

17. INTERACTION OF THE FOREGOING

17.1 Introduction

The preceding Chapters 5 to 16 of this rEIAR identify the potential significant environmental effects that may have occurred in terms of Population and Human Health, Biodiversity, Ornithology, Land, Soils and Geology, Hydrology and hydrogeology, Air Quality, Climate, Noise and Vibration, Cultural Heritage Landscape and Visual, Material Assets (Roads and Traffic, Utilities and Waste Management), and Vulnerability to/from Major Accidents and Natural Disasters as a result of the Existing Development as described in Chapter 4 of this rEIAR. Mitigation and best practice measures implemented during the construction of the Existing Development are detailed within each chapter and the 2019 Construction Environment Management Plan (CEMP).

This chapter identifies, describes, and assesses the interactions between the various environmental factors considered within the preceding chapters. Environmental impacts do not occur in isolation; instead, they can combine in ways that may exacerbate or diminish the overall significance of effects. The assessment draws on the findings of chapters 5 to 16 and assesses whether any combined effects could have result in additional or more significant impacts than those identified in each chapter.

As detailed in Section 1.1.1 in Chapter 1 of this rEIAR, the various development components are described and assessed using the following references: 'Subject Development', 'Existing Development', 'Prospective Development', 'Permitted Development', 'Site', 'Wind Farm Site', 'Grid Connection Site', 'BMEP Site', 'Grid Connection', 'November 2020 Peat Slide', '2017 EIAR' and 'proposed turbines' or 'proposed turbine locations'. A detailed description of the Subject Development is provided in Chapter 4 of this rEIAR.

17.1.1 Statement of Authority

This section of the rEIAR has been prepared by Thomas Blackwell with input from Emma Prior. It has been reviewed by Sean Creedon.

Thomas Blackwell – Senior Environmental Consultant

Thomas Blackwell is a Senior Environmental Consultant in MKO. Thomas has over 20 years of progressive experience in environmental consulting. Thomas' professional experience includes managing Environmental Impact Assessment Reports, environmental permitting, environmental due diligence and compliance, and general environmental assessment on behalf of clients in the renewable energy, mining, solid waste management, residential and commercial development, and public sectors. Thomas' multi-sector experience working on projects in multiple jurisdictions has allowed him to develop a wealth of knowledge and understanding of the challenges involved in guiding complex project through the regulatory and planning process. Thomas also has experience in habitat restoration design and implementation for impact mitigation and offsetting. Thomas holds a Bachelor of Arts Degree in Natural Science from Trinity College Dublin, and a Master of Science Degree in Environmental Resource Management from University College Dublin and is a Professional Wetland Scientist.

Emma Prior – Environmental Scientist

Emma Prior is an Environmental Scientist with MKO since September 2024. Emma holds a first-class Honours BA (Hons) in Geography & Human Development from Dublin City University and a Master of Science Degree in Environmental Resource Management from University College Dublin achieving a first-class honours Thesis. Emma's key strengths and areas of expertise are in environmental

geography, field research, communication, and teamwork. Emma is skilled in report writing and QGIS mapping, with experience across a diverse range of projects including wind farms, wastewater treatment plants, quarries, and residential developments. Since joining MKO, Emma has been involved in the preparation of Environmental Impact Assessment (EIA) Scoping Reports, EIA Report Chapters, Construction Environmental Management Plans and Environmental fieldwork including surface and groundwater monitoring.

Sean Creedon – Associate Director

Sean Creedon is an Associate Director in the Environment Team at MKO. He leads a team of highly skilled environmental professionals working on EIAR for large-and medium scale Renewable Energy infrastructure. Sean has directed and overseen multiple renewable energy projects across wind, solar, battery, biogas and hydrogen as well as a range of thermal and other energy related developments. He has worked on the planning and environmental impact elements within all stages of wind farm project delivery. Sean's professional experience includes the development and management of a portfolio of wind farm developments to the consenting decision. He is a member of the MKO senior management team. Sean has over 24 years' experience in project development and holds an MSc from NUI Galway and a Diploma in Project Management from Institute of Project Management Ireland.

17.1.2 Legislation and Guidance

Interactions are addressed within Article 3 (1) of the EIA Directive as amended by Directive 2014/52/EU which requires that *“the environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*

- a) population and human health;*
- b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
- c) land, soil, water, air and climate;*
- d) material assets, cultural heritage and the landscape;*
- e) the interaction between the factors referred to in points (a) to (d).”*

Also, pursuant to section 2(1)(b) of the Roads Act 1993 (as amended) the EIAR (or EIS as then was under the Roads Act) is *“including an examination, analysis and evaluation by An Bord Pleanála (now An Coimisiún Pleanála) under section 51(5) in order to identify, describe and assess the direct and indirect significant effects of the particular proposed road development, including significant effects derived from the vulnerability of the proposed road development to risks of major accidents and disasters relevant to it, on*

- (i) population and human health,*
- (ii) biodiversity, with particular attention to species and habitats protected under Council Directive 92/43/EEC of 21 May 1992 and Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009,*
- (iii) land, soil, water, air and climate,*
- (iv) material assets, cultural heritage and the landscape, and*
- (v) the interaction between the factors mentioned in subparagraphs (i) to (iv);”*

The interaction of effects within the Existing Development in respect to each of the environmental factors, listed in Article 3(1) of the EIA Directive, have been identified and addressed in detail in the respective chapters in this rEIAR. This chapter presents an assessment of the interaction (inter-relationship) of impacts between the various environmental factors.

When a development has the potential for significant environmental effects, there is also possibility for interaction between these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect.

A matrix is presented in Table 17-1 below to identify potential interactions between the various aspects of the environment already assessed in this rEIAR. The matrix highlights the occurrence of potential positive or negative effects. The matrix is symmetric, with each environmental component addressed in the chapters of this rEIAR being placed on both axes of a matrix, and therefore, each potential interaction is identified twice. In Section 17.2 below, the potential interactions between each environmental component have been discussed in order of the relevant chapters of the rEIAR. Once a potential interaction between two environmental components has been discussed, for example, Population & Human Health and Lands, Soils and Geology, the interaction will not be discussed again in the following relevant section, therefore there is no Land, Soils and Geology and Population & Human Health section.

Table 17-1 Interaction Matrix: Potential for Interacting Impacts

	Population, Human Health	Biodiversity	Ornithology	Land, Soils & Geology	Hydrology & Hydrogeology	Air Quality	Climate	Noise & Vibration	Landscape and Visual	Cultural Heritage	Material Assets	Major Accidents & Disasters
Population, Human Health												
Biodiversity												
Ornithology												
Land, Soils & Geology												
Hydrology & Hydrogeology												
Air Quality												
Climate												
Noise & Vibration												
Landscape & Visual												
Cultural Heritage												
Material Assets												
Major Accidents & Disasters												

Legend	Neutral Effect	Positive Effect	Negative Effect	No Interacting Effect
--------	----------------	-----------------	-----------------	-----------------------

The potential for interaction of effects has been assessed throughout this rEIAR as part of the Impact Assessment process. This rEIAR was collated by MKO as an integrated report of findings from the impact assessment process, by all relevant experts, and effects that potentially interact have been assessed in detail in the individual chapters of the rEIAR and summarised in Section 17.2 below.

17.2 Impact Interactions

17.2.1 Population and Human Health

The assessment of interacting effects between the November 2020 Peat Slide event and population and human health is discussed in section 17.2.6.

Population and Human Health with Land, Soils and Geology

Potential health effects arise mainly through the potential for soil and ground contamination. The Wind Farm Site and Grid Connection Site are not recognised as a source of pollution (e.g. they are not waste management sites, or a chemical plant sites), and there has been no record of hydrocarbons spillages or leaks associated with the Existing Development. Hydrocarbons were used onsite during construction; however, the volumes were small in the context of the scale of the Existing Development. All hydrocarbons were handled and stored in accordance with best practice mitigation measures. With the implementation of these measures as detailed in section 8.5.2.3 of chapter 8 Land, Soil and Geology and the 2019 Construction and Environmental Management Plan (CEMP) (Appendix 4-4), the residual interacting effects associated with soil or ground contamination during the construction phase and subsequent health effects were short term, Negative Imperceptible and Not Significant.

Population and Human Health with Hydrology & Hydrogeology

There are no mapped public or group water scheme groundwater protection zones in the area of the Wind Farm Site and there are no private wells located in close proximity to the Existing Development. Notwithstanding this, the Existing Development design and mitigation measures ensure that the potential for effects on the hydrogeological have not been, and will not be, significant. The Lough Mourne surface water abstraction is located within the Wind Farm Site. The design and mitigation measures have ensured that no significant effects have, or will occur, on the water environment. As such, the residual interacting effects associated with water quality contamination during the construction phase and subsequent health effects were short term, Negative, imperceptible and Not Significant.

Flooding of property can cause inundation with contaminated flood water. Flood waters can carry waterborne disease and contamination/effluent. Exposure to such flood waters can cause temporary health issues. A detailed Flood Risk Assessment (Appendix 9-1) has shown that the risk of the Existing Development contributing to downstream flooding is very low, as the long-term plan for the Wind Farm Site is to retain and slow down drainage water within the existing site. Onsite drainage control measures will ensure no downstream increase in flood risk.

Population and Human Health with Air Quality Climate

According to the Institute of Air Quality Management (2024) *Guidance on the Assessment of Dust from Demolition and Construction*, dust deposition impacts can occur for a distance of 250 m from works areas, but the majority of deposition occurs within the first 50 m (IAQM, 2024). There are no High Sensitivity Receptors located within 250 m of the existing Wind Farm Site constructed elements (access roads, peat storage cells, borrow pits, berms, stilling ponds, substation, internal cabling and ducting etc),

with the nearest occupied dwelling being over 500m away. Dust soiling effects during the construction of these elements are considered short term, negative and imperceptible. There is a total of 42 no. High Sensitivity Receptors within 250m of the Grid Connection construction footprint with the closest being 10m from the footprint. As assessed in chapter 10 Air Quality, the overall risk of dust emissions impacts with no mitigation applied for the major dust generating activities during the construction phase of the grid connection route is Low-Medium. Considering the Grid Connection was constructed in a rolling manner, with dust emissions occurring near a receptor for a brief to temporary period, the dust effects from the construction phase of the Grid Connection and associated interacting effects with Population and Human Health are considered to have been Brief to Temporary, Imperceptible, Negative and Not Significant, with the implementation of the dust control measures detailed in Chapter 10 Air Quality and the 2019 CEMP.

The release of GHG emissions into the atmosphere from the short-term construction phase of the Existing Development had a, imperceptible negative effect on national climate change and global GHG concentrations and continues to do so, as once released, these emissions remain in the atmosphere. When considering these GHG emissions emitted during the construction of the Existing Development within the context of the Electricity Sector Emissions Ceilings Carbon Budget the emissions associated with the Existing Development are Permanent, Negative, Imperceptible and Not Significant and had a Negative Imperceptible effect on Climate Change and consequently, Population and Human Health, which is also Not Significant.

Population and Human Health with Noise & Vibration

As detailed in chapter 12 Noise and Vibration, Noise Sensitive Locations (NSLs) are any occupied dwelling house, hostel, health building or place of worship and may include areas of particular scenic quality or special recreational amenity importance. For the Existing Development, all NSLs in the study area are dwellings. It is important to note that in the case of construction noise in general, once the noise generating activity has ceased, any environmental noise effects also stop, and there is no effect which persists after the noise has stopped. The assessment concludes that the predicted worst case noise level from construction plant and machinery was significantly below the threshold, and with mitigation and best practise measures in place (2019 CEMP section 3.9), the noise and vibration emissions during the construction of the Existing Development are assessed as Negative, Temporary and Not Significant to Slight and therefore interacting effects on Population and Human Health are Not Significant. The noise generated by construction traffic is assessed as Neutral, Temporary, Not Significant. The operational noise from the existing 110kV substation is assessed as Negative, Imperceptible and long-term. Therefore, any interacting effects on Population and Human Health are assessed as Not Significant. Furthermore, there were no noise complaints from NSLs during the construction phase of the Existing Development or since the existing 110kV substation has been in operation.

Population and Human Health, with Landscape and Visual

The construction phase of the Existing Development saw the short term introduction of construction machinery into a landscape already heavily modified by commercial forestry, associated access tracks, agricultural activities. This would have been a short-term, Not Significant, Negative effect on the landscape and a short-term, Not Significant, Negative visual effect for Population, occurring in the immediate setting of the Wind Farm Site only i.e. visual impacts during the construction phase were highly localised to locations along the Wind Farm Site boundary and Grid Connection Site boundary. Therefore, any interacting effects on Population and Human Health are assessed as Not Significant.

Visibility of the operational 110kV Substation is currently limited to long ranging views from the north (including in the protected view towards the Barnesmore Gap, categorised as a 'High' sensitivity receptor), and northwest where the substation buildings and electrical infrastructure appear as a small and distant feature. Visual effects of the majority of other components of the Existing Development are localised to the immediate setting of the Wind Farm Site. Overall, the visual Magnitude of Change by the introduction of the Existing Development is deemed to be 'Negligible' due to the limited visibility

of the substation and no perceptible visibility of any other constructed components. The 'High' sensitivity of the protected view, combined with the highly localised Negligible Magnitude of Change on the landscape, results in Not Significant Permanent visual effects on the Population from a visual amenity perspective.

Road opening construction works along the Grid Connection would have resulted in Temporary Negative effects of Imperceptible Significance. Following the reinstatement of the grid connection trenching, no perceptible landscape or visual effects exist for Population are associated with the Grid Connection as it is all contained within the road network. The Grid Connection does not and will not, interfere with the character of the landscape except in rare and infrequent occasions where maintenance works may be required and are considered Brief to Temporary localised Negative impacts which are Not Significant. Therefore, any interacting effects on Population and Human Health are assessed as Not Significant.

Population and Human Health with Material Assets

A Traffic Management Plan (TMP) was in place for the duration of the construction of the Existing Development which contained various measures to minimise the impacts on local road users. During the laying of the Grid Connection, temporary diversions and stop/go contra-flow systems were required for traffic on the local roads. However, the volume of local traffic impacted was low and residual interacting effects on the local Population during the construction of the Existing Development are considered to have been short term, negative slight and Not Significant.

A detailed TMP was developed in 2019 and implemented to manage traffic associated with the installation of ducting for the Grid Connection. With the implementation of this TMP, the residual interacting effects on local road users/local Population were Temporary to Short-term, Slight, Negative and Not Significant.

There was no potential to impact telecommunications due to the construction or presence of the Existing Development. Following the implementation of the mitigation measures during the construction of the Existing Development, no impacts on electricity or water infrastructure/supply occurred. Furthermore, no reportable incidents involving electricity or infrastructure/ supply were reported. As such, the residual effects on utility infrastructure and supply were short term, imperceptible neutral and therefore the interacting effects on Population from utilities interference are considered to have been short term, Imperceptible Neutral and Not Significant.

17.2.2 Biodiversity and Ornithology

The assessment of interacting effects between the November 2020 Peat Slide event and biodiversity and ornithology is discussed in section 17.2.6.

Biodiversity and Ornithology with Land, Soils and Geology

The removal of forestry and soil, during construction phase of the Existing Development likely resulted in some disturbance of flora and fauna in, at and adjacent to the Existing Development footprint thereby, potentially causing effects on flora and fauna. These potential impacts have been assessed in Chapter 6: Biodiversity, of this rEiAR.

There were permanent, negative but not significant effects on subsoils and soils due to the removal of soil and peat during construction of the Existing Development. The removal of subsoils indirectly removed certain habitats. The main habitat loss was related to conifer plantation, the removal of which did not have a significant effect on biodiversity. Peat storage cells are associated with permanent, imperceptible positive effects on subsoils and soils, due to the relocation, but not destruction of, peat. The cells have since revegetated. As such, the interacting effects between the removal of habitats and the removal of soil due during the construction of the Existing Development is Not Significant.

Biodiversity and Ornithology with Hydrology and Hydrogeology

Onsite activities during the construction phase had the potential to give rise to some water pollution, and consequential indirect effects (such as disturbance and deterioration of habitat quality) on flora and fauna that use that water within the same catchment. However, onsite activities during the construction phase did not result in water pollution. The mitigation measures employed during the construction and resulting impacts have been assessed in Chapter 9: Hydrology and Hydrogeology, of this rEIAR. Both chemical and biological monitoring of water quality during the construction phase and beyond have shown that any impact on water quality and aquatic flora and fauna had at worst, a short term, imperceptible, and negative effect. No ongoing deterioration in water quality downstream of the Existing Development was detected to date. Therefore, the interacting effect between aquatic ecology and water quality are Not Significant.

Biodiversity and Ornithology with Air Quality, Climate

There were no significant negative effects on air quality during the construction phase of the Existing Development; however, the presence of plant machinery generating dust and noxious gases within and around the Existing Development footprint had the potential to be a nuisance to flora and fauna, thereby having a temporary, imperceptible, negative interacting effect on biodiversity, which is Not Significant. The mitigation measures outlined in Chapter 8: of the rEIAR ensured that the potential for negative effects was reduced or eliminated.

The construction of the Existing Development resulted in greenhouse gas (GHG) emissions associated with tree felling and peat soil disturbance, and operation of vehicles and plant. This impact on biodiversity was short-term and slight only, given the quantity of GHGs that were emitted to the atmosphere and were restricted to the duration of the construction phase. As discussed above in Section 17.2.1, once emitted to the atmosphere, the GHG emissions that have arisen from construction phase activities have a permanent imperceptible negative effect on Climate and consequently a permanent imperceptible negative interacting effect on biodiversity and ornithology which is Not Significant. This is assessed further in Chapter 10 Air Quality and Chapter 11 Climate of this rEIAR, and mitigation measures are presented that were implemented onsite to minimise any effects.

Biodiversity and Ornithology with Noise and Vibration

Onsite activities during the construction phase gave rise to noise that could have had a nuisance effect on fauna. Best practice mitigation measures detailed in Chapter 6: Biodiversity, Chapter 7 Ornithology, Chapter 12: Noise and Vibration, and the 2019 CEMP (Appendix 4-3) minimised the potential negative effect of noise generated during the construction phase on biodiversity. Any noise impact was at worst, negative, temporary and not significant to slight.

Biodiversity and Ornithology with Material Assets

As discussed above, the presence of plant machinery and dust emissions within and around the Existing Development footprint had the potential to be a nuisance to flora and fauna, thereby having a temporary, imperceptible, negative interacting effect on biodiversity and ornithology, which is Not Significant. The emissions that have arisen from construction phase plant machinery would have had an imperceptible negative interacting effect on biodiversity and ornithology which is Not Significant.

17.2.3 Land, Soils and Geology

The assessment of interacting effects between the November 2020 Peat Slide event and land, soil and geology is discussed in section 17.2.6.

Land, Soils and Geology with Hydrology and Hydrogeology

Construction activities related to the Existing Development such as the excavation of peat, subsoil and occasionally bedrock, landscaping, stockpiling and forestry felling all could have had an impact on the water environment through sediment run off from drainage channels, forestry drains, spoil stockpiles and seepage water from excavations. These activities could have resulted in the release of suspended solids to surface watercourses, resulting in an increase in the suspended sediment load and increased turbidity which in turn could have affected the water quality and fish stocks of downstream water bodies. However, mitigation in place during the construction phase including mitigating design and avoidance measures, as well as best practise measures, ensured that residual interacting effects on surface water quality due to earthworks were Negative, Indirect, Imperceptible and Temporary. Refer to Chapter 8 Land, Soil and Geology, Chapter 9 Hydrology and Hydrogeology and Appendix 4-3 for the 2019 CEMP which was implemented onsite during the construction phase.

Land, Soils and Geology with Air Quality, Climate

The construction of the Existing Development resulted in the generation of dust particles arising from associated peat and spoil earthworks, storage and transportation, tree felling, and operation of vehicles and plant. Mitigation measures outlined in Chapter 10: Air Quality minimised the release of dust particles through dust suppression measures and proper vehicle/plant handling. The residual interacting effect on air quality from the construction activities and transportation and storage of spoil were short-term, negative and imperceptible.

These earthwork activities, spoil storage and transportation all required the use of plant and machinery which released CO₂ and other noxious gases into the atmosphere. Furthermore, earthworks in a peatland environment results in the release of CO₂ into the atmosphere. Once GHGs are emitted they are permanently added to existing GHG concentrations; this cannot be reversed. As such, this is a permanent negative effect on Climate Change and GHG concentrations. When considering these activities and their associated GHG emissions in the context of Electricity Sector Emissions Ceilings, the volume of CO₂ released relative to the CO₂ budget for Renewables (Table 11-2, Chapter 11 Climate), is imperceptible. As such, the residual interacting effect on Climate Change and GHG concentrations on a national and global scale respectively, is imperceptible, negative, permanent and Not Significant.

Land, Soils and Geology with Cultural Heritage

Earthworks, such as excavations of previously undisturbed peatlands can have the potential to permanently and negatively affect any previously unrecorded sub-surface archaeological site and artefacts. There were no recorded monuments, National Monuments, UNESCO Sites, National Inventory of Archaeological Heritage, Protected Structures or Monuments In Care Northern Ireland within the Wind Farm Site. There were no unrecorded monuments or artefacts encountered during archaeological surveys prior to the commencement of the construction phase, nor were any previously unrecorded archaeological monuments or artefacts encountered during the monitoring (under licence) of all earthworks of the Existing Development. Therefore, there were no residual interacting negative effects on previously unknown sub surface archaeology during the construction of the Existing Development.

One recorded monument (DG094-026— Kiln) is located along the existing 110kV grid connection route. The kiln was already excavated, removed and recorded in 1999, in advance of the Clar-Barnesmore road realignment, prior to the commencement of the Grid Connection works for the Existing Development. The construction of the Grid Connection was monitored and the associated report states: '*None of these sites were impacted by the works and no archaeology was found during monitoring of excavations*' (Delaney 2023). Therefore, no direct effects to this monument as a result of Existing Development are therefore identified.

There is no potential for ongoing direct effects (i.e. earthworks) associated with the Existing Development, as all excavation works associated with the Existing Development have been completed.

Land, Soils and Geology with Landscape and Visual

The earthworks undertaken within the Wind Farm Site would have introduced construction machinery, materials and construction crews into a landscape already heavily modified by commercial forestry, associated access tracks, agricultural activities. This would have been a short-term, Not Significant, Negative effect on the local landscape. The permanent removal of peatland and forestry and replacement with concrete, crushed stone and the 110kV substation, along with the construction of borrow pits, peat cells and peat storage areas (all of which have revegetated) directly altered the landcover and landform, but on a localised level. Visibility of the operational 110kV Substation in the landscape is currently limited to long ranging views from the north (including in the protected view towards the Barnesmore Gap, categorised as a 'High' sensitivity receptor), and northwest where the substation buildings and electrical infrastructure appear as a small and distant feature. In an overall landscape with a sensitivity of Low, the Magnitude of Change is Slight due to the highly localised setting and visibility of the Existing Development. Therefore, the residual interacting effects on the landscape were permanent, negative, localised and 'Not Significant'.

17.2.4 Air Quality and Climate

The assessment of interacting effects between the November 2020 Peat Slide event and air quality and climate is discussed in section 17.2.6.

Air Quality and Climate with Material Assets

The construction of the Existing Development generated an estimated additional 5.7% of passenger car units (PCUs) relative to the background traffic volumes during the delivery of concrete (per day over 14 days), an additional 1.4% of PCUs during the main construction works per day over an estimated 262 days and an additional 2.1% of PCUs during the construction of the Grid Connection which occurred simultaneously with the main construction works. This increase in traffic volumes relative to the baseline is assessed as temporary to short term, Slight and Not Significant. The collection, handling and transport of waste materials (non-hazardous and hazardous) associated with the construction of the Existing Development had the potential to interact with air quality and climate through emissions associated with vehicle use such as CO₂, CO and other GHGs. However, the volume and frequency of waste-related vehicle movements was low and Brief (i.e. lasting less than one day) respectively, within the short-term the construction phase and therefore did not materially increase overall traffic levels associated with the construction of the Existing Development or of the baseline traffic volumes in general. With mitigation and best practise measures as detailed in Chapter 10 Air Quality, Chapter 11 Climate and Chapter 15 Material Assets, this small percentage of traffic volume increase would have generated an associated volume of GHGs into the atmosphere which would have had a residual Negative Imperceptible and Permanent interacting effect on Climate and GHG concentrations which is Not Significant.

17.2.5 Landscape and Visual

The assessment of interacting effects between the November 2020 Peat Slide event and landscape and visual is discussed in section 17.2.6.

Residual landscape and visual effects have the potential to interact with cultural heritage; specifically in relation to the setting of heritage assets and views to and from such receptors. There are two National Inventory of Architectural Heritage (NIAH) structures (mile post and bridge) located along the road within which the grid connection route is laid. The construction of the Existing Development was monitored by a licenced archaeologist who observed that ‘*None of these sites were impacted by the works*’, as such, no visual alteration to these assets of cultural heritage occurred. Given that the remaining Existing Development it is not deemed to be visually prominent in the landscape and there is a lack of cultural heritage assets within or in close proximity to the Wind Farm Site (refer to section 14.3 of Chapter 14 Cultural Heritage), there are no interacting visual effects to the cultural heritage resource in the surrounding landscape as a result of the Existing Development.

17.2.6 Major Accidents and Natural Disasters

Ireland is a geologically stable country with a temperate, oceanic climate, resulting in mild winters and cool summers. It does not suffer from the extremes of temperature; the hills and mountains provide shelter from strong winds and from the direct oceanic influence and earthquakes and tsunamis are extremely unlikely. A Peat Stability Risk Assessment was undertaken for the Meenbog Wind Farm (AGEC 2017) which concluded the risk of peat failure at the Wind Farm Site was Low. A 2026 Peat Stability Assessment was undertaken for the as-built Existing Development which concluded the risk of peat failure due to the presence of the Existing Development is Low.

There were no construction related incidents, accidents, injuries or near misses to members of the public, traffic users or construction crew, or leaks/spills of hazardous hydrocarbon materials during the construction of the Existing Development.

As such, the risk of a major accident or natural disaster from climatic and geological events, construction/traffic related incidents and biohazard contamination were Low during the construction of the Existing Development and remain Low today.

November 2020 Peat Slide Event

A peat slide occurred within the Wind Farm Site in November 2020. Contributing factors included a period of intense rainfall after a relative dry period, the existing forestry drainage pattern, recent downslope felled forestry on peat, localised topography at the failure site, and a localised area of weak peat failed under the construction of a 20m floating road. Approximately 86,240m³ of peat was disturbed due to this slide. The displaced peat was predominately contained within the Wind Farm Site, with some peat entering the Shruhargarve Stream and Mourne Beg River. The below discusses the interacting effects the November 2020 Peat Slide had with other environmental factors.

November 2020 Peat Slide with Population and Human Health

There are 3 no. Residential Receptors identified within a 1 km buffer of the Wind Farm Site with the closest residential receptor being 500 metres (H17). There was no injury, loss of life or near miss incident to members of the public or construction staff during or following the peat slide event. No households were evacuated and no impacts occurred to any public road, utilities, or infrastructure. There were no contamination related issues except for the sediment run off into the Shruhargarve and Mourne Beg watercourses, both of which have since been remediated. As discussed above the 2026 stability assessment it is considered there is no ongoing risk of peat failure at the Wind Farm Site from the Existing Development. The interacting effect of the November 2020 Peat Slide with population and human health is imperceptible neutral and Not Significant.

Vulnerability to Major Accidents and Natural Disasters with Biodiversity

The November 2020 Peat Slide resulted in temporary significant effects on biodiversity, including the loss of approximately 2.2ha of Annex I peatland habitat of County importance, localised impacts on water quality, and temporary siltation and smothering of aquatic habitats. Emergency works undertaken at the time of the event limited further peat loss and reduced the overall scale of impact. Subsequent monitoring indicates that these effects were temporary and have reduced over time, with evidence of natural recovery including vegetative recolonisation of peatland habitats, improved water quality, and recovery of aquatic habitats and associated species populations. No ongoing degradation, desiccation, or instability has been identified within surrounding peatland habitats, watercourses, or associated infrastructure. Additional mitigation and habitat enhancement measures proposed as part of the Prospective Development are discussed in chapter 6 Biodiversity of the EIAR. Overall, the residual interacting effects of the peat slide on biodiversity continue to improve through both restoration measures and natural recovery over time.

Vulnerability to Major Accidents and Natural Disasters with Ornithology

Following the November 2020 Peat Slide, the survey effort undertaken at the Wind Farm Site indicates that there was no discernible change in the distribution, habitat or foraging habits of the key ornithological receptors surveyed for the Existing or Prospective Development. The survey data provided no evidence of a meaningful change in hen harrier distribution, activity, abundance or frequency during the construction activity and the breeding season following the November 2020 Peat Slide. There is no potential for further disturbance and no evidence of any ongoing disturbance impact on hen harrier as a result of the Existing Development. Therefore, the interacting residual effect of disturbance on hen harrier from the peat slide is assessed to be low.

Vulnerability to Major Accidents and Natural Disasters with Land, Soil and Geology

Following the November 2020 Peat Slide, a second stability assessment and various site inspections and investigations were undertaken provided a series of recommendations and quality control measures to be incorporated at the Wind Farm Site during the remaining construction works. However, construction ceased at the Wind Farm Site apart from environmental remediation works. For further information on these remediation works, refer to Section 4.4.3 and 4.5 of Chapter 4 Description. A third stability assessment has been undertaken for the Existing Development in 2026 by Fehily Timoney which has concluded that Existing Development is stable and that there is a low risk of instability in the future.

Given the findings of the 2017, 2021 and 2026 stability assessments, the post-slide site inspections along with the implementation of the control measures prescribed in the 2019 CEMP, the residual effect was a negative, moderate, direct, permanent effect on peat and land associated with the November 2020 Peat Slide. The effect is considered to be moderate as the volumes of peat which were disturbed as a result of the peat slide (86,240m³) represent only 26% of the total volume of peat disturbed as a result of the Existing Development. In the context of the volumes of peat present at the Wind Farm Site and in the wider area, the volumes moved by the peat slide are considered to be minor and therefore the interacting residual effect on land, soil and geology is considered to be Not Significant.

Vulnerability to Major Accidents and Natural Disasters with Hydrology and Hydrogeology

The peat slide entered the Shruhanagarve Stream which flows through the Wind Farm Site. This impacted the morphology of the stream for approximately 1,070 metres from the slip scar downstream. The reinstatement and restoration works, described in detail in Appendix 2-3 of this rEIAR, included re-designing the stream channel. The original channel, morphology, depth, sinuosity of the Shruhanagarve Stream was lost in some reaches following the peat slide. However, the effected reaches of the Shruhanagarve had already been impacted by forestry activities on the Wind Farm Site and the morphology of the channel was poor. The reinstatement works, that were implemented following the Peat Slide, included re-designing the stream channel using a process driven design methodology to re-

establish an appropriate channel morphology. The remedial works that were undertaken to restore the Shruhanagarve successfully reinstated a stable channel in the effected reach. The residual effect on the morphology of the Shruhanagarve Stream is therefore considered to be a negative, moderate, direct, short term effect.

The effects on biological Q-Ratings of the watercourses impacted by the peat slide have been short-term (i.e. effects lasting 1 to 7 years). Water quality monitoring in the aftermath of the peat slide in the Shruhanagarve and Mourne Beg watercourses showed that turbidity concentrations quickly returned to background levels (refer to Chapter 9 section 9.3.7 for further details on restored water quality). The residual effect of the peat slide on surface water quality is considered to be at worst, a negative, significant, direct, short-term effect on downstream surface water quality in the Shruhanagarve Stream and the Mourne Beg River.

As discussed above, the 2026 stability assessment concludes there is no ongoing risk of peat failure from the Existing Development. The likelihood of a landslide due to the Existing Development impacting the environment, including the aquatic environment is 'Low' with a Moderate Significance of Effects.

Vulnerability to Major Accidents and Natural Disasters with Air Quality, Climate

The November 2020 Peat Slide resulted in the displacement of approximately 86,240 m³ of peat at the Wind Farm Site, representing a disturbance of a CO₂ enriched peat. This disturbance, together with vehicular and plant emissions associated with remediation works, had the potential to interact with air quality and climate environment through the release of greenhouse gases and dust. When considered in the context of overall sectoral emissions ceilings for renewable energy developments (refer to Table 11-2, Chapter 11), the residual interacting effect between the displacement of peat with air quality and climate is assessed as Permanent, Imperceptible, Negative, and Not Significant.

Vulnerability to Major Accidents and Natural Disasters with Landscape and Visual

The November 2020 Peat Slide resulted in the displacement of peat at the Wind Farm Site, giving rise to a localised alteration in landform and landcover, impacting the existing landscape character and visual amenity at a site level. Likewise, remediation works such as containment walls also impacted the landcover and visual amenity. However, these changes are not discernible from outside the Wind Farm Site and occurred within a site already modified through the construction of the Existing Development and surrounding forestry plantations. Furthermore, elements of the Wind Farm Site and affected areas have undergone natural regeneration. As such, the residual landscape and visual effects arising from the peat slide are localised and limited in extent. The interaction between the peat slide and landscape and visual is therefore assessed as permanent, imperceptible, Negative, and Not Significant.

Vulnerability to Major Accidents and Natural Disasters with Material Assets

The November 2020 Peat Slide did not encroach on any public roads or infrastructure. Plant machinery was required onsite to facilitate emergency works; however, as machinery was already onsite for the Existing Development construction which immediately ceased following the peat slide, the continued use of machinery for emergency works onsite would not have any additional impact on traffic volumes and road users. There are no underground utilities within the Wind Farm Site that could have been impacted by the November 2020 Peat Slide. There are no electricity masts within the Site that could have been impacted by the November 2020 Peat Slide and given the nature of the event, overhead lines could not have been impacted. The peat slide did not have any material effect on waste production or removal. As such, there was no interacting effect between the November 2020 Peat Slide and Material Assets.

Vulnerability to Major Accidents and Natural Disasters with Cultural Heritage

The desktop assessments, onsite survey walkovers and archaeological monitoring of the construction of the Existing Development concluded that there was no evidence of recorded archaeology within the Wind Farm Site and no evidence of unrecorded subsurface archaeology was encountered during the archaeological monitoring of the construction works. On that basis, the likelihood of previously unknown subsurface archaeology being impacted by the peat slide is very low. Accordingly, no significant residual interacting effects between the peat slide and cultural heritage are identified, and the residual effect is considered Not Significant.

17.2.7 Mitigation and Residual Impacts

The Existing Development was constructed in accordance with the best practise measures and mitigation and monitoring as set out in the 2019 CEMP and as such, the residual effect(s) associated with the construction of the Existing Development are not significant.

Where any potential interactive negative impacts have been identified in the above, a full suite of appropriate mitigation measures has already been included in the relevant sections (Chapters 5 to 16) of the rEIAR and are detailed in the 2019 CEMP (Appendix 4-3). The implementation of these mitigation measures reduced or removed the potential for these effects to have occurred. Information on potential residual impacts and the significance of effects, is also presented in each relevant chapter.