. Where loss of habitat occurs in the Project 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 identified impacts; the Proposed Project has also avoided, insofar as possible, any potential pathways between the Project Site and identified environmental receptors. The alternative would be to either omit these measures or propose measures which are not best practice and effective, neither of which would be sustainable.

1.4 Description of the Proposed Project

Chapter 4 of the EIAR 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 and a detailed overview of current onsite activities is included in Section 1.1 above.

The Proposed Project consists of the Proposed Turbines, Proposed Onsite Substation, Proposed Offsite Substation, underground electrical cabling and overhead line (OHL) cabling, peat and spoil areas, meteorological masts, relay mast, internal site access roads and hardstand areas, temporary construction compounds, ecological and ornithological enhancement and offset areas, amenity track, car parks and all ancillary works and apparatus. Detailed site layout drawings of the Proposed Project are included in Appendix 4-1 to this EIAR.

The layout of the Proposed Project has been designed to minimise the potential environmental effects, while at the same time maximising the energy yield from the wind resource passing over the Proposed Wind Farm.

Proposed Wind Farm

There are 19 no. Proposed Turbines with a tip height of 200m and 27 no. Proposed Turbines with a tip height of 220m. Table 1-1 identifies the tip height for each Proposed Turbine.

The Proposed Turbines are aligned with the required setback distances in the WEDGs 2006 and Draft WEDG 2019 and reduce the visual impact of the Proposed Turbines in the areas surrounding the Proposed Wind Farm.

There will be 19 no. Proposed Turbines with the following dimensions:

- Turbine Tip Height – 200 metres
- Hub Height – 115 metres
- Blade Rotor Diameter – 170 metres

There will be 27 no. Proposed Turbines with the following dimensions:

- Turbine Tip Height – 220 metres
- Hub Height – 135 metres
- Blade Rotor Diameter – 170 metres

The assessment of the development footprint of the Project Site, within this EIAR, is based on the maximum potential footprint for all the infrastructural elements; for clarity, there are no unconfirmed details associated with this planning application relating to turbine dimensions.

Table 1-1 Proposed Wind Turbine Locations and Elevations

Turbine	ITM X	ITM Y	Turbine Tip Height	Top of Foundation Levels (mOD)
1	669577	723417	200	73.2
2	667966	722318	200	75.0
3	668652	722904	200	74.7
4	667122	722389	200	74.4
5	666811	722918	220	69.1

Turbine	ITM X	ITM Y	Turbine Tip Height	Top of Foundation Levels (mOD)
6	667272	723632	220	70.4
7	666843	724155	220	68.3
8	666062	723362	220	68.7
9	665993	724419	220	70.1
10	665722	725145	220	69.6
11	665245	723070	220	68.7
12	665675	722587	200	71.0
13	664725	722393	200	69.6
14	665129	721837	200	68.2
15	664797	723510	220	70.1
16	664366	723995	220	70.1
17	664368	724900	220	68.7
18	665151	724290	220	70.2
19	663527	724680	200	75.4
20	663228	725279	200	70.5
21	664020	725419	220	69.7
22	663076	726129	200	69.5
23	665568	728222	200	68.6
24	664901	727516	220	72.2
25	664557	726842	220	70.3
26	663924	727245	200	71.8
27	666654	728789	200	73.8
28	667453	728387	200	73.8
29	667535	729311	200	72.4
30	667317	730151	200	75.3
31	666424	729892	200	74.2
32	665913	730395	200	74.1
33	668791	723754	220	73.1
34	668234	724133	220	72.5
35	667696	724705	220	71.7
36	667700	725703	220	72.1
37	668428	725406	220	71.9
38	666932	725059	220	69.0
39	666484	725794	220	69.3
40	667297	726306	220	71.9
41	666699	726708	220	71.4
42	667233	727483	220	71.8
43	668319	727108	220	74.9
44	668927	727701	220	75.1
45	668094	727874	220	74.6
46	669561	728266	200	75.4

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 7MW has been chosen to calculate the power output of the proposed 46-turbine renewable energy development, which would result in an estimated installed capacity of 322MW.

Site Roads

The Proposed Project makes use of the existing road network insofar as possible. To provide internal access within the Project Site, existing roads and tracks will need to be upgraded, and new access roads will need to be constructed. The Proposed Wind Farm makes use of the existing access track network insofar as possible. It is proposed to upgrade approximately 2.8 km of existing site tracks, and to construct approximately 60km of new internal site access road for the Proposed Project.

Met Masts

There are 2 no. permanent meteorological masts (met masts) proposed as part of the Proposed Project. The met masts will be equipped with wind monitoring equipment at various heights. The met masts will be located within the Proposed Wind Farm ITM X 664363, Y723502 (Met Mast 1) and at ITM X667735, Y726740 (Met Mast 2), and will be slender structures 40 metres in height.

Relay Mast

During detailed telecommunication scoping in July 2020 and again in March 2025, the latter consultation identified that there are 3 no. Virgin Media links traversing the Project Site, which have the potential to interact with the Proposed Turbine locations. The proposed relay mast will mitigate any potential impacts caused by the Proposed Turbines on Virgin Media radio links. The relay mast will be 60m in height and will have appropriately 2 no. antennae.

Temporary Construction Compound

There are 10 no. temporary construction compounds proposed as part of the Proposed Project, of which 9 no. will be located within the Proposed Wind Farm site and 1 no. within private land containing the Proposed Offsite Substation. The temporary construction compounds are strategically situated to facilitate works during the construction phase of the Proposed Project. The 10 no. temporary construction compounds will be decommissioned following construction.

Site Underground 33kV Electrical Cabling

Each turbine will be connected to the Proposed Onsite Substation via underground 33kV (kilovolt) electricity cabling. Fibre-optic cables will also connect each Proposed Turbine, the proposed meteorological masts (met mast), and the proposed relay mast to the Proposed Onsite Substation. The electricity and fibre-optic cabling connecting to the Proposed Onsite Substation will be run in cable ducts adjacent to the proposed internal site access roads and buried directly alongside the internal site access roads at depths of approximately 1m below ground level to the top of the duct.

Amenity

The Proposed Project includes 55.2 km of amenity track. This includes:

- 13.4km of a new dedicated internal amenity access track;
- 40km of proposed internal site access road;
  - 8.5km equestrian loop for equestrian users only – this loop will overlap with proposed internal site access road (40km) for approximately 7.5km;
- 0.844km (844m) of amenity board walk.

The connectivity provided by the proposed amenity track is detailed in Section 1.1 above.

Clear-Felled Forestry and Vegetation Removal with Associated Replanting

A total of 60.7ha of forestry (comprising conifer plantation (WD4)) will be permanently clear-felled within and around the Proposed Wind Farm site to accommodate the Proposed Enhancement Areas. The replacement of the 60.7ha hectares of forestry can occur anywhere in the State subject to licence. The specific lands on which any such replacement afforestation would occur have not been identified at this stage. On a precautionary basis, the Applicant commits that, where replacement afforestation is required, the replacement afforestation lands will be located at least 10km from the Proposed Wind Farm and will not be located where there is a hydrological pathway through which the afforestation works could give rise to cumulative effects with the Proposed Project.

As part of the Proposed Project, bog woodland (WN7) and scrub (WS1) will be required to be removed within and around the footprint of the Proposed Wind Farm and Proposed Onsite Substation and other ancillary infrastructure and Proposed Enhancement Areas. The estimated 176ha of vegetation to be removed within and around the Proposed Project, along with existing treeline boundaries is not subject to a Felling Licence from the Forestry Service and will be replanted within the Proposed Wind Farm site as part of the Proposed Enhancement Areas.

Proposed Grid Connection

The Proposed Grid Connection will facilitate the connection of the Proposed Wind Farm to the national grid. The Proposed Grid Connection is comprised of the Proposed Onsite Substation, Proposed Offsite Substation, the 13.1km underground cabling connection from the Proposed Onsite Substation to the Proposed Offsite Substation, and overhead line (OHL) connecting to the existing Maynooth-Dunstown 220kV OHL, and all ancillary works and apparatus.

The Proposed Grid Connection underground 220kV electrical cabling route will exit the Proposed Onsite Substation via the proposed internal access track onto the R414, and will comprise then Horizontal Directional Drilling at 1 no. location, i.e., beneath the Grand Canal west of the Shee Bridge, before and continuing along the R403 through Allenwood, and turn south along the L6002 at Prosperous to connect to the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare.

Proposed Enhancement Areas

The Proposed Project incorporates a comprehensive suite of biodiversity offsetting and enhancement measures, as detailed in the Biodiversity Management Plan (BMP), included as Appendix 6-5 of this EIAR, to compensate for habitat loss and enhance ecological conditions across the Project Site.

Ornithological offsetting and enhancement measures include the creation of approximately 246.27ha of scrub mosaic habitat around Proposed Turbines to discourage golden plover from higher-risk areas, alongside the enhancement of Lodge Bog and Killina Bog to provide alternative suitable habitats. At Lodge Bog, measures include scrub removal and management, the creation of two permanent waterbodies (7.8ha and 5.6ha) for wintering whooper swan, 25ha of breeding wader habitat primarily for lapwing, and approximately 5.6ha of reedbed habitat for roosting hen harrier. At Killina Bog, approximately 60.7ha of forestry will be removed and restored to open peatland habitat suitable for golden plover. Predator-proof fencing, habitat management and monitoring will also be implemented to support the long-term effectiveness of these measures.

Ecological offsetting and enhancement measures include planting of 45.3ha of native woodland and scrub planting and restoration of approximately 231.6ha of cutover bog across four areas through targeted drain blocking, rewetting and water-level management, supplementing the existing peatland rehabilitation obligations under the IPC Licence. Measures are also proposed to protect and enhance marsh fritillary habitat, including fencing of suitable breeding areas, targeted scrub management,

planting of devil's-bit scabious and the creation of habitat corridors and stepping-stone habitats to improve connectivity.

Further biodiversity enhancements, beyond those required to offset identified significant effects, include the creation and management of flower-rich pollinator habitats along internal access roads, nesting embankments for solitary bees, and the installation of artificial nesting and roosting features for peregrine, kestrel, bats, pine marten and red squirrel.

Community Benefit Proposals

An important part of a renewable energy development, which the Applicant has been at the forefront of developing, is its Community Fund. BnM presently manages 7 no. Community Benefit Funds at its wind farms in Derrinlough, Mountlucas, Cloncreen, Sliabh Bawn, Oweninny Phase 2 and Bruckana and Timahoe North Solar Farm. BnM is proposing to replicate its proven Community Benefit Fund model for Ballydermot Wind Farm in accordance with best practice requirements. The Fund will look to support the local communities, near neighbours and local students.

1.4.2 Operation

The Proposed Wind Farm is expected to have a lifespan of approximately 35 years. As part of the 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.

Each turbine will be monitored off-site by the appointed Operations and Maintenance contractor (typically the wind turbine manufacturer) and a wind farm operations management company. The monitoring of turbine output, performance, wind speeds, and responses to any key alarms will be monitored off-site by both parties 24 hours per day. Regular on-site visual inspections will also be carried out by the wind farm operations management company. Once operational, the Proposed Project will support 6 – 8 long term, high-quality technical jobs in operation and maintenance as well as a number of jobs in ancillary functions.

1.4.3 Decommissioning

The wind turbines proposed as part of the Proposed Wind Farm are expected to have a lifespan of approximately 35 years. 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.

Upon decommissioning of the Proposed Wind Farm, the Proposed Turbines will be disassembled in the reverse order to how they were erected. The Proposed Turbines will be disassembled with a similar model of crane that was used for their erection. The Proposed Turbines will likely be removed from the Proposed Wind Farm using the same transport methodology adopted for delivery to the Proposed Wind Farm initially. The Proposed Turbine materials will be transferred to a suitable recycling or recovery facility.

Upon decommissioning of the Proposed Wind Farm, the Proposed Grid Connection including all the associated transmission infrastructure, Proposed Onsite Substation and Proposed Offsite Substation will form part of the national grid infrastructure and operate in perpetuity as part of Transmission System and Transmission Asset Owner (TAO) assets and will remain in-situ. The assets transferred to the TAO will not form part of the decommissioning works.

1.5 Population and Human Health

Chapter 5: Population and Human Health of the EIAR identifies, describes and assesses the potential significant, direct and indirect effects of the Proposed Project on population and human health.

One of the principal concerns during the development process is that individuals or communities will experience no significant diminution in their quality of life from the direct or indirect effects arising from the construction, operation and decommissioning of a proposed project. Ultimately, all the impacts of a proposed project impinge on human health, directly and indirectly, positively and negatively. The key issues examined in this chapter 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, and health and safety.

The likely future receiving environment at commencement of the construction phase is anticipated to remain materially comparable to the existing baseline environment with respect to population and human health. In relation to future environment trends, continued natural revegetation, ongoing site management, decommissioning works, and environmental monitoring and implementation of the targeted rehabilitation measures within the Draft Rehabilitation Plans are not anticipated to influence existing population characteristics or introduce new sources of human health risk. Accordingly, the future environmental trends of the receiving environment for population will remain materially comparable to the baseline conditions. While the individual environmental determinants of health, including air quality, land and soil, water quality, climate, noise and vibration, aviation, traffic and transport, and risks associated with major accidents and natural disasters, may evolve over time, on balance, these changes are not anticipated to materially alter the overall human health baseline.

The design, construction, operation and decommissioning of the Proposed Project will provide employment for technical consultants, contractors and maintenance staff. Up to approximately 200-250 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 30-36 months, and the decommissioning phase will likely last approximately 11 months. The majority of construction/decommissioning phase staff will be sourced locally, thereby helping to sustain employment in the construction trade.

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 during the operational phase when rotating wind turbine blades cast flickering shadows at 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 – it lasts only for a short period of time and occurs only during certain specific combined circumstances. The WEDG 2006 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 1.70km (10 x 170m rotor diameter). In total, there are 310 properties identified within the shadow flicker study area.

A detailed shadow flicker assessment was undertaken for the Proposed Project, with conservative modelling assumptions predicting shadow flicker levels for all 310 no. sensitive receptors located within the shadow flicker study area. The predicted shadow flicker model results indicate:

- 138 sensitive receptors are theoretically predicted to experience zero shadow flicker;
- 172 sensitive receptors are theoretically predicted to experience some shadow flicker;

- Of the 172 sensitive receptors, 63 sensitive receptors are theoretically predicted to experience shadow flicker that exceeds the WEDG 2006 thresholds for daily shadow flicker. Of these 63 no. sensitive receptors, 6 no. are commercial building and of these 2 no. are owned by the Applicant.

- The annual threshold of over 30 hours for shadow flicker (WEDG 2006) is predicted to be exceeded at 3 sensitive receptors once the regional sunshine average factor of 31.74% has been considered.

The modelling represents a conservative assessment, as it does not fully account for factors such as existing vegetation, buildings and window orientation, which may reduce or prevent shadow flicker from occurring at individual properties. If it is not possible to mitigate any identified shadow flicker limit exceedance locally, wind turbine control measures will be implemented. Furthermore, the Proposed Wind Farm could be brought in line with the requirements of the Draft WEDG 2019 should they come into force during the planning application process for this Proposed Project.

The cumulative assessment considered the Proposed Project in combination with other existing, permitted and proposed developments, including surrounding wind farms, utility infrastructure and ongoing peatland rehabilitation activities. Overall, no significant adverse cumulative effects on population and human health are anticipated across the topics assessed throughout the construction, operational, and decommissioning phases of the Proposed Project. During operation, positive cumulative effects are anticipated in relation to employment, community investment, tourism, air quality and climate, particularly through renewable electricity generation and peatland rehabilitation.

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. During the operational stage the Proposed Wind Farm will have a positive, slight, long-term impact on tourism and a long term, significant positive effect on air quality and climate, which will contribute to positive effects on population and human health and assist in Ireland reaching its emissions targets and renewable energy goals.

1.6 Biodiversity

This chapter 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 Ornithology 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, consultation with relevant bodies and a suite of field surveys were undertaken. The desk study included a review of available ecological information, including records for protected and rare habitats, flora and fauna as well as information in relation to European and Nationally designated sites within the surrounding area. Field surveys were undertaken between 2020 and 2026 and included multi-disciplinary ecological walkover surveys, habitat mapping, detailed botanical surveys and dedicated surveys for protected species including bats, otter, badger, marsh fritillary, pollinators and moths, and the rare plant species round-leaved wintergreen. Aquatic ecological surveys were also undertaken, including fisheries and aquatic macroinvertebrate surveys, to assess the ecological status of watercourses within and downstream of the Project Site.

The surveys were carried out in accordance with TII's *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes* (TII, 2008)[1]. The habitats within the Project Site were subject to detailed survey and habitat mapping. This mapping was undertaken following the classification system set out in *A Guide to Habitats in Ireland* (Fossitt, 2000)[2]. Surveys also included a search for Invasive Alien Species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024. Where habitats were considered to have potential to conform to habitats protected under Annex I of the EU Habitats Directive, reference was made to the European Commission's Interpretation manual of European Union habitats (2013)[3], the latest NPWS Article 17 Habitats Assessments (NPWS, 2025)[4] and habitat-specific assessment guidance from Irish Wildlife Manuals. Eco-hydrological modelling was also undertaken in order to identify areas of remnant uncut raised bog within the Proposed Wind Farm site which conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120] in line with NPWS (2017)[5].

The Proposed Wind Farm site comprises 14 no. large cutaway bogs within the Allen Bog Group which have been subject to industrial peat extraction by BnM until the permanent cessation of peat extraction in June 2020. The cutover bog is dominated by bare peat and revegetating habitats, with large areas of pioneer poor fen, *Calluna*-dominated communities, reed and large sedge swamps and scrub revegetating, as well as bog woodlands where commercial peat extraction has ceased for longer periods of time. These habitats occur in intricate mosaics throughout the Proposed Wind Farm site, together with smaller areas of remnant raised bog, woodlands, grasslands, conifer plantation and artificial habitats (i.e. tracks, roads). The Proposed Grid Connection underground electrical cabling route, Proposed Offsite Substation and Proposed Turbine Delivery Route accommodation areas are located outside of the Proposed Wind Farm site and were also surveyed in detail.

The assessment within Chapter 6 Biodiversity considers the potential for direct and indirect effects on habitats and species as a result of the Proposed Project. The assessment also considers the likely future receiving environment within the Project Site at the time of the commencement of construction in order to allow for consideration of any likely changes to the existing baseline (e.g. vegetation succession) between the present and the commencement of construction and whether this may have implications for the impact assessment. Future environmental trends of the Proposed Wind Farm site during the

1 TII (2008) Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes. Dublin: National Roads Authority.
2 Fossitt, J.A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.
3 EC (2013). Interpretation Manual of European Union Habitats. Version EUR 28. European Commission, DG Environment.
4 NPWS (2025). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitats Assessments. Unpublished NPWS report.
5 NPWS (2017) National Raised Bog Special Areas of Conservation Management Plan 2017–2022. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.

operational phase and following implementation of the Draft Rehabilitation Plans will result in the development of a range of habitats that will support biodiversity including plants, insects, birds and mammals. This includes some species that are rare and protected in the wider landscape. As these changes will materially alter the ecological, ornithological and hydrological baseline, they have been carried forward into the assessment in Chapter 6.

The Biodiversity Management Plan (BMP) prepared for the Proposed Project provides for the enhancement of approximately 263.8ha of cutover bog, management and enhancement of 11.6ha of marsh fritillary habitat, creation of approximately 45.3ha of native woodland and 15.6ha of pollinator foraging habitat. It also includes for the management of approximately 339 hectares at Lodge Bog for breeding and wintering waders and conversion of approximately 58ha of conifer plantation towards peatland habitats for breeding and wintering birds, which will also have wider biodiversity benefits. These project-specific measures are distinct from the peatland rehabilitation obligations that apply independently under the existing IPC Licence.

The construction of the Proposed Project will result predominantly in the loss of cutover bog dominated by bare peat habitats which have been heavily drained and have not yet become heavily revegetated. The Proposed Project will also result in the loss of cutover bog which is revegetating with poor fen (both pioneer poor fen communities and more established poor fen), *Calluna*-dominated communities, reed and large sedge swamps, scrub, bog woodland, as well as treelines and watercourses. Due to an iterative design process, mitigation by avoidance has minimised the loss of high biodiversity habitats within the Project Site. Habitat losses as a result of the Proposed Project largely consist of cutover bog and revegetating habitats, which represent a small proportion of the similar habitats present within the wider Project Site and surrounding landscape and there is no potential for long-term significant residual effects as a result of habitat loss.

A number of areas of uncut remnant raised bog habitat occur within the Proposed Wind Farm site. This habitat has been completely avoided by the Proposed Project with the exception of a small area in the south of Ballydermot South Bog, over which a proposed amenity track is proposed, which will consist of a floating boardwalk with no excavations required. Potential effects on uncut raised bog from construction activities, including habitat loss, changes to drainage and dust deposition, have been assessed within the Biodiversity Chapter and measures to protect these areas include avoidance through project design and sensitive construction methods, as well as appropriate mitigation measures and controls during construction. With the proposed mitigation measures in place, no significant residual effects on raised bog are predicted.

Two plant species listed as Near Threatened on the Red List for Vascular Plants, round-leaved wintergreen and basil thyme, were recorded within the Proposed Wind Farm site, including at locations within the construction footprint. The chapter assesses the potential loss or damage of these plants and their supporting habitats and prescribes receptor-specific mitigation to ensure there will be no significant effect on populations of these species. Japanese knotweed and New Zealand pygmy weed was also recorded within the Project Site, however Japanese knotweed it is located over 380m from the nearest Proposed Project infrastructure and New Zealand pygmy weed is located within the Grand Canal, as such there will be no disturbance as a result of the Proposed Project and no Invasive Species Management Plan is required.

The surveys undertaken to inform this assessment also recorded evidence of protected non-volant mammals including badger, otter, pine marten, Irish stoat and red squirrel. A number of badger setts and two inactive otter holts were recorded within the Project Site, along with other signs including scat/spraint, sightings and feeding signs. No breeding sites for any other mammal species were identified during the baseline ecological surveys. Chapter 6 Biodiversity considers the potential for direct and indirect effects on these species including potential habitat loss, disturbance and loss of breeding or resting sites during construction, and assigns species-specific mitigation measures including detailed pre-construction surveys, implementation of appropriate buffers within which no construction will take place and, where necessary, consultation with the NPWS and IFI, as well as relevant licensing before

any exclusion or disturbance of protected sites. No significant residual effects on any non-volant mammal species are predicted following implementation of mitigation.

Bats were recorded commuting and foraging across the Proposed Wind Farm site, with a species assemblage dominated by common pipistrelle, soprano pipistrelle and Leisler's bat, with lower levels of activity recorded for *Myotis* spp., brown long-eared bat and Nathusius' pipistrelle. There were no confirmed roosts identified within the Project Site, with only limited roosting potential identified within trees, bridges and structures within the Proposed Wind Farm site, along the Proposed Grid Connection underground electrical cabling route and Proposed Turbine Delivery Route accommodation areas. With regard to construction impacts, no significant residual effects are anticipated in relation to the loss of commuting or foraging habitat, the loss or disturbance of roosts, or displacement of bat populations, following the implementation of native tree planting as outlined within the BMP. During operation, there is potential for collision risk with turbine blades. A range of mitigation measures will be implemented including felling buffers around turbines such that habitat features used by bats are maintained outside the turbine risk zone, turbine blade feathering at low wind speeds and a detailed post-construction monitoring programme. With these measures in place, no significant residual effects on bat populations are predicted.

During dedicated surveys, marsh fritillary larval webs were recorded within the Proposed Wind Farm site, with the core population located within Lullybeg Butterfly Reserve. While there will be some short-term loss of suitable habitat for this species, the BMP includes measures to manage and enhance approximately 11.6ha of existing marsh fritillary suitable habitat within the Proposed Wind Farm site. Additional mitigation measures have also been prescribed to protect identified areas of suitable habitat for this species which are located immediately adjacent to but outside of the Proposed Project infrastructure footprint during construction to ensure there is no unnecessary encroachment of machinery into these areas. This will also serve to protect larval webs, should they be present. As a result, there is no potential for significant effects on marsh fritillary populations. Detailed surveys for other pollinators and moth species were also undertaken, and these species are considered separately within Chapter 6 Biodiversity.

Aquatic surveys covered watercourses both within and downstream of the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route. The potential effects assessed within Chapter 6 Biodiversity include deterioration of water quality and impacts associated with watercourse crossings and other in-stream works. The Proposed Project includes drainage and pollution-prevention measures, controls for works near watercourses and measures to protect fish, otter and other aquatic fauna. A range of best-practice pollution prevention and drainage design measures will be implemented during construction and operation to protect surface water and groundwater quality, and a full hydrological assessment of the Proposed Project is provided in Chapter 9 of the EIAR. Where in-stream works are required, a suite of mitigation measures have been prescribed in order to protect the aquatic habitats and any species which may reside within the watercourses during construction. With these measures in place, no significant effects on rivers, streams or associated aquatic habitats and species are anticipated.

The Proposed Project includes approximately 55.2km of amenity routes, comprising proposed internal access roads and dedicated amenity tracks. The assessment of the operational phase of the Proposed Project has also considered potential disturbance associated with increased recreational use during operation, alongside maintenance activities associated with the Proposed Wind Farm and Proposed Enhancement Areas. The potential operational effects on bats and aquatic receptors are also assessed separately and addressed through mitigation and monitoring, where required. The assessment of the operational phase also concludes that significant effects on biodiversity, flora and fauna are not anticipated.

The Proposed Wind Farm site is located adjacent to The Long Derries, Edenderry SAC and as such is considered for the potential for dust-related impacts on the QI grassland habitat. Additionally, the Proposed Grid Connection underground electrical cabling route crosses Ballynafagh Lake SAC at the Blackwood feeder canal, and is considered in relation to potential water quality deterioration resulting

from the Proposed Project. A downstream hydrological link has also been established between the Proposed Grid Connection underground electrical cabling route and Ballynafagh Bog SAC. The River Barrow and River Nore SAC are likewise considered for potential water quality deterioration due to hydrological connectivity with the Proposed Project, as well as ex-situ disturbance effects on otter and aquatic QI species. The potential for likely significant effects on Poulaphouca Reservoir SPA was identified due to the potential for *ex-situ* effects on associated bird species. These potential pathways for effects have been fully assessed within the Appropriate Assessment Screening Report (AASR) and Natura Impact Statement (NIS) that accompany this planning application. 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. Chapter 6 Biodiversity also concludes that no significant residual effects on nationally designated sites are anticipated.

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, flora or fauna have been identified.

It is therefore concluded 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 on any of the identified Key Ecological Receptors.

1.7 Ornithology

Chapter 7 Ornithology 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 during surveys. The potential effects of the Proposed Project are then described in terms of the construction, operation and decommissioning phases of the Proposed Project. 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 Project Site. The identification of Key Ornithological Receptors (KORs) and the assessment of effects follow a precautionary approach.

At the commencement of the construction phase the continued natural revegetation, and the continuation of existing site management, decommissioning works, and environmental monitoring, may slightly reduce the extent of open habitats (such as peatlands and grasslands) across the Proposed Wind Farm site. The reduction in open habitat would increase habitat suitability for KORs with a preference towards scrub and woodland (e.g. woodcock and sparrowhawk) and slightly reduce habitat suitability for KORs with a preference towards open habitats for predator detection and unobscured foraging (e.g. golden plover and lapwing). At the commencement of the construction phase in the likely future receiving environment, natural revegetation is not anticipated to have taken place to a degree that would materially alter the existing ornithological baseline.

The future environmental trends of individual environmental factors influencing the ornithological assemblage within the Proposed Wind Farm site including scrub coverage, establishment of woodland, future flooding regimes have been considered for each of the KOR assessments. While the distribution and abundance of KORs may evolve over time, on balance, these changes are not expected to materially alter the overall ornithological baseline for the majority of KOR species.

The potential for effects on designated sites is fully described in the Natura Impact Statement (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 the EIAR and its appendices. The measures ensure that the construction, operation and decommissioning of the Proposed Project will not have an adverse effect on the integrity of any European sites in light of their conservation objectives.

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, 2022) and low effect significance (Percival, 2003), which is not significant at the regional or national scale (CIEEM, 2024). The only exceptions are wintering golden plover, wintering hen harrier, wintering whooper swan, breeding lapwing, and snipe for which significant effects were predicted without intervention. The significance of these predicted effects are summarised below:

- Wintering golden plover: long-term significant negative displacement and collision risk effects (EPA, 2022) are predicted for the operational phase.
- Wintering hen harrier: long-term significant negative displacement effects (EPA, 2022) are predicted for the operational phase.
- Wintering whooper swan: short and long-term significant negative habitat loss, disturbance and displacement effects (EPA, 2022) were predicted for the construction, operational and decommissioning phases.

- Breeding lapwing: short and long-term negative which are significant for habitat loss, disturbance, displacement, and barrier effect (EPA, 2022) are predicted for the construction, operational and decommissioning phases.

Consequently, a robust plan is proposed to reduce the magnitude of the effects; refer to Appendix 6-5 for the Proposed Project BMP. Following implementation of mitigation measures, no residual effect significance greater than ***Low,*** as per Percival (2003) criteria, is identified for any KOR and no effect significance greater than ***Slight,*** as per EPA (2022) criteria, is identified for any KOR. There are no significant residual effects at a regional, national or international scale (CIEEM, 2024). Significant residual effects on the KORs with regard to direct habitat loss, disturbance/displacement, barrier effect or collision mortality are not anticipated.

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.

1.8 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.

Proposed Project

The Proposed Wind Farm site consists predominantly of cutover bog comprising of bare and revegetating peat fields separated by field drains. The existing topography of the Proposed Wind Farm site is relatively flat, ranging from approximately 68 to 82mOD. As a result of industrial peat extraction activities and associated drainage works the land and topography of the Proposed Wind Farm site has been significantly modified. Peat extraction activities ceased at the Proposed Wind Farm site in June 2020 and the former peat production areas have already begun to revegetate. The Proposed Grid Connection underground cabling route from the Proposed Onsite Substation to the Proposed Offsite Substation is largely within the carriageway of the existing road network.

Based on the peat depth information for the Proposed Wind Farm site, peat depths vary between 0 and >6m with an average peat depth of 1.61m. The peat thickness at the Proposed Turbine locations ranges from 0.1 to 4m. The average peat depth is less than 1m at 16 no. Proposed Turbine locations (~approximately 34%) and is less than 2m at 33 no. Proposed Turbine locations (70%). The average peat depth only exceeds 3m at 2 no. Proposed Turbines (T12 and T30) (4.3% of Proposed Turbine locations). Where possible the deeper peat areas have generally been avoided by the Proposed Project layout. The peat deposits at the Proposed Wind Farm site are underlain by lacustrine clays and glacial tills. The glacial till deposits are underlain by limestone bedrock.

The Proposed Project will typically involve removal of peat and subsoils (spoil) for access roads, internal road network, internal cable network, hardstanding emplacement, turbine foundations, Proposed Onsite Substation, crane hardstands, compounds and met mast foundations.

Estimated volumes of peat and spoil to be excavated is 870,900m^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 peat and spoil 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. The majority of material excavated along the Proposed Grid Connection underground cabling trench will be transported to peat and spoil areas or will be used for landscaping where the Proposed Grid Connection is located in private lands. However, some excess spoil material generated during the cable route construction will be transported by permitted waste contractors to a suitable permitted/licensed site for disposal/recovery. This is dependent on the road makeup at locations along the Proposed Grid Connection underground cabling route. The main contractor will determine the appropriate location for management of arisings from the route. Storage and handling of hydrocarbons/chemicals will be carried out using best practice methods. Measures to prevent soil and subsoil erosion during excavation and reinstatement will be undertaken to prevent water quality impacts.

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 Geotechnical and Peat Stability Assessment was undertaken for the Proposed Wind Farm site (Appendix 8-1) and it demonstrates an acceptable margin of safety, that the Proposed Wind Farm site is suitable for the Proposed Wind Farm and Proposed Onsite Substation 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 Wind Farm site. 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. Therefore, no significant effects on land will occur during the construction, operation or decommissioning of the Proposed Project.

The peat bog at the Proposed Wind Farm site has been degraded by the historical peat extraction activities. 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.

The assessment within Chapter 8 Land Soils and Geology considers the likely future receiving environment within the Project Site at the time of the commencement of construction. Since cessation of peat extraction, ongoing site management, decommissioning activities and natural revegetation have resulted in localised changes to surface conditions. These activities are expected to continue up to commencement of the Proposed Project construction phase. However, they are not anticipated to materially alter the peat thickness, soil and subsoil characteristics, bedrock geology, geological resources or geological heritage features identified in the existing baseline. Consideration is also given to future environmental trends following the implementation of the Draft Rehabilitation Plans during the operational phase; i.e., drain blocking, rewetting and vegetation establishment across the former industrial peatland will result in changes to surface conditions, local peat moisture characteristics, and reduction in erosion potential. However, they are not anticipated to result in material changes to the underlying geological environment across the wider Proposed Wind Farm site.

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 cumulative effects on land, soil and geology as a result of the Proposed Project. The assessment found that the cumulative effect with the Draft Rehabilitation Plan (Appendix 2-4) will result in an overall positive effect on the local land, soils and geological environment due to the small footprint of the Proposed Project.

1.9 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.

Proposed Project

The surface of the Proposed Wind Farm 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 bogs. The Proposed Grid Connection underground electrical cabling route from the Proposed Onsite Substation to the Proposed Offsite Substation is located largely within the carriageway of the existing road network.

Regionally, the Proposed Wind Farm site is located is predominantly mapped in the River Barrow Catchment. All surface waters are directed to the Figile and Slate rivers and their associated tributaries. Whilst the north of Ticknevin Bog is mapped in the River Boyne Catchment there are no surface water outfalls to the River Boyne or its tributaries. Within the Proposed Wind Farm, there are a total of 15 no. watercourse crossing locations over natural watercourses (EPA mapped rivers and streams).

On a regional scale, the Proposed Grid Connection underground electrical cabling route is located primarily in the River Barrow Catchment and is drained by the Slate River and its tributaries. The Proposed Offsite Substation is mapped in the Liffey and Dublin Bay Catchment. There are a total of 11 no. crossings over EPA mapped watercourses along the Proposed Grid Connection underground electrical cabling route.

The underlying bedrock geology is classified as comprising Locally Important Aquifer and Regionally Important Aquifer. The Regionally Important Aquifer is a karst aquifer, however, there are no karst features mapped in the local area and the site investigations did not encounter any evidence of karst. There are no group or public groundwater abstractions in the surrounding lands with the potential to be impacted by the Proposed Wind Farm or Proposed Onsite Substation. The hydrogeological regime at the bogs 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. The Proposed Grid Connection underground electrical cabling route is mapped to cross the Grand Canal pNHA and the Ballynafagh Lake SAC; this interaction is entirely located within the public road corridor. Due to the minor and transient nature of the proposed works, coupled with the prescribed mitigation measures, there will be no significant effects on downstream designated sites. The Proposed Offsite Substation has no interaction with designated sites.

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 refuelling. 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 Project Site during the construction and operational phases of the Proposed Project and measures are proposed within the EIAR to deal with these potential minor local impacts. Mitigation measures have also been prescribed to protect groundwater during the proposed piling works.

During each phase of the Proposed Project (construction, operation, and decommissioning) a number of activities will take place, some of which will have the potential to significantly affect the hydrological regime or water quality at or downstream of the Proposed Wind Farm 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 Proposed 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 Resource and Waste Management Plan which will be incorporated into the Construction and Environmental Management Plan (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 Wind Farm or the Proposed Onsite Substation 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.

Sections of the Proposed Grid Connection underground electrical cabling route is underlain by a Regionally Important Aquifer – Karstified (conduit). However, due to the minor, shallow and transient nature of the works, and the prescribed mitigation measures, there will be no significant effect on karst features or the underlying karst aquifer. The Proposed Offsite Substation is not mapped to be underlain by a karst aquifer and no evidence of karst features were recorded during the walkover surveys or the site investigations completed at this location.

A hydrological assessment of potential impacts on local designated sites was undertaken. The River Barrow and River Nore SAC/pNHA and the Long Derries, Edenderry SAC are considered to be hydrologically connected to the Proposed Wind Farm site. Following implementation of the appropriate mitigation measures as outlined in the EIAR no significant impacts on these designated sites will occur as a result of the Proposed Wind Farm or Proposed Onsite Substation.

A Water Framework Directive (WFD) Compliance Assessment (Appendix 9-4) 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.

A Site-Specific Flood Risk Assessment (Appendix 9-1 and Appendix 9-2) has been completed for the Proposed Project (Proposed Wind Farm and Proposed Onsite Substation – Appendix 9-1; Proposed Grid Connection underground electrical cabling route and Proposed Offsite Substation – Appendix 9-2) and concludes that these elements of the Proposed Project have no potential to increase the downstream flood risk.

The assessment within Chapter 9 Water considers the likely future receiving environment within the Project Site at the time of the commencement of construction. The existing drainage network and associated water management infrastructure will continue to influence surface water drainage patterns, flow pathways and discharge arrangements. Ongoing site management and natural revegetation may result in localised changes to surface conditions, but these are not anticipated to materially alter the overall hydrological regime prior to construction. Consideration is also given to future environmental trends following the implementation of the Draft Rehabilitation Plans during the operational phase.

Future environmental trends will move towards a progressively rehabilitated peatland with enhanced retention of surface water, and improved water quality in comparison to the existing baseline conditions with no anticipated alteration to the wider hydrogeological environment.

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 Plans (Appendix 2-4) will result in an overall positive effect as the rehabilitation plans will improve surface water quality and attenuation within the Proposed Wind Farm site.

An assessment of the construction, operational and decommissioning phases has been completed, along with a cumulative assessment for each phase. Based on the above, and with implementation of the detailed mitigation measures, no significant effects on the surface water and groundwater environments will occur.

1.10 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 existing air quality in the vicinity of the Proposed Project is typical of rural areas in Ireland, which are classified as Zone D under the Environmental Protection Agency's (EPA) national air quality monitoring system. 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 assessment was informed by published 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 D to determine the representative levels of such emissions for the Proposed Project.

The air quality in the vicinity of the Proposed Project is typical of that of rural areas of Ireland. 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 2025' was published by the EPA in October 2026. The EPA reports provide SO_2, PM_{10}, NO_2 and O_3 concentrations for areas in Zone D.

The likely future receiving environment of the Proposed Wind Farm site at the commencement of the construction phase will be a former industrial peat-extraction landscape with a developing but spatially variable cover of natural revegetation, managed and monitored under IPC Licence. From an air quality perspective, the Proposed Wind Farm site is anticipated to be materially comparable to the existing baseline.

Continued natural revegetation, ongoing site management, environmental monitoring, and decommissioning works and implementation of the Draft Rehabilitation Plans are anticipated to facilitate the progressive rehabilitation of peatland across the Proposed Wind Farm site and result in an overall improvement to air quality due to the further stabilisation of peat surfaces and associated reduction in wind-blown peat and dust emission. The future environmental trends of the receiving environment for air quality are anticipated to show an overall improvement in the air quality baseline as described.

During the construction phase, temporary emissions of dust and exhaust emissions will arise from construction activities, machinery and vehicle movements. The potential effects of these emissions on local air quality have been assessed in accordance with relevant guidance, including the Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2024). A CEMP will be in place throughout the construction phase (see Appendix 4-4). The CEMP includes dust suppression measures. In addition, construction materials and turbine components will be transported along specified haul routes, which will be regularly inspected for cleanliness and cleaned where necessary. Following implementation of the proposed mitigation measures, residual effects on air quality during construction are considered to be short-term, slight and negative, and are not significant.

During the operational phase, exhaust emissions of carbon dioxide (CO_2), oxides of nitrogen (NO_x), sulphur dioxide (SO_2) or dust emissions associated with the Proposed Project will be minimal and will primarily arise from to the use of operation and maintenance vehicles onsite. Following implementation of the proposed mitigation measures, residual effects on air quality during the operational phase are considered to be long-term, imperceptible and negative, and are not significant.

There will be a net reduction in 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 CO_2, NO_x, and SO_2. The production of renewable energy from the Proposed Project will have a long-term significant positive effect on air quality due to the offsetting of approximately 146,857 tonnes of CO_2 per annum, or 5,139,995 tonnes of CO_2 over the proposed 35-year lifecycle of the Proposed Wind Farm.

Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, albeit of lesser impact. The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential impacts on air quality.

The cumulative assessment considered the Proposed Project in combination with other existing, permitted and proposed developments, including surrounding wind farms, utility infrastructure and ongoing land uses. During construction, potential cumulative effects on air quality are primarily associated with dust and exhaust emissions from construction machinery and vehicle movements. However, given the limited anticipated overlap with other infrastructure developments and the implementation of appropriate mitigation measures, no significant adverse cumulative effects on air quality are anticipated during any phase of the Proposed Project.

Overall, following the implementation of the proposed mitigation measures, the construction, operation and decommissioning of the Proposed Project are not anticipated to result in significant adverse effects on air quality. The Proposed Project will also contribute to reducing emissions associated with fossil fuel-based electricity generation, resulting in positive effects on air quality during its operational life.

1.11 Climate

Chapter 11: Climate identifies, describes, and assesses the potential likely 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. Changing climate patterns are linked to increased frequency of extreme weather conditions such as storms, floods and droughts. In addition, warmer weather trends can place pressure on animals and plants that cannot adapt to a rapidly changing environment. Moving away from our reliance on coal, oil and other fossil fuel-driven power plants is essential to reduce emissions of greenhouse gases and combat climate change.

The likely future receiving environment of the Proposed Wind Farm site at the commencement of the construction phase is anticipated to reflect a net greenhouse-gas source at commencement of construction and will remain materially comparable to the existing climate baseline against which the Proposed Project is assessed. With regard future environment trends, continued natural revegetation, ongoing site management, environmental monitoring, and decommissioning works and implementation of the Draft Rehabilitation Plans are anticipated to facilitate the progressive rehabilitation of peatland across the Proposed Wind Farm site. These activities are anticipated to regenerate the Proposed Wind Farm site as a carbon store and contribute to the reduction of greenhouse gas emissions at the national level through the increased carbon sequestration potential projected for the Proposed Wind Farm site.

The Peatland Code carbon calculator was used to assess the emission reduction potential of the Proposed Wind Farm site under the requirements of the IPC Licence (P0503-01). The carbon sequestration loss potential resulting from the Proposed Project permanent infrastructure footprint has been calculated for both the construction and operational phase of the Proposed Project, against a detailed set of assumptions. The Peatland Code carbon assessment has been utilised to determine the emission reductions per year from the start of IPC required rehabilitation as outlined in the Draft Rehabilitation Plans across the 35-year operational life of the Proposed Wind Farm.

Based on the area of the 14-no. Allen Bog Group bogs which form the Proposed Wind Farm site (i.e., 5,139ha) total emission reductions have been determined to be 2,158,380 tCO2eq over the operational lifetime of the Proposed Wind Farm (i.e., 0-35 years) in the absence of the Proposed Project; annualised this equates to 61,668 tCO2eq. The area of the Proposed Wind Farm site assumed to actively sequester carbon is reduced by 152ha during the operational phase and 220ha during the construction phase. Once the area of the Proposed Project permanent infrastructure footprint (152ha) is removed from the total potential carbon sequestration area, approximately 97% of the Proposed Wind Farm site remains available for rehabilitation, this area has the potential to result in approximately 59,844tCO_2eq of carbon savings per annum over the 35 year operational life of the Proposed Wind Farm. Once the area of the Proposed Project construction footprint (i.e., 220ha) is removed from the total potential carbon sequestration area, approximately 96% of the Proposed Wind Farm site remains available for rehabilitation, this area has the potential to result in approximately 59,028tCO_2eq of carbon savings per annum over 35 year operational life of the Proposed Wind Farm.

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.

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 TII Carbon Assessment Tool. 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 along dedicated haul routes and installation of these materials during a construction phase, and the subsequent replacement, removal, and disposal of these materials upon decommissioning.

The full life cycle and embodied carbon of the Proposed Turbines have been taken account of in the Macauley Institute model. The emissions associated with the embodied carbon, along with the construction phase transport movements of the ancillary infrastructure and materials required for the construction of the Proposed Project are considered using the TII Carbon Tool (TII, 2022). The TII Carbon Tool is customised for road and light rail projects in Ireland, using emission factors from recognised sources during the construction, maintenance and operation of TII projects in Ireland.

The worksheet models and online tools calculate that the Proposed Project will give rise to 949,630 tCO_2eq losses over the construction, operation, and decommissioning phase of the Proposed Project. Of this total figure, the losses due to the life of the Proposed Turbines directly account for 279,353 tCO_2eq, or 29%. Losses due to backup account for 221,144 tCO_2eq, or 23%. Losses from reduced carbon fixing potential accounts for 4,304 tCO_2eq, or 0.5%. Losses from soil organic matter, i.e., CO_2 loss from removed and drained peat, will equate to 69,923 tCO_2eq, or 7%. Losses due to embodied carbon accounts for 344,715 tCO_2eq, or 36% which is calculated based on the types of materials available in the TII Carbon Tool, and losses due to construction phase transport emissions accounts for 3,314 tCO_2eq, or 0.4% based on the assumption that material will be imported only along the specified routes. Losses due to clear-felled forestry equates to 26,877 tCO_2eq or 2.8%. In completion of these calculations a number of assumptions have been made under theoretical precautionary conditions all of which are detailed in Appendix 11-2 Carbon Calculations.

The calculation for carbon savings outlines that 146,857 tonnes of carbon dioxide will be displaced per annum from the largely carbon-based traditional energy mix by the Proposed Wind Farm. Over the proposed 35-year lifetime of the development, therefore **5,193,995** tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation**.** The 949,630 tonnes of CO_2 that will be lost to the atmosphere due to changes in soil and ground conditions and due to the construction and operation of the Proposed Project will be offset by the Proposed Wind Farm in approximately **77** months (6.4 years) of operation. Furthermore, the loss of carbon sequestration potential within the Proposed Wind Farm site arising from the Proposed Project will be offset by **less than 2%** of the carbon savings associated with the Proposed Project's generation of renewable electricity from wind power.

Following construction of the Proposed Project, there will be a permanent, slight, negative effect on Climate as a result of greenhouse gas emissions from construction plant and vehicles, embodied carbon associated with the turbines and construction materials. Operation of the Proposed Project will have a Long-Term, Significant, Positive Effect on climate as a result of reduced greenhouse gas emissions.

As part of the assessment, it is concluded that the principal cumulative climate effects arise during construction through greenhouse gas emissions and reduced carbon sequestration potential. These are expected to be outweighed over the operational lifespan by significant positive cumulative benefits from renewable electricity generation and peatland rehabilitation.

1.12 Noise and Vibration

Chapter 12: Noise and Vibration has been prepared by AWN Consulting (AWN) assesses the potential noise and vibration effects of the Proposed Project during construction, operation and decommissioning. The assessment has been undertaken using applicable Irish guidance and recognised best-practice standards for wind farm noise assessment, including the WEDG 2006, Draft WEDG 2019, ETSU-R-97, the Institute of Acoustics Good Practice Guide and the recently published Assessment and Rating of Wind Turbine Noise (ARWTN, 2026).

The surrounding area is predominantly rural in character, with existing noise sources including local road traffic, agricultural activities, wind-generated vegetation noise and typical rural community activity. Background noise monitoring was undertaken at ten representative locations surrounding the Proposed Wind Farm. The measured data were analysed alongside site wind-speed measurements and used to derive appropriate operational noise limits for nearby noise-sensitive locations. No significant sources of vibration were identified during the baseline surveys.

At the commencement of the construction phase the likely future receiving environment will reflect the continued establishment and maturation of natural revegetation in suitable areas, in combination with the continuation of site management, decommissioning works, and environmental monitoring under IPC Licence. These changes relate primarily to ground-level conditions and would not introduce sources of noise or vibration capable of affecting the noise environment. Furthermore, it is not anticipated that new developments would materially alter future noise or vibration trends at the Proposed Wind Farm site.

Temporary construction noise may arise from turbine foundation works, hardstand and access-track construction, substations, peat and spoil management activities, enhancement and offsetting works, underground cabling installation and construction traffic. Construction noise levels associated with the majority of activities are predicted to remain below the adopted construction noise thresholds at nearby properties. Some short-term increases in noise may occur during progressive works such as Proposed Grid Connection underground electrical cable route installation; however, these activities will move along the Proposed Grid Connection underground electrical cable route, and the highest noise levels are expected to occur for only brief periods at any individual property. Construction traffic will increase traffic volumes on sections of the local road network, but overall construction noise levels are predicted to remain within acceptable limits. Construction vibration is expected to remain well below recognised thresholds for structural damage and significant disturbance. Construction noise and vibration effects are therefore assessed as negative, short-term or temporary, and not significant.

During operation, the principal noise sources will be the Proposed Turbines and electrical equipment associated with the Proposed Onsite Substation and Proposed Offsite Substation. Proposed Turbine noise was modelled at surrounding properties using conservative assumptions that favour sound propagation. The cumulative assessment also considered the existing Cloncreen Wind Farm and existing Cushaling Wind Farm. The assessment demonstrates that operational turbine noise will comply with the applicable daytime and night-time noise limits at all assessed properties. While one receptor is predicted to experience elevated cumulative noise levels, these are primarily attributable to the existing Cushaling Wind Farm, with the contribution from the Proposed Wind Farm being negligible. Operational wind turbine noise effects are therefore assessed as negative, not significant, and long-term which is Not Significant.

The predicted operational noise levels from the Proposed Onsite Substation and Proposed Offsite Substation are below the adopted fixed plant noise criterion at the nearest noise sensitive locations. Electrical equipment will be selected and specified to ensure compliance with the applicable noise limits and to avoid significant tonal, impulsive or intermittent characteristics. Operational vibration from the Proposed Turbines, Proposed Onsite Substation and Proposed Offsite Substation is expected to be below human perception thresholds and will not result in significant effects.

Low frequency noise, infrasound, tonality and amplitude modulation were also considered in the assessment. Current best practice guidance indicates that low frequency noise, infrasound and operational vibration from modern wind turbines do not require separate assessment, as they are adequately controlled through the standard wind turbine noise assessment methodology or are below perceptible levels at nearby properties. Should a complaint relating to excessive amplitude modulation or tonal noise arise during operation, the operator will investigate the matter using recognised assessment methods and implement engineering controls, operational changes or turbine curtailment where necessary.

Best practice noise and vibration controls will be incorporated into the construction contract, including appropriate working hours, maintenance of plant and equipment, careful management of construction activities and communication with local residents. Prior to commissioning, a Noise Compliance Monitoring Programme will be agreed with the planning authority. Post-construction monitoring will verify compliance with operational noise limits and corrective measures will be implemented if required. A formal noise complaints procedure will also be maintained throughout the operational life of the development, and this procedure is included as Appendix 12-6.

At the end of the operational life of the Proposed Wind Farm, decommissioning will involve removal of the turbines, meteorological masts and other above ground wind farm infrastructure. Similar plant and equipment to those used during construction will be required; however, overall activity levels will be lower. Decommissioning noise and vibration effects are therefore expected to be negative, not significant, short term which is Not Significant.

Overall, the assessment concludes that the Proposed Project will not result in significant residual noise or vibration effects. Construction and decommissioning effects will be temporary and controlled through best practice measures. During operation, noise from the Proposed Turbines, Proposed Onsite Substation and Proposed Offsite Substation will comply with the applicable noise criteria, while operational vibration levels will remain negligible. Compliance monitoring and a complaints management procedure will provide ongoing verification and control throughout the operational phase.

1.13 Landscape and Visual

Chapter 13: 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, Chapter 13 focuses on the Proposed Turbines, the Proposed Onsite Substation and the Proposed Offsite Substation. Chapter 13 describes the baseline landscape and assesses the direct effects on the landscape of the Proposed Wind Farm. It also assesses effects on landscape character, 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 20km from the Proposed Turbines. Visual effects were determined from information gathered during multiple site visits, Zone of Theoretical Visibility (ZTV) mapping, photomontages and photowires.

The Proposed Wind Farm is predominantly located within a large-scale, flat landscape of former industrial peatlands, which has been substantially modified by historic peat extraction, drainage and forestry. The Proposed Wind Farm has little to no recreational value and comprises predominantly degraded cutover peatland with an industrial character and limited scenic quality. It is located within Kildare County Development Plan (KCDP) LCA 04 – Bog of Allen and the Offaly LCA. This area is designated as 'Open for Consideration' to wind energy development in the KCDP and 'Acceptable in Principle' in the Offaly County Development Plan (OCDP). The Proposed Wind Farm is not located within any highly sensitive landscape designations. However, a small portion of an esker designated as an Area of High Amenity in the OCDP extends into the north-western extent of the Project Site. A key focus of the Landscape and Visual Impact Assessment (LVIA) in Chapter 13 is the effect on sensitive landscape receptors in the surrounding landscape. These include the Grand Canal, the Curragh and Environs, Croghan Hill, the Chair of Kildare, Lodge Bog Nature Reserve, the Lullymore East Ecclesiastic Site, the Peatland & Nature Corridor and Dún Ailinne.

The future receiving environment at the Proposed Wind Farm site at the commencement of the construction phase will remain materially comparable to the existing baseline environment with respect to landscape and visual receptors. Continued natural revegetation may result in localised changes to vegetation cover and reduce visibility into the Proposed Wind Farm site.

Continued natural revegetation, ongoing site management, decommissioning works, and environmental monitoring, and implementation of the targeted rehabilitation measures outlined in the Draft Rehabilitation Plans are anticipated to result in a more vegetated landscape character than the predominantly bare cutaway peatland. These future environmental trends are anticipated to progressively alter the landscape character. Having regard to the flat nature of the receiving landscape and the existing boundary vegetation surrounding the Proposed Wind Farm site, these changes are not anticipated to materially alter the visual baseline experienced by ground-based receptors in the surrounding landscape.

The Proposed Project has undergone an extensive iterative design process since 2020, informed by LVIA surveys, ZTV mapping and photomontages, to avoid and reduce potential landscape and visual effects. Key design measures include the removal of turbines from previous layouts, including those in Lodge Bog which appeared visually disconnected from the rest of the Proposed Turbines. They also include the use of two turbine tip heights, with lower 200m turbines around the outer perimeter and 220m turbines towards the centre. The turbine layout is visually coherent, in line with the guidance for Flat Peatland landscapes in the Wind Energy Development Guidelines 2006 (WEDG 2006) and Draft WEDG 2019. In addition, the Proposed Turbines adhere to the recommended four-times-tip-height setback from residential receptors and are appropriately set back from the Grand Canal.

Site visits, ZTV mapping, a Route Screening Analysis and photomontages determined that visibility of the Proposed Turbines will be very limited beyond 5km from the Proposed Wind Farm. The Proposed Turbines are sited at low base elevation within an extensively flat landscape, surrounded by highly vegetated agricultural fields. This largely restricts visibility in the wider landscape, with more distant views generally limited to localised elevated vantage points.

The landscape value of the Proposed Wind Farm site is deemed to be 'Low/Medium', with a 'Low' sensitivity to wind energy development. The location of the Proposed Offsite Substation has a 'Low' landscape value and sensitivity. Residual effects on the landscape of the Project Site itself are deemed to be 'Long-term', 'Negative' and 'Moderate', and will be localised to the footprint of the Proposed Project. On balance, these effects are not considered significant.

The greatest residual landscape effects will occur within KCDP LCA 04 – Bog of Allen and the Offaly LCA, where a 'Long-term', 'Negative', 'Moderate' effect is deemed to arise. Effects on all other LCAs will be 'Not Significant' or 'Slight'. This includes KCDP LCA 03 – River Liffey Valley and Plains, where the Proposed Offsite Substation is located. The Proposed Project will not physically alter any of the sensitive landscape receptors assessed. Residual effects on their character range from 'Not Significant' to 'Moderate'. On balance, no significant landscape effects are deemed to arise.

The assessment of visual effects was informed by photomontages, a Route Screening Analysis and site visits. Photomontages were used to assess visual effects from 27 no. viewpoint locations. No 'Profound' or 'Very Significant' effects occurred at any viewpoint. Residual 'Significant' effects occurred at 4 no. viewpoint locations. Two of these, VP01 (Crosspatrick Hill) and VP12 (Boston Hill), represent elevated hilltop views at the Chair of Kildare / Six Hills. The other two, VP05 (Ballydermot) and VP15 (Edenderry), represent nearby residential receptors and an elevated vantage point within Edenderry. All other viewpoints were assessed as 'Moderate' (8), 'Slight' (12) and 'Not Significant' (3). These significant effects occur for a small number of receptors within small geographic areas and are not representative of effects across the overall study area.

Residential receptors were a key consideration throughout the design process. All Proposed Turbines exceed the minimum 500m setback from residential properties set out in the WEDG 2006. They also adhere to the four-times-tip-height setback for residential visual amenity in the Draft WEDG 2019. Visual effects on residential receptors range from 'Slight' to 'Significant' for a small number of residences in close proximity (VP05 and VP15). The flat landscape and the mature boundary vegetation around many properties substantially restrict visibility. Effects are further mitigated by the two turbine tip heights and the removal of turbines from Lodge Bog.

The Proposed Onsite Substation and Proposed Offsite Substation, which form part of the Proposed Grid Connection, will give rise to highly localised visual effects ranging from 'Slight' to 'Moderate'. On balance, these effects are not considered significant.

Cumulative landscape and visual effects are most likely to arise with other existing, permitted and proposed wind energy developments. The greatest cumulative landscape effects will occur within KCDP LCA 04 – Bog of Allen. Cumulative visual effects are mostly limited to elevated vantage points. The large-scale, flat and expansive landscape has the capacity to accommodate the Proposed Wind Farm as well as other wind energy developments. Cumulative landscape effects with the proposed Eastern and Midlands Region Water Supply Project will be localised to where it crosses the Project Site, and no cumulative visual effects are likely.

The LVIA in Chapter 13 determined that the Proposed Wind Farm is located within a landscape that can effectively accommodate a wind energy development of this scale. This is due to the large-scale and expansive nature of the receiving environment and the mitigation measures embedded in the design of the Proposed Project. The four 'Significant' residual visual effects are localised and are not representative of effects throughout the overall study area. Overall, the landscape of the Project Site is capable of effectively accommodating the Proposed Project.

1.14 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 Project Site, any proposed infrastructure therein and proposed ecological enhancement areas.

At the commencement of the construction phase the likely future receiving environment will reflect the continued establishment and maturation of natural revegetation in suitable areas, in combination with the continuation of site management, decommissioning works, and environmental monitoring under IPC Licence. These changes relate primarily to ground-level conditions and are not anticipated to result in material alteration to the known cultural heritage resource identified in the baseline assessment and do not, in themselves, involve ground disturbance or excavation with the potential to affect subsurface archaeological remains. Furthermore, it is not anticipated that implementation of targeted rehabilitation would materially alter future trends pertaining to cultural heritage receptors at the Proposed Wind Farm site.

Where potential effects have been identified, such as to potential sub-surface archaeology, appropriate mitigation measures have been identified 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. There is only one instance where Proposed Project infrastructure interacts with a recorded monument where the proposed amenity track north-east of T46 crosses the line of Class 1 togher KD012-002001- which extends from higher ground in Ticknevin townland to the north and Derrybrennan townland to the south. Archaeological monitoring of ground works associated with the construction of the amenity track will be undertaken. The monitoring will be carried out under licence from the National Monuments Service (NMS). Should archaeological finds, features or deposits be uncovered during the monitoring further mitigation such as preservation in situ or preservation by record (excavation) may be required and will be carried out in consultation with the NMS.

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 of the Proposed Turbines 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 5km and 15km. 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.

One UNESCO WHS Tentative List site is located within 20km of the nearest Proposed Turbines and comprises Dún Ailinne. The ZTV demonstrates theoretical visibility of the majority of Proposed Turbines from Dún Ailinne, apart from its south-eastern extent where there is no theoretical visibility. As part of the assessment of potential effects to Dún Ailinne as part of the Royal Sites of Ireland UNESCO WHS Tentative site, its potential relationship or inter connectivity with other monuments or sites in the surrounding landscape was also considered, i.e., the Curragh, the monastic site at Old Kilcullen, and the Hill of Allen. The Proposed Turbines do not lie between Dún Ailinne and the Curragh, between Dún Ailinne and the monastic site at Old Kilcullen, or between Dún Ailinne and the Hill of Allen. Therefore, their connectivity and intervisibility will not be affected by the introduction of same.

An assessment of potential cumulative effects was also undertaken taking into consideration other planning applications, the historical industrial peat extraction within the Allen Bog Group, 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.

1.15 Material Assets

1.15.1 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 Project Site resulting from the additional traffic movements that will be generated by the Proposed Project during the construction, operational and decommissioning phases.

The Project Site is currently served by a number of existing tracks and access roads due to its previous use as a commercial bog. It is proposed that the Project Site will be accessed via 7 no. Access Junctions and the associated site entrances. 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 and monitoring use (operational phase), and removal of Proposed Wind Farm infrastructure (decommissioning phase).

Due to the nature of the Proposed Project, all proposed works will be local to the Project Site and as such, the construction phase will utilise 7 no. access junctions. Of the 7 no. access junctions there are 12 no. associated site entrances proposed to be used during the construction, operational, and decommissioning phases. Of these site entrances, 4 no. are existing access junctions that will be upgraded, and 8 no. are proposed new site entrances.

The assessment also considers the likely future receiving environment within the Project Site at the time of the commencement of construction. The quantum of the materials, HGV trips and additional traffic volumes that will be generated on the roads during the construction phase of the Proposed Project has been modelled between the years 2030 to 2032 inclusive and are considered within the traffic assessment contained in Chapter 15. Future environmental trends, i.e., continuation of natural revegetation, ongoing site management, decommissioning works and environmental monitoring, and implementation of the targeted rehabilitation measures are not anticipated to introduce additional LGVs or HGVs to the area that would affect traffic flows or volumes or alter forecasted traffic and transport related activity. There is therefore no pathway through which these processes could materially alter future trends relating to traffic associated with traffic and transport.

The construction phase is estimated to take approximately 30 to 36 months, and the works can be broken down into three main overlapping phases, 1) civil engineering works: 24 months, 2) electrical works: 27 months, and 3) turbine erection and commissioning: 21 months. The traffic and transport assessment contained in Chapter 15 has utilised a 30-month programme under a precautionary scenario, i.e., assuming the greatest potential volume of traffic over the shortest potential construction phase.

During construction, the Proposed Project will generate traffic associated with workforce travel, delivery of construction materials, concrete, cranes, electrical equipment, turbine components and stone. All crushed stone, hardcore materials and ready-mix concrete that will be required during the construction phase will be sourced from local, appropriately authorised quarries and delivered via the Proposed Construction Haul Routes. For the purposes of assessment within the EIAR, 9 no. existing, authorised quarries, located within 20km of the Project Site were assessed. A preliminary capacity assessment of Proposed Construction Haul Routes was undertaken by Alan Lipscombe Traffic & Transport Consultants Ltd and provided in full in Appendix 15-4. The purpose of this preliminary assessment was to inform the design of the Proposed Project and the selection of the Proposed Construction Haul Routes for the construction phase with consideration of potential impacts on road users and capacity of the road network to facilitate construction of the Proposed Project.

Construction traffic effects have been minimised by prioritising the more suitable delivery routes from the north and west of the Project Site and selecting haul routes that avoid constraints such as the R415

humpback bridges, Kinnegad (R148), the northern approach to Edenderry (R401), the R414 adjacent to the Bog of Allen Nature Centre, and Tullamore town. Through-movements at the Shee Bridge R403 / R414 junction have also been avoided by providing access via an internal crossing at Access Junctions 5 and 6.

For the purposes of assessment, turbine components will be delivered from the Port of Galway. Turbine delivery vehicles will travel along the N6 and M6 to Junction 5 of the M6 (Tullamore/Kilbeggan) with the N52. From here the Proposed Turbine Delivery Route heads south on the N52, bypassing Tullamore to the east. The turbine delivery vehicles will then continue southeast along R420 regional road, before turning northeast travelling along the R402 through Daingean. From this point the Proposed Turbine Delivery Route heads southeast on the L1003 local road before turning left to travel east through the existing Cloncreen Wind Farm to reach the R401 and Access Junction 1, Site Entrance A of the Project Site. These loads are abnormal in size and will be transported under controlled conditions, typically at night and with Garda escort. The assessment concludes that these deliveries may cause temporary local delays, but any disruption will be limited and short-term.

The Proposed Onsite Substation is located in the townland of Allenwood South, Co. Kildare, and will connect to the Proposed Offsite Substation in Killybegs, Co. Kildare via approximately 13.1km of underground 220kV electrical cabling, located primarily within the public road network. The construction of the Proposed Grid Connection underground electrical cabling route will give rise to temporary traffic effects. These effects will result from trenching and duct installation works along sections of the public road network. Traffic management will be in place throughout construction of the Proposed Grid Connection underground electrical cabling route, there are 2 no. traffic management options;

- **Stop & Go** traffic management system – This retains one traffic lane at all times with the flow alternating by direction controlled either manually by site staff, or by temporary traffic signals (Preferred Option).
- **Road closures and diversions –** At locations where there is insufficient room, the road at the point of construction is closed, and the traffic is diverted onto alternative temporary routes.

A detailed survey and design of the Proposed Grid Connection underground electrical cabling route will be prepared prior to construction. The assessment contained within Chapter 15 is based on maintaining traffic flow through Stop & Go traffic management. The precautionary scenario assumes a complete closure of the affected road section and a diversion of all traffic to the proposed diversion route and therefore represents an intentionally conservative assessment. Notwithstanding, works along the Proposed Grid Connection underground electrical cabling route will be progressive and temporary, i.e., no one location will be affected for the full duration of construction.

A Traffic Management Plan (TMP), incorporating all mitigation measures is provided as Appendix 15-2 to the EIAR. The TMP includes measures such as agreed haul routes, controls on delivery times, management of abnormal load deliveries, temporary signage, stakeholder liaison, road condition surveys, wheel washing and other measures to keep roads safe and clean. Specific traffic management arrangements will also be put in place for the underground cabling works and to maintain access to homes, farms and emergency services where reasonably practicable. The TMP will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior to construction works commencing on site.

During the 30-month delivery period within the 36 month construction phase of the Proposed Project, it is forecasted that the additional traffic that will travel on the public road network serving the Project Site, will have a short-term, slight, negative effect, which is Not Significant, on existing road users, following the implementation of the mitigation measures. In the event that road closures are required during the construction of the Proposed Grid Connection underground electrical cabling route, the magnitude of the impacts on these 131 days will increase to moderate.

There will be no significant impacts on the surrounding local road network once the Proposed Project is operational based on an average of approximately 1 to 2 trips made by site staff in and out of each of the proposed 7 Access Junctions made by private car or light goods vehicle, approximately 50 amenity trips in and out of 3 Access Junctions available for amenity car parking by car or light goods vehicle per day, and no regular visits required for the Proposed Grid Connection.

Traffic generated during decommissioning is expected to be lower than during construction, as infrastructure such as foundations, hardstanding areas, access tracks and parts of the electrical infrastructure will remain in place. As a result, decommissioning traffic effects are expected to be temporary, imperceptible and negative, but lower than those occurring during construction.

The cumulative assessment considered the Proposed Project in combination with surrounding wind farms, utility infrastructure, other permitted and proposed developments, and implementation of targeted rehabilitation under IPC Licence. During construction, potential cumulative effects on traffic and transport are primarily associated with overlapping construction programmes, shared haul routes and abnormal load deliveries. The Eastern and Midlands Region Water Supply Project presents the greatest potential for overlapping construction activities, with negative, slight to moderate, short-term cumulative effects anticipated. Other developments are generally expected to result in negative, slight, short-term cumulative effects. Overall, no significant cumulative effects on traffic and transport are anticipated, with appropriate construction scheduling and coordination expected to minimise potential disruption. No significant cumulative effects are anticipated during operation or decommissioning, including in combination with ongoing peatland rehabilitation activities.

Overall, the assessment concludes that the Proposed Project will not result in significant residual effects on traffic and transport. Construction and decommissioning effects will be short-term and appropriately managed through the measures set out in the TMP. During the operational phase, traffic levels will be very low and no significant effects will occur.

1.15.2 Telecommunications

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 there are proposed turbines directly in line with the transmitter radio path.

During the development of any large project that holds the potential to effect telecoms, the developer is responsible for engaging with all relevant telecommunications operators 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.

The likely future receiving environment at commencement of the construction phase will remain materially comparable to the existing baseline environment with respect to telecommunications. Notwithstanding the continued natural revegetation, and implementation of the Draft Rehabilitation Plans, the future environmental trends of the receiving environment for telecommunications will remain materially comparable to the material asset (i.e., telecommunications) conditions as described.

The potential for electromagnetic interference from the Proposed Project may only occur during the operational phase. There are no electromagnetic interference impacts for telecommunications and aviation assets or operations associated with the construction or decommissioning phases of the Proposed Project.

A Telecommunications Impact Assessment (TIA)(Appendix 15-4) was carried out by Ai Bridges. The TIA identified 28 radio links that cross over/through or are in close proximity to the Project Site. In the

absence of mitigation, the Proposed Project would interfere with 3 no. existing Virgin Media telecommunications links, resulting in a long-term, moderate, negative impact. ESB Networks has identified an exclusion zone around its radio communications network. Although no impacts were found on the links it identified in 2021, there is a precautionary potential for a similar impact should new links have since been established within that zone.

The TIA provides an assessment of several mitigation solutions on the Virgin Media links. After consultation with Virgin Media it was decided to mitigate the impacts to the Virgin Media network via a relay mast. The location of the relay mast was carefully selected to consider topography, turbine density and existing wind farm developments. The Proposed Project therefore includes for a telecommunications relay mast in the Proposed Wind Farm site which Appendix 15-4 has demonstrated is a suitable mitigation measure to ensure no significant impact on the radio links will occur. Prior to construction, the Applicant will also engage with Virgin Media to confirm the use of the proposed relay mast and with ESB Networks to identify any new links, agreeing and implementing any necessary mitigation before the relevant turbines are erected. In addition, 2RN will prepare a standard protocol document, which the developer will sign before construction.

Overall, following the implementation of the proposed mitigation measures, no significant residual effects on telecommunications are anticipated during the any phase of the Proposed Project. The cumulative assessment considered the potential for the Proposed Project to give rise to telecommunications interference in combination with other existing, permitted and proposed developments. Taking account of the proposed mitigation measures, no significant cumulative effects on telecommunications are anticipated.

1.15.3 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 existing services and utilities where possible, thereby minimising potential interactions with existing infrastructure.

The likely future receiving environment at commencement of the construction phase will remain materially comparable to the existing baseline environment with respect to other material assets. Notwithstanding the continued natural revegetation, and implementation of the Draft Rehabilitation Plans, the future environmental trends of the receiving environment for other material assets will remain materially comparable to the material asset (i.e., built services) conditions as described.

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.

During construction, potential impacts on other material assets are primarily associated with works in proximity to existing electricity, water and gas infrastructure, the crossing of the Grand Canal and construction waste generation. These include underground electrical cabling works within the public road network and modifications to existing electricity transmission infrastructure associated with the Proposed Grid Connection. Appropriate consultation with utility providers, site investigations and construction management measures will be undertaken to avoid or minimise potential effects on existing services and utilities. Following implementation of the proposed mitigation measures, no significant adverse residual effects on other material assets are anticipated during construction.

A Resource and 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. The RWMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Project. Disposal of waste will be a last resort.

During operation, the Proposed Project will have a significant, positive, long-term effect on electricity supply, contributing approximately 322 MW of renewable electricity to the national grid. No significant adverse effects on other material assets are anticipated, with residual effects generally assessed as negative, imperceptible and Not Significant. Impacts during decommissioning are expected to be similar to, but less than, those arising during construction, with no significant adverse effects anticipated.

The cumulative assessment considered the Proposed Project in combination with other existing, permitted and proposed developments. No significant adverse cumulative effects on other material assets are anticipated during any phase of the Proposed Project. Positive cumulative effects on electricity supply are anticipated during operation in combination with other renewable energy developments.

1.16 Aviation

Chapter 16: Aviation identifies, describes, and assesses the potential likely significant direct and indirect effects on aviation (military and civil) capabilities and safety and aviation assets, including restricted airspace, military low flying training areas, radar systems and aerodrome safeguarding. Specialist reports were prepared by Cyrrus Ltd, Ai Bridges, and Sagentia Aviation. The assessment was informed by consultation with the Department of Defence, Irish Aviation Authority and other relevant aviation stakeholders.

The likely future receiving environment at commencement of the construction phase will remain materially comparable to the existing baseline environment with respect to aviation. Notwithstanding the continued natural revegetation, and implementation of the Draft Rehabilitation Plans, the future environmental trends of the receiving environment for aviation will remain materially comparable to the baseline conditions as described.

During the construction phase there is no potential for penetration of restricted airspace EI-R16 or MOA4 through temporary crane usage or for interference with PSR, SSR, or meteorological radar systems. Constructed turbines will not penetrate restricted airspace EI-R16 or MOA4 and impacts on radar require movement. During the construction phase the only movement on site at a height to impact on radar will be the use of cranes as the Proposed Turbines will only move following energisation in the operational phase.

The Proposed Wind Farm is located within Military Operating Area (MOA) 4 and beneath restricted airspace EI-R16 (Sectors C and H). While the Proposed Turbines will form part of the existing aviation obstacle environment, the maximum turbine tip height is approximately 968 feet above mean sea level and the Proposed Turbines will not penetrate the restricted EI-R16 or MOA4 airspace. Furthermore, Chapter 16 assesses the potential effects on aircraft operating below the restricted airspace, having regard to minimum obstacle clearance requirements and established aviation procedures, Visual Flight Rules (VFR) or Instrument Flights Rules (IFR) would be in place to facilitate safe aviation activities below restricted airspace. Following implementation of the proposed notification and mitigation measures, residual effects will be negative, imperceptible, and short-term, which is Not Significant.

The Proposed Turbines are also located within the Edenderry/Allenwood/Rathangan Low Flying Training Area (LFTA), which has been identified through consultation as being used by the Irish Air Corps for low-level helicopter training. Due to the unknowns associated with the exact activities taking place within the LFTA an associated impact cannot be confirmed. Furthermore, the Edenderry/Allenwood/Rathangan LFTA cannot be mitigated directly (assuming that the activities do occur in the area of the Proposed Turbines) and therefore an alternative site will be required for this activity. The Applicant are committed to continuing engagement with the DoD/Irish Air Corps to facilitate an alternative location for LFTAs if feasible. If an alternative area is confirmed there will be no impact on the Edenderry/Allenwood/Rathangan LFTA. Should an agreement be made with the DoD to move the low flying area to an alternative suitable area, residual effects are considered to be reduced to an unlikely, permanent imperceptible negative effect.

Dedicated assessments of primary surveillance radar, secondary surveillance radar, meteorological radar and aerodrome safeguarding, including a detailed Instrument Flight Procedures Safeguarding Assessment for Casement Aerodrome, were carried out for the operational phase. These assessments concluded that the Proposed Project will not result in significant effects on radar systems or aerodrome safeguarding. Mitigation and safeguarding measures include engagement with the relevant radar operators, notification of turbine locations and dimensions, and agreement with the Irish Aviation Authority of an appropriate aeronautical obstacle warning lighting scheme prior to operational. Following implementation of the proposed notification and mitigation measures, residual effects will be negative, imperceptible, and long-term, which is Not Significant.

The cumulative assessment considered other existing, permitted and proposed wind farms within 25km of the Proposed Turbines. While the cumulative presence of turbines has the potential to increase the aviation obstacle environment, the assessment concluded that cumulative effects on aviation, radar and aerodrome safeguarding would be long-term, imperceptible and not significant. A significant cumulative effect on the Edenderry/Allenwood/Rathangan Low Flying Training Area is identified under the precautionary scenario in the absence of an alternative suitable location. The Applicant will engage with the Department of Defence and Irish Air Corp ahead of construction to facilitate an alternative location for LFTAs within their landbank. If an alternative area is confirmed there will be no impact on the Edenderry/Allenwood/Rathangan LFTA.

1.17 Major Accidents and Natural Disasters

Chapter 17: Major Accidents and Natural Disasters of the EIAR describes the likely significant effects on the environment arising from the vulnerability of the Proposed Project to risks of major accidents and/or natural disasters.

Major accidents or natural disasters are hazards which have the potential to impact the Proposed Project and consequently have potential impacts on the environment. This assessment also identifies the potential of the Proposed Project to impact major accidents or natural disasters. 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 disaster considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., population and human health, land and soil (peat stability), water, air quality, climate, noise and vibration, material assets (including traffic and transport), aviation and landscape.

A desk-study has been completed to establish the baseline environment for which the proposed risk assessment is being carried out. This will influence both the likelihood and the impact of a major accident or natural disaster. Local and regional context has been established prior to undertaking the risk assessment to develop an understanding of the vulnerability and resilience of the area to emergency situations. Chapter 17 outlines the baseline environment of the Project 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 and Kildare Local Authority Climate Action Plan 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.

The likely future receiving environment at commencement of the construction phase will remain materially comparable to the existing baseline environment with respect to major accidents and natural disasters. Notwithstanding the continued natural revegetation, and implementation of the Draft Rehabilitation Plans, the future environmental trends of the receiving environment for major accidents and natural disasters will remain materially comparable to the major accidents and natural disasters conditions as described and do not require separate consideration elsewhere in the major accidents and natural disasters impact assessment.

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 was identified as, ‘Contamination’ ‘Major Fire’ and ‘Aviation’ during the construction, operational and decommissioning phases.

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.

The risk of a major accident and/or disaster during the construction of the Proposed Project is considered 'low' in accordance with the '*Guide to Risk Assessment in Major Emergency Management*' (DoEHLG, 2024).

It is considered that when the mitigation and monitoring measures outlined in the Construction and Environmental Management Plan (CEMP), Appendix 4-4, are implemented and adhered to there will not be significant residual effect(s) associated with the construction, operation and decommissioning of the Proposed Project. Similarly, the cumulative assessment identifies no significant increase in the vulnerability of the Proposed Project or surrounding areas to major accidents or natural disasters, subject to implementation of the identified mitigation and safety measures.

1.18 Interactions of the Foregoing

Chapter 18 Interaction of the Foregoing identifies the potential significant environmental effects that may occur in terms of Population & Human Health, Biodiversity, Birds, Land, Soils & Geology, Water, Air Quality, Climate, Noise & Vibration, Landscape & Visual, Cultural Heritage, Material Assets, Aviation and Major Accidents & 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 outlined in the main EIAR. 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. The interaction assessment does not reassess the receiving environment or the individual environmental effects identified within the preceding EIAR chapters; rather, it considers whether interactions between those assessed effects give rise to any additional or materially different environmental effects.

A matrix is presented in Chapter 18 Interactions of the Foregoing 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 5–17) of the EIAR.

1.19 Schedule of Mitigation Measures

All mitigation and monitoring measures relating to the pre-commencement, construction, operational and decommissioning phases of the Proposed Project are set out in the relevant chapters (Chapters 5–17) of the EIAR.

All mitigation which shall be implemented during the various phases of the Proposed Project are presented in Table 19-1 of Chapter 19: Schedule of Mitigation Measures. The mitigation measures have been grouped together according to their EIAR Chapter and Proposed Project phase and are presented under the following headings:

- Pre-Commencement Phase;
- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

The mitigation proposals in the tabular format in Chapter 19 provides an easy-to-audit list that can be reviewed and reported on during each phase of the Proposed Project. 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 this EIAR. 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.

1.20 Summary of Significance of Effects

EIA classification tables summarising the outcomes of the impact assessments at all phases of the Proposed Project are included as Chapter 20 to the EIAR. Providing these tables compiled in Chapter 20 provides a comprehensive and easy-to-audit compilation of the significance of effects related to the Proposed Project.