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21 SUMMARY OF MITIGATION MEASURES

21.1 Introduction

This chapter of the EIAR contains a summary of the mitigation which will be implemented during the pre-commencement, construction, operational and decommissioning phases of the Proposed Development. All mitigation and monitoring measures relating to the construction, operational and decommissioning phases of the Proposed Development are also set out in the relevant chapters of this EIAR. The mitigation measures have been grouped together according to their environmental field/topic and are presented under the following headings:

- Description of the Proposed Development
- Biodiversity
- Ornithology
- Hydrology and Hydrogeology
- Land, Soils, and Geology
- Material Assets
- Shadow flicker
- Noise and Vibration
- Landscape and Visual
- Archaeology and Cultural Heritage
- Traffic and Transport
- Air Quality
- Climate

As stated in **Chapter 5 Description of the Proposed Development**, a Construction Environmental Management Plan (CEMP) has been prepared for the Proposed Development and is included in **Appendix 5.1** of this EIAR. The CEMP sets out the key environmental management measures associated with the construction, operation and decommissioning of the Proposed Development, to ensure that during these phases of the project, the environment is protected, and any potential effects are minimised. The CEMP includes an Emergency Response Plan, Spoil Management Plan, Surface Water Management Plan, Water Quality Management Plan, Waste Management Plan, Decommissioning Plan. A separate Construction Traffic Management Plan (CTMP) has been prepared and is included in **Appendix 5.2** of this EIAR.

An Environmental Manager / Ecological Clerk of Works (ECoW) with appropriate experience will be appointed for the duration of the construction phase to oversee the implementation of the CEMP. The following sections describe key activities which, if unmitigated against, may cause harm or nuisance to the public.

It is intended that the CEMP will be updated where required prior to the commencement of construction to include all mitigations and monitoring measures, conditions and or alterations to the EIAR and application documents should they emerge during the course of the planning process and would be submitted to the Planning Authority for written approval.

21.2 Summary Table

Table 21.1 displays a list of the mitigation measures proposed in the EIAR chapters and forms part of the Proposed Development.

Table 21.1: Summary of Mitigation Measures

Ref No.	Reference Heading	Reference Location	Mitigation Measure
EIAR Chapter 5 – Description of the Proposed Development			
Construction Phase			
MM1	Environmental Management of Construction Activities	5.3.1	<ul style="list-style-type: none"> • A CEMP has been prepared for the Project and is included in Appendix 5.1 of the EIAR. The CEMP sets out the key environmental management measures associated with the construction, operation and decommissioning of the Proposed Development, to ensure that during these phases, the environment is protected, and any potential effects are avoided, reduced or offset. • The final CEMP will be updated upon planning approval, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned. • An Ecological Clerk of Works (ECoW) will be appointed for the duration of the construction phase to oversee the implementation of the CEMP.
MM2	Refuelling	5.3.1	<ul style="list-style-type: none"> • Wherever possible, vehicles will be refuelled off-site. This will be the case for regular, road-going vehicles. For vehicles that require refuelling onsite, a limited amount of fuel will be stored on site in the temporary construction compound and banded to at least 110% of the storage capacity of fuels to be stored. On-site refuelling of machinery will be carried out at dedicated refuelling locations a minimum distance of 50m from watercourses using a mobile double skinned fuel bowser. The fuel bowser, a double axel refuelling trailer or similar will be re-filled on site by the local supplier by means of a fuel truck or similar and will be towed to refuelling locations by a 4x4 jeep to where machinery is located. The 4x4 jeep will be equipped with a drip tray, spill kits and fuel absorbent pads in case of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use. Only designated trained competent operatives will be authorised to refuel plant on site.
MM3	Concrete Management	5.3.1	<ul style="list-style-type: none"> • Concrete will be delivered from local batching plants in sealed concrete delivery trucks, as required. • When concrete is delivered to site, only the chute of the delivery truck will be cleaned in a dedicated banded area, using the smallest volume of water

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>necessary, before leaving the site. Concrete trucks will then exit the site and return to the supply plant to wash out the mixer itself.</p> <ul style="list-style-type: none"> • The concrete pours at the turbine locations will be planned in advance and proposed mitigation measures are detailed in EIAR Chapter 9: Hydrology and Hydrogeology and are summarised as follows: <ul style="list-style-type: none"> ○ Using weather forecasting to assist in planning large concrete pours, and avoiding large pours where prolonged periods of heavy rain is forecast. ○ Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets. ○ Ensuring covers are available so that areas can be covered if heavy rain arrives during the curing process to prevent runoff of concrete. ○ The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a Siltbuster-type concrete wash unit or equivalent.
MM4	Dust Suppression	5.3.1	<ul style="list-style-type: none"> • In periods of extended dry weather, dust suppression may be required to ensure dust does not cause a nuisance. If necessary, damping down of haul roads and site compounds will be undertaken to prevent the generation of dust. • To reduce mud and debris from getting onto the local road network, a wheel wash facility will be employed at exiting points on-site which will wash mud and debris from vehicles egressing the site.
MM5	Traffic Management	5.3.1	<ul style="list-style-type: none"> • Traffic management at the site will be coordinated by an appointed Traffic Manager for the duration of the construction phase of the Proposed Development. • A pre-condition survey will be carried out on all public roads that will be used in connection with the development to record the condition of the public roads in advance of construction commencing. • A post construction survey will also be carried out after the works are completed.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • All roads will be reinstated in a timely manner upon completion of the construction works, in line with an appropriate road opening license. • Letter drops will be carried out to notify members of the public living near the proposed works to advise them of any particular upcoming traffic related matters. Clear signage relating to the development, both temporary and permanent, will be provided for accessing the site. • The entrances to the site will be secured when the site is not in use. • When necessary, a flagman will be used to assist traffic movements at the site entrance or in other areas as required. • Turbine delivery will require the transportation of abnormal loads. This will be undertaken at off-peak times under agreement with the local authority and An Garda Síochána and in accordance with the conditions of any permit issued for these deliveries. • For the grid connection construction, cable trenching will be carried out with the aid of lane closures and / or road closures, which will ensure that the trenching works are completed as expeditiously as possible. • Road closures will be applied for by the appointed contractor and will outline local diversions whilst maintaining local access at all times for residents, farms and businesses, and restrictions during school drop off and collection times, where applicable. • Road closures will be subject to the applicable statutory processes as implemented by the Local Roads Authority. Road closures will be facilitated by the existing road network. 'Rolling road closures' will be implemented, whereby the works will progress each day along a road, which will have the effect of reducing the impact for local residents. • Traffic management for the cable trenching will be adopted, in consultation with Clare County Council, to provide a safe environment for road users and construction workers. • A Construction Traffic Management Plan (CTMP) has been prepared for the project and is presented in in Appendix 5.2 of the EIAR. In the event planning permission is granted for the proposed development, the CTMP will be updated

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			to include any relevant planning conditions, including any additional mitigation measures which are conditioned.
MM6	Spoil Management	5.3.1	<ul style="list-style-type: none"> • Any soil excavated for the construction of access roads within the site will be re-used on site in berms and for landscaping purposes and along the margins of the access roads. • Berms will be created from suitable excavated material and are located on the opposite side of infrastructure to any interceptor drains. The berms will therefore not obstruct flow or risk siltation to interceptor drains. • Berms will be placed outside the roadside drains which drain the new access tracks. • Further details related to management of soil during the construction stage can be found in Chapter 10 Soils and Geology and within the CEMP in Appendix 5.1. • Spoil arisings during construction works will be stored at a maximum height of approximately 3m and a minimum of 25m from watercourses. • Silt fences will be placed between the spoil storage areas and significant water crossings to prevent silt from entering the drains during construction. • These temporary spoil mounds will have side slopes battered back to 1:1 and will be covered when left for extended periods of time. • Following completion of construction, all plant and machinery will be removed from the site. The temporary works/assembly areas needed for the construction period will be reinstated using the original spoil material removed and stockpiled close to the location from where it was excavated as explained in Chapter 10 Soils and Geology.
MM7	Waste Management	5.3.1	<ul style="list-style-type: none"> • A Waste Management Plan (WMP) has been prepared and is included in the CEMP (Appendix 5.1). • The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the proposed development. Disposal of waste will be a last resort. • Orsted, in conjunction with appointed contractor, will prevent, reduce, reuse and recover as much of the waste generated on site as practicable and ensure the

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>appropriate transport and disposal of residual waste off site to licensed facilities. This is in line with the relevant National Waste Management Guidelines and the European Waste Management Hierarchy, as enshrined in the Waste Management Act 1996, as amended and circular economy principles.</p> <ul style="list-style-type: none"> • Prior to the commencement of the development, a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will have overall responsibility to instruct all site personnel including sub-contractors to comply with on-site requirements. They will ensure, at an operational level, that each crew foreman is assigned direct responsibility. They will also ensure that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. • The WMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping. • Wastewater from the staff welfare facilities will be collected in a sealed storage tank. • All wastewater will be tankered off-site by an authorised waste collector to a wastewater treatment plant.
MM8	Working hours for construction	5.3.2	<ul style="list-style-type: none"> • Working hours for construction will generally be from 07:00 to 19:00 on weekdays, with reduced working hours from 08:00 to 13:00 on a Saturday. It should be noted that it may be necessary to commence turbine base concrete pours at earlier times due to time constraints incurred by the concrete curing process. Similarly, in the case of turbine assembly to allow works within suitable weather conditions. Turbine component deliveries will be undertaken during early morning working hours as part of the specialise turbine delivery operation.
Operational Phase			
NM9	Maintenance	5.4.1	<ul style="list-style-type: none"> • The turbines will be subject to a routine preventative maintenance programme involving a number of checks and changing of consumables, including oil changes. In addition, there will be a requirement for unscheduled maintenance

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			which could include resetting alarms to major component changes requiring a crane. Maintenance traffic will consist of four-wheel drive vehicles or vans. The electricity substation components and site tracks will also require periodic maintenance.
MM10	Monitoring	5.4.2	<ul style="list-style-type: none"> The Species and Habitat Management Plan (SHMP) submitted with this planning application sets out a programme of monitoring required for the operational phase of the Proposed Development and should be consulted for detailed information on the monitoring requirements during the operational phase.
EIAR Chapter 6 – Population and Human Health - No specific mitigation measures required			
EIAR Chapter 7 – Biodiversity			
Pre-Commencement Phase			
MM11	Ecological Clerk of Works (ECoW)	7.5.4	<p>An Ecological Clerk of Works (ECoW) will be appointed to address issues relating to ecological features during the construction, operational and decommissioning phases, as described within the CEMP. Their responsibilities will include:</p> <ul style="list-style-type: none"> Undertake pre-works surveys to ensure that significant effects on ecological features will be avoided; Inform and educate site personnel of sensitive ecological features within/in close proximity to the Proposed Development site and how effects on these features could occur; Oversee management of ecological issues during the construction and decommissioning period and advise on ecological issues as they arise; Provide guidance to contractors to ensure legal compliance with respect to protected habitats and species; and Liaise with officers from consenting authorities and other relevant bodies, and with contractors, providing regular updates in relation to the progress of the Proposed Development phases.
Construction Phase			

Ref No.	Reference Heading	Reference Location	Mitigation Measure
MM12	Construction Methods	7.5.1	<ul style="list-style-type: none"> • No removal of habitats or movement of construction machinery will occur outside of the development works areas during the construction phase, clearly marking out the works footprint for site staff; • There is potential for retained trees and hedgerows to become damaged by construction activity whereby damage to roots would occur if they remained unprotected during construction activities. Measures to protect trees include the installation of tree protection barriers around the root protection zones of retained trees and hedgerows. Where essential works are required within root protection zones, ground protection (such as cellweb membrane) will be installed, following consultation with a qualified arboriculturist, to minimise risks of damage to roots; • Existing hedgerows and trees being retained within and in the vicinity of the Proposed Development site will be protected in line with current guidance and on the advice of an appointed arboriculturist (NRA, 2006); • Production of an Invasive Species Management Plan to be included within the CEMP. This will include measures to eradicate and control invasive species such as Japanese Knotweed; • All edible and putrescible waste will be stored and disposed of in an appropriate and timely manner. Construction materials will be stored and stockpiled according to strategies set out within the CEMP; • Excavations will be covered at night to prevent mammals getting trapped. If this is not possible, a method of egress such as a ladder will be provided; and • All plant and machinery will comply with specific noise legislation (Construction Plant and Equipment Permissible Noise Levels Regulations 1998) and will be turned off when not in use. • Measures will be implemented to maintain a buffer of at least 15m from minor watercourses and land drains (except where they are crossed by tracks or, in the case of minor land drains, where a lesser buffer is applied or where the drain is re-directed); • Excavated soil from access road construction will be reused on-site for berms, landscaping, and along road margins. Berms will be placed away from interceptor drains to avoid flow obstruction or siltation risk. Constructed drainage systems will manage runoff from various areas, reducing potential silt

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>runoff during construction and operation. The Proposed Development will implement a Sustainable Drainage System (SuDS) with on-site flow retention, buffer zones, and silt removal techniques to promote environmentally responsible water management;</p> <ul style="list-style-type: none"> • Drilling fluids such as Clearbore (an environmentally friendly, high-performance water-based mud suitable for tunnelling and drilling operations) or fluids with similar environmental properties will be used in drilling operations. Where the proposed grid connection cable route encounters minor culverts, the ducts will be installed above or below the culvert depending on its depth in accordance with construction methodologies outlined in the CEMP; and • Measures will be employed to minimise light spill onto identified foraging and commuting habitats / watercourses.
MM13	Timing of Works	7.5.3	<ul style="list-style-type: none"> • To minimise the potential for impacts on sensitive species, works with the potential for harm and/or disturbance of such species will be undertaken at the appropriate time of year to avoid/minimise effects (in accordance with relevant best practice guidance). Where this is not possible, works will be preceded and/or accompanied by appropriate ecological monitoring and/or supervision.
MM14	Ecological Clerk of Works (ECoW)	7.5.4	<ul style="list-style-type: none"> • The ECoW will <ul style="list-style-type: none"> ○ Oversee management of ecological issues during the construction period and advise on ecological issues as they arise; ○ Liaise with officers from consenting authorities and other relevant bodies and contractors with regular updates in relation to construction progress.
MM15	Habitat Reinstatement and Creation	7.6.5	<ul style="list-style-type: none"> • Habitats will be created in proportion with the type and extent of habitat loss during construction. • The design and management of this habitat will take into consideration the suitability of this habitat for the Key Ecological Features identified. • The locations of habitat reinstatement and enhancement measures will take into consideration the risk of operational effects (e.g., turbine collisions), with creation of features which could bring sensitive species (e.g., bats) into proximity with wind turbines is to be avoided.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> Detailed habitat re-instatement and creation is described in the SHMP for the Proposed Development. This includes the creation and/or enhancement of the following habitats identified as being important in the context of the Proposed Development: heath and bog, grassland, scrub and hedgerows, and conifer plantation. Details of habitat management regimes are specified in the SHMP.
Operational Phase			
MM16	Species and Habitats Management Plan	7.6.3	<ul style="list-style-type: none"> A Species and Habitats Management Plan (SHMP) has been produced to accompany this application and should be read in conjunction with Section 7.7. This provides a framework for the conservation and enhancement of ecological features, to avoid potential significant adverse effects and ensure the Proposed Development is managed in the interests of biodiversity.
MM17	Invasive Species Management Plan	7.6.4	<ul style="list-style-type: none"> The Proposed Development will include a detailed Invasive Species Management Plan to avoid causing the spread of invasive plant species. This will be adopted during all stages (e.g., construction, operation and decommissioning) of the Proposed Development and reviewed/updated in response to any significant changes in the ecological baseline regarding invasive non-native plant species. Measures within the Invasive Species Management Plan will include: <ul style="list-style-type: none"> All relevant staff will be briefed and made aware of issues regarding the presence of invasive non-native species, the management plan and its requirements, and their responsibilities; Control by marking out contaminated areas (i.e., with a 7m radius of any stands); Ensuring vehicles do not work within contaminated areas, and treating contaminated soils carefully; ECoW to continue to monitor the extents and distributions of invasive species and use this information to inform any updates to the invasive species management plan; Eradication through long-term treatment with herbicides. Treatment methods must be appropriate to the habitats present within/nearby (e.g., avoiding effects on watercourses or hedgerows); and

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Disposal at a licensed landfill site.
MM18	Monitoring	7.6.6	<ul style="list-style-type: none"> • Detailed monitoring will be undertaken to ensure the mitigation and enhancement measures specified are satisfying their aims and will inform any additional management measures and/or changes in management practices. • In particular, monitoring will focus on the condition of Key Ecological Features (i.e., species and habitats) within and adjacent to the Proposed Development (notably in any identified mitigation and enhancement areas), and on monitoring turbine collisions and baropressure effects through frequent carcass searches. If monitoring identifies the presence of significant effects, or any additional scope for mitigation and/or enhancements, these will be implemented into future management to benefit the Key Ecological Features identified in this report. Further details of monitoring in relation to Key Ecological Features are provided in the SHMP.
Decommissioning Phase			
MM19	Ecological Clerk of Works (ECoW)	7.5.4	<ul style="list-style-type: none"> • An Ecological Clerk of Works (ECoW) will be appointed to address issues relating to ecological features during the construction, operational and decommissioning phase.
EIAR Chapter 8 – Ornithology			
Pre-Commencement Phase			
MM20	Ecological Clerk of Works (ECoW)	8.5.4	<p>An Ecological Clerk of Works (ECoW) will be appointed to address issues relating to birds and other sensitive habitats and species. Their responsibilities will include, but not be limited to:</p> <ul style="list-style-type: none"> • Undertake a pre-construction walkover survey to ensure that significant effects on breeding and non-breeding birds will be avoided. • Undertake nesting bird checks on any vegetation that needs to be removed within the breeding season. • Inform and educate site personnel of sensitive ornithological features within the Project site and how effects on these features could occur. • Oversee management of ornithological issues during the construction and decommissioning period and advise on ornithological issues as they arise.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • Provide guidance to contractors to ensure legal compliance with respect to protected bird species on site. • Liaise with officers from consenting authorities and other relevant bodies and contractors with regular updates in relation to construction and/or decommissioning progress.
Construction Phase			
MM21	Lighting	8.5.1	<ul style="list-style-type: none"> • Works will aim to avoid the use of artificial lighting in habitat (i.e., heath, rough grassland, hedgerows and tree lines) used by potentially sensitive nocturnal species such as Woodcock.
MM22	Timing of Work	8.5.3	<ul style="list-style-type: none"> • To minimise the potential for impacts on nesting birds, removal or alteration of suitable nesting habitat (e.g., dense vegetation, trees, rough grassland) will, wherever possible, be undertaken outside of the peak breeding season (i.e., outside of the period mid-February to early September inclusive). • Works with the potential to cause significant disturbance of sensitive breeding birds (e.g., through the generation of noise, dust, vibration and/or light spill, or through increased human activity) will also be undertaken outside of the peak breeding season where possible. It should be recognised that whilst undertaking works in late-September to early February inclusive minimises the likelihood of effects on breeding birds, certain species may still nest during this period. • If suitable nesting habitat needs to be removed or altered during the peak breeding season, works to the habitat will be preceded by a nesting bird check, during which a suitably experienced ornithologist would check the affected habitat for any active nests. This check will be undertaken within 48 hours prior to the commencement of the works. If an active nest is encountered, an exclusion zone will be established within which works would be suspended until the nest is no longer active (to be confirmed by a suitably experienced ornithologist through ongoing monitoring of the nest). The size of the exclusion zone would be dependent on the species affected, the likely level of disturbance caused by the works relative to baseline disturbance levels on site, and the extent to which the nest site is screened from disturbance (e.g., by adjacent

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			dense vegetation). Exclusion zones may range from 5m (e.g., for breeding passerines) to several hundred metres (e.g., for breeding raptors).
MM23	Species and Habitats Management Plan	8.7	<ul style="list-style-type: none"> A Species and Habitats Management Plan has been produced to accompany this application. This provides a framework for the conservation and enhancement of ecological features (notably Hen Harrier and Red Grouse), to avoid potential significant adverse effects and ensure the Proposed Development is managed in the interests of biodiversity.
MM24	Habitat reinstatement and creation	8.7.1	<ul style="list-style-type: none"> Habitats will be created in proportion with the type and extent of habitat loss during construction. The design and management of this habitat will take into consideration the suitability of this habitat for birds; notably for the Key Ornithological Features identified in this report. The locations of habitat reinstatement and enhancement measures will take into consideration the risk of effects from collisions with wind turbines, with creation of features which could bring target species into proximity with wind turbines to be avoided. Detailed habitat re-instatement and creation focusing on Red Grouse and Hen Harrier is described in the SHMP, with compensatory habitats for hen harriers for the lifetime of the wind farm. This includes the management/creation of grassland, heath, scrub and forestry which will significantly increase the local availability, quality and connectivity of this habitat, to the benefit of relevant Key Ornithological Features (notably Red Grouse and Hen Harrier).
Operational Phase			
MM25	Timing of Work	8.5.3	<ul style="list-style-type: none"> To minimise the potential for impacts on nesting birds, removal or alteration of suitable nesting habitat (e.g., dense vegetation, trees, rough grassland) will, wherever possible, be undertaken outside of the peak breeding season (i.e., outside of the period mid-February to early September inclusive). Works with the potential to cause significant disturbance of sensitive breeding birds (e.g., through the generation of noise, dust, vibration and/or light spill, or through increased human activity) will also be undertaken outside of the peak breeding season where possible. It should be recognised that whilst undertaking works in late-September to early February inclusive minimises the

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>likelihood of effects on breeding birds, certain species may still nest during this period.</p> <ul style="list-style-type: none"> If suitable nesting habitat needs to be removed or altered during the peak breeding season, works to the habitat will be preceded by a nesting bird check, during which a suitably experienced ornithologist would check the affected habitat for any active nests. This check will be undertaken within 48 hours prior to the commencement of the works. If an active nest is encountered, an exclusion zone will be established within which works would be suspended until the nest is no longer active (to be confirmed by a suitably experienced ornithologist through ongoing monitoring of the nest). The size of the exclusion zone would be dependent on the species affected, the likely level of disturbance caused by the works relative to baseline disturbance levels on site, and the extent to which the nest site is screened from disturbance (e.g., by adjacent dense vegetation). Exclusion zones may range from 5m (e.g., for breeding passerines) to several hundred metres (e.g., for breeding raptors).
MM26	Monitoring	8.7.2 / 8.9	<ul style="list-style-type: none"> Detailed monitoring will be undertaken to ensure the mitigation and enhancement measures (including the improvement and creation of additional heathland, scrub, conifer forest and grassland) are satisfying their aims, and inform any additional management measures and/or changes in management practices. In particular, monitoring will focus on the success of bird populations within and adjacent to the Proposed Development (notably in any identified mitigation and enhancement areas), and on monitoring turbine collisions through frequent carcass searches. If monitoring identifies the presence of significant effects, or any additional scope for mitigation and/or enhancements, these will be implemented into future management to benefit the Key Ornithological Features identified in this report. Full details of monitoring in relation to Key Ornithological Features are provided in the SHMP. <p>Specific monitoring to be undertaken during the operation of the Proposed Development regarding ornithological features and relevant habitats will be as follows:</p>

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • Habitat Monitoring: habitats within and adjacent to the Proposed Development will be periodically monitored to ensure that they are delivering the maximum benefit to bird populations and other biodiversity features; • Bird Population Monitoring: frequent bird population monitoring (including annual Hen Harrier monitoring) will take place throughout the construction and operation of the Proposed Development. This monitoring should be undertaken in accordance with best practice survey methods (Gilbert et al., 1998; Hardey et al., 2013; O'Donoghue, 2019) and focus on recording the following information (depending on the importance of the Key Ornithological Feature in question): <ul style="list-style-type: none"> ○ The number and locations of active nests and breeding areas; ○ The timing and success of breeding attempts, notably the number of chicks successfully fledged; and ○ The number and locations of winter roost sites. • Avian Mortality Monitoring: detailed collision fatality monitoring will be undertaken to confirm the accuracy of the collision risk modelling predictions and to guide any additional mitigation requirements. Carcasses of birds likely to be associated with turbine collisions will be searched for by handlers with specially trained cadaver dogs. This monitoring will involve monthly searches of carcasses within monitoring years (January-December) to ensure breeding and wintering species are accounted for. All feather spots and bird carcasses will be photographed and logged in an annual fatality search report, which will be submitted to relevant stakeholders and the planning authority for consultation. Mitigation measures should be reviewed in light of the findings of this collision fatality monitoring and updated as needed to avoid significant effects; especially on key ecological features such as Hen Harrier.
Decommissioning Phase			
MM27	Habitat Reinstatement	7.4	<ul style="list-style-type: none"> • Any habitat that is temporarily cleared during the decommissioning phase will be reinstated on a like-for-like basis, and areas from which Proposed Development infrastructure is removed will be restored to their pre-construction baseline conditions. Following this habitat reinstatement, the Proposed Development footprint will be subject to frequent monitoring to determine the

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>progress of habitat reinstatement and inform any requirement for management to facilitate this reinstatement (e.g., supplementary planting with native species).</p> <ul style="list-style-type: none"> At the end of the first year following the decommissioning of the Proposed Development, a reassessment of the Proposed Development footprint will be undertaken to assess the habitats and species present and inform any further management requirements. This will ensure the Proposed Development footprint is suitable for bird populations and other flora and fauna in the long-term.
EIAR Chapter 9 – Hydrology and Hydrogeology			
Construction Phase			
MM28	Nature Based Solutions	9.5.1	<ul style="list-style-type: none"> Nature Based Solutions (NBS) will be adopted at the Wind Farm site where possible. NBS include Sustainable Drainage Systems (SuDS), which will be employed to attenuate runoff and reduce the hydrological response to rainfall at the Site.
MM29	Attenuation Features	9.5.1	<ul style="list-style-type: none"> Mitigation measures to address surface water runoff and drainage include in line attenuation features such as check dams and stilling ponds and buffered outfalls and have been designed to take into consideration for a 1 in 100-year rainfall event, including an additional 20% to account for climate change. Check dams will be constructed along the length of constructed drainage at regular intervals in line with relevant guidance. They will be permanent (for the life of the Proposed Development / drainage network), made of suitable locally sourced coarse aggregate (similar geology), and are intended to attenuate (impede) surface water runoff in the drainage channel, therefore slowing the velocity of the runoff in turn reducing the potential for erosion in the channel and allowing suspended solids to settle out if present. At low velocity, the runoff has increased opportunity to percolate through the coarse aggregate and into the surrounding peat area, effectively contributing to bog water levels at that location. Stilling ponds with buffered outfalls will be constructed at drainage outfalls associated with the construction runoff drainage network. Buffered outfalls will be established at intervals along the clean runoff drainage network. Similar to

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>check dams; stilling ponds will be permanent (for the life of the Proposed Development / drainage network), made of suitable coarse aggregate, and are intended to attenuate surface water runoff in the drainage channel, slowing the velocity of the runoff before discharging to vegetated areas (buffered outfall). Slowing the water velocity allows suspended solids to settle out if present. At low velocity the runoff has increased opportunity to percolate through the coarse aggregate and into the surrounding peat area.</p>
<p>MM30</p>	<p>Promotion of Peatland Habitats</p>	<p>9.5.1 / 9.5.2</p>	<ul style="list-style-type: none"> • Excavated peat will be deposited with a view to restore infilled excavation areas associated with the Site e.g., adjacent to Turbine Hardstand areas and spoil storage areas. • The peat layers Acrotelm and Catotelm will be stored separately until reinstatement and then at the Acrotelm layer will be placed on top. • A Peat and Spoil Management Plan has been prepared and is included as part of the CEMP. This Plan incorporates provision on materials management with a view to establishing material balance (reuse of excavation arisings) during the proposed construction phase, thus minimising the potential for or the length of time excavated materials are exposed and vulnerable to entrainment by surface water runoff.
<p>MM31</p>	<p>Establishment of Buffer Zones</p>	<p>9.5.1</p>	<ul style="list-style-type: none"> • 50m Surface Water Buffer Zone - Mapped surface water features i.e., mapped streams, rivers, lakes. Source for mapped surface water features; EPA. • 15m Drainage Buffer Zone - Non-mapped drainage features i.e., non-mapped streams, significant natural and artificial drainage features. Source for non-mapped surface water features includes desk study and aerial photography assessment, Lidar topographic data and field observations. • 100m Groundwater Buffer Zone – Groundwater abstraction points in relation to proposed access tracks and cable trenches i.e., shallow excavation. Source for mapped abstraction points: GSI. Applicable to the Site, Grid Connection and Turbine Delivery Routes.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • 250m Groundwater Buffer Zone – Groundwater abstraction points in relation to proposed borrow pit and foundations. Source for mapped abstraction points: GSI. Not applicable, none within 250m of the Site. • The Surface Water Management Plan included with the CEMP details mitigation measures for works proposed within buffer zones. • Method statements and the proposed design of any road crossings will be agreed within Inland Fisheries Ireland (IFI) and the Local Authority in advance of any construction necessary within the buffer zones. The mitigation measures described in the following sections will also be applied.
MM32	Increased Runoff Proposed Mitigation Measures – General / Wind Farm	9.5.2	<ul style="list-style-type: none"> • Management of excavated material – A Peat and Spoil Management Plan has been prepared and is included as part of the CEMP. This Plan incorporates provision on materials management with a view to establishing material balance (reuse of excavation arisings) during the proposed construction phase, thus minimising the potential for or the length of time excavated materials are exposed and vulnerable to entrainment by surface water runoff. • Temporary stockpile locations are identified and will be used to avoid the temporary placement of any excavation arisings outside of the footprint of the Development. Temporary stockpile areas will be managed to facilitate the orderly segregation of material types, be isolated from the receiving surface water network by the use of silt screens etc., are limited in height, and are covered in plastic sheeting during extended temporary periods and ahead of storm alerts. • Earthworks will be limited to seasonally dry periods and will not occur during sustained or intense rainfall events. Similar to measures outlined in relation to ground stability during excavation works (Chapter 10: Soils and Geology), an emergency response system has been developed for the construction phase of the Proposed Development, particularly during the early excavation phase. This involves 24-hour advance meteorological forecasting (downloadable from Met Éireann) linked to a trigger-response system. When a pre-determined rainfall trigger level is exceeded (e.g., sustained rainfall (any foreseen rainfall event longer than 4-hour duration) and/or any yellow or greater rainfall warning (>25mm/hour) issued by Met Éireann, planned responses will be undertaken. These responses will include:

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Cessation of all construction works during and until such storm events (yellow warning, Met Éireann), including storm runoff passing over; ○ Following heavy rainfall events, and before construction works recommence, the Site construction areas and infrastructure will be inspected by an Environmental Clerk of Works to confirm no additional escalation of response is required; and ○ measures will be implemented to ensure safe working conditions, for example, dewatering of standing water in open excavations and repair works to drainage features if necessary. <ul style="list-style-type: none"> ● Exposed soils/peat (exposed temporary stockpiles) will be covered with plastic sheeting during all heavy rainfall / storm events and during periods where works have temporarily ceased before completion at a particular area (e.g., weekends, overnight, etc.). ● Sediment fencing will be erected along proximal and paralleling areas of watercourses, channels and drains spanned by the works to reduce the potential for sediment laden run-off to reach sensitive receptors. ● No direct flow paths between stockpiles and watercourses will be permitted at the Site. ● All drainage infrastructure (as per drainage design, Sections 4 and 5 of the Surface Water Management Plan, included in the CEMP) required for the management of surface water runoff or draining peat ahead of excavation works will be established before excavation works commence. Similarly, mitigation measures related to surface water quality will be implemented before excavation works commence.
MM33	Increased Runoff Proposed Mitigation Measures – Grid Connections	9.5.2	<ul style="list-style-type: none"> ● In sensitive areas, excavation of material will be conducted in a controlled manner whereby any temporary deposit of the material in buffer zones can be minimised. For example, vacuum excavation techniques or similar will be used for excavations within Surface Water Buffer zones and other sensitive areas (constraints) (Figure 9.13a Figure 9.13b). Excavated soil will be removed to temporary storage areas. ● Management of excavated material will adhere to the measures related to the management of temporary stockpiles outlined in Chapter 10: Soils and Geology,

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>a Peat and Spoil Management Plan has been established and forms part of the CEMP with a view to establishing material balance during the proposed construction phase, thus minimising the potential for, or the length of time excavated materials are exposed and vulnerable to entrainment by surface water runoff.</p> <ul style="list-style-type: none"> • All spoil from trenches in public roadways will be removed from Site as it is excavated and transported to a licensed facility, this is due to the presence of bituminous material and potential hydrocarbon contaminants which will not have the opportunity to be entrained in runoff from stockpiling, but rather removed (i.e., mitigation by avoidance). All spoil from trenches in public roadways will be removed from Site as it is excavated and reused as a by-product or transported to an authorised facility for soil and stones. • Earthworks will be limited to meteorologically dry periods and will not occur during sustained or intense rainfall events. Similar to measures outlined in relation to ground stability during excavation works (Chapter 10: Soils and Geology), an emergency response system has been developed for the construction phase of the Proposed Development (see CEMP), particularly during the early excavation phase. This, at a minimum, will involve 24 hours advance meteorological forecasting (Met Éireann download) linked to a trigger-response system. When a pre-determined rainfall trigger level is exceeded (e.g., 1 in 100-year storm event or very heavy rainfall at >25mm/hr), planned responses will be undertaken. These responses will include cessation of construction until the storm event including storm runoff surge has passed over. Following heavy rainfall events, and before construction works recommence, the site will be inspected and corrective measures implemented to ensure safe working conditions, for example dewatering of standing water in open excavations and transfer to treatment train.
MM34	Construction Water Management, Dewatering, Treatment & Discharge of Trade Effluent	9.5.2	<p>Mitigation measures to reduce the potential for adverse effects arising from earth works / management of spoil and associated entrainment of solids in runoff and construction water will include the following:</p> <ul style="list-style-type: none"> • Conceptual and information graphics presented in Appendix 9.5 – Tiles no. 13, 14 and 15 present indicative layout and specification for active management treatment trains (containment, management and treatment of construction water) and emergency response and intervention (recycling or diversion of

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>poor-quality runoff to the active management portion of the treatment train). Continuous real time monitoring is also detailed.</p> <ul style="list-style-type: none"> • Management of excavations, that is areas of soil / subsoils to be excavated will be drained ahead of excavation works by sumps, in a stepped / phased approach whenever necessary, with the aim of temporarily lowering groundwater levels to allow excavation to be carried out in dry and stable conditions. For example, saturated areas of peat, thus reducing the volumes of water encountered during excavation works. • Engineered drainage and attenuation features will be established concurrent with excavation works. • Dewatering flow rate or pumping rate will be controlled by an inline gate valve or similar infrastructure (Appendix 9.5- Tile 16). This will facilitate reduction of loading on the receiving drainage and attenuation network, thus enhancing the attenuation and settlement of suspended solids. All pumped water will be discharged to constructed drainage and in line treatment train or to a vegetated surface through a silt bag (Appendix 9.5 – Tile 12) outside of surface water buffer zones. Dewatering is a dynamic process and will require continuous monitoring and modification depending on conditions encountered (Appendix 9.5 – Tile 16). • In some areas of the Development constraints related to construction activities within the prescribed buffer zones, will likely limit the potential for installation of engineered attenuation features. In such instances water arising from dewatering activities will be directed or pumped to a settlement tank (Appendix 9.5 – Tile 11) before being discharged to the receiving drainage network or pumped to an area of the Site where the installation of attenuation features is suitable. • No extracted or pumped water will be discharged directly to the drainage or surface water network associated with the Site (This is in accordance with the Local Government (Water Pollution) Act, 1977 as amended). • All pumps, tanks, settlement ponds, dewatering bags and check dams used in the dewatering process will be regularly inspected and maintained as necessary to ensure surface water run-off is appropriately treated.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
MM35	Excavation Dewatering – Active construction water management	9.5.2	<ul style="list-style-type: none"> • In all instances where construction water, or runoff has the potential to entrain solids during excavation and other construction activities, runoff will be contained by means of temporary berms (lined geotextile of similar), bunds (lined) and sumps. This will be referred to as dewatering. Construction water (contaminated) will be pumped to the treatment train. • Contaminated water arising from construction works, namely, excavations, drilling, and temporary stockpiling, will be contained and treated prior to release or discharge. • In all instances, stilling ponds, silt bags and outfalls will be situated outside of surface water buffer zones. At many locations, works will be within buffer zones. In these instances, waters can be pumped to the treatment train which can be positioned upgradient along the road (grid connection route) where discharge to vegetated areas / roadside drains can be managed. • Discharge of non-contaminated storm runoff to vegetated land within the Redline Boundary will be made in relatively low flow conditions (e.g., <2 litres per second (l/sec) typical of runoff over a relatively small site area. In the event that the expected incoming flow rate or dewatering rate is relatively high (>2 l/sec) a discharge licence will be acquired and all conditions adhered to. • The discharge points will be located outside of buffer zones and into minor or non-mapped surface water / drainage features. The main components of the treatment will be positioned outside of the 50m surface water buffer zone where possible. Suitable locations for temporary infrastructure will be identified having due regard to variables such as traffic and access management. The subject drain will be inspected to ensure connection to the mapped network (not blocked). • The quality of the water being discharged will be monitored. If discharge water quality is poor (e.g., >25mg/l) additional measures will be implemented, for example, pausing works as required and treating construction water by dosing with coagulant to enhance the settlement of finer solids – this will be done in a controlled manner by means of a suitably equipped settlement tank. Collected and treated construction water will be discharged by gravity / pump to a vegetated area of ground within the Site. Silt fences will be established at the discharge area to ensure potential residual suspended solids are attenuated and the potential for erosion is reduced. The discharge area will be outside of

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			50m surface water buffer areas (similar to dewatering of excavations). The quality of water discharged will comply with discharge limits in any water discharge licence and will be monitored in real time (telemetry with 15 min sampling rate).
MM36	Excavation Dewatering – Passive construction water management	9.5.2	<ul style="list-style-type: none"> • Spoil bunds and/or temporary berms. Spoil bunds and/or berms will be constructed using either crushed rock or clean soils and overlain or lined with an impermeable layer e.g., geotextile or plastic membrane. These features are intended to control the movement of construction water / runoff with a view to; <ul style="list-style-type: none"> ○ Containing contaminated water (e.g., drilling / excavation spoil and runoff laden with solids). Temporary bunds will be used to manage spoil arising from drilling operations or saturated spoil arising from excavations in sensitive areas e.g., within Surface water buffer zones. ○ To divert runoff i.e., divert clean/storm runoff during construction works or contaminated construction water away from sensitive receptors such as drains/surface waters directly adjacent to construction areas. • Silt screens will be utilised in a similar sense to berms whereby, silt screens will be installed between construction areas and sensitive receptors, including: <ul style="list-style-type: none"> ○ At the outfall of the treatment train, where discharging to vegetated ground or within non-mapped drains (within Site boundary). ○ Along the perimeter of construction areas which are directly adjacent to watercourses or within surface water buffer zones. This includes all watercourse crossings and sections of grid connection route alongside adjacent watercourses.
MM37	Release and Transport of Suspended Solids Proposed Mitigation Measures	9.5.2	<ul style="list-style-type: none"> • The drainage, attenuation and other surface water runoff management systems will be installed concurrent with the main construction activities to control increased runoff and associated suspended solids loads in runoff during intensive construction activities. • Vehicular movements will be restricted to the footprint of the Proposed Development and advancing ahead of any constructed hardstand will be minimised in so far as practical.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • Drainage infrastructure will be installed during meteorologically dry ground conditions • Collector drains and/or soil berms will be established to direct/divert surface water runoff from development areas, including temporary stockpiles, and direct same into established treatment trains including stilling, buffered discharge points, or other surface water runoff control infrastructure, as appropriate (See Appendix 9.5). • Silt fences will be established along the perimeter of source areas e.g., stockpiles, within the drainage network, and in existing natural drains which are likely to receive surface water runoff (See Appendix 9.5). • Where possible multiple silt fences will be installed at multiple locations in drains / treatment trains discharging to the surface water network. Double silt fences / screens will be deployed at outfalls within surface water buffer areas. Silt fences will be temporary features but will remain in place for a period following the completion of the construction phase until such time that Site conditions are stable. • In line Check Dams will be constructed across drains (Appendix 9.5 - Tiles 6 – 10) to reduce the velocity of run-off in turn facilitating the settlement of solids upstream of the dam. The following will be implemented in the design of check dams and their deployment (CIRA, 2004): <ul style="list-style-type: none"> ○ Permanent rock filter bunds (coarse aggregate) will be used for check dams however, temporary wood or straw/hay bales can also be used if properly anchored and if the need arises. ○ Check dams will be installed at c. 20m intervals within the length of drainage channels. This is dependent on the slope angle and height of check dams constructed, refer to Appendix 9.5– Tile no. 3 & 4. ○ Check dams will include a small orifice / pipe at the base to allow the flow of water during low flow conditions i.e., maintain hydrological regime during low flow conditions. Note: the use of coarse aggregate will facilitate some infiltration. ○ Erosion protection will be established on the downstream side of the check dam i.e., cobbles or boulder (100-150 mm diameter) extending at least 1.2m.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Check dams will be constructed as part of the drain i.e., reduce the potential for bypassing between the drain wall and check dam. • Outfalls will not be positioned in areas with extensive existing erosion and exposed soils. Buffered outfalls will be fanned and be comprised of coarse aggregate (cobble / boulders) (Appendix 9.5 – Tile 5). • Silt fences will be established downstream of buffered outfalls with a view to ensuring the effectiveness of the attenuation train, particularly during elevated flow events. Buffered outfalls established will be permanent.
MM38			<ul style="list-style-type: none"> • As required, flocculant will be used to promote the settlement of finer solids prior to redistributing to the treatment train and discharging to surface water networks. When flocculants are required, the material used will be made from anionic polymer. Gel blocks will be a temporary measure during the construction phase. • Straw bales (similar to stone check dams) (Appendix 9.5 - Tile 18), and silt fences (discussed under diffuse runoff) can also be used within drainage channels for the purposes of attenuating runoff and entrained suspended solids, however these measures should be considered temporary and will be used mainly in managing potential acute contamination incidents. The installation of straw bales or silt fences will be checked on a daily basis by the Contractor's Environmental Manager and supervised by the Environmental Clerk of Works (EnvCoW) to ensure the bypassing does not occur.
MM39	Ground stability and compaction	9.5.2	<ul style="list-style-type: none"> • Vehicular movements will be restricted to the Development footprint and advancing ahead of any constructed hardstand will be minimised in so far as practical. The only exception to limiting vehicular movements to the footprint of the Proposed Development will be for peat cutting. • The management vehicles used for tree felling will align with measures set out in this report, for example; spill kits to hand, etc. During construction down time / overnight, vehicles will be stored in suitable locations on the Proposed Development footprint and not left un-manned on vegetated / tree felling / soils areas, or within sensitive areas / receptor buffers. • Where vehicular movements are necessary outside of the Proposed Development footprint, ground conditions will be maintained and reinstated. This includes for example replacing sods, smoothing over with excavator bucket

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>etc. Where ground conditions are poor, or prolonged works, temporary access measures will be deployed, for example floating platforms / floating access track.</p> <ul style="list-style-type: none"> • For the Grid Connection route, before starting construction, the area around the edge of each joint bay which will be used by heavy vehicles will be surfaced with a terram cover (if required) and stone aggregate to minimise ground damage. •
MM40	Release of Hydrocarbons	9.5.2	<ul style="list-style-type: none"> • In instances where refuelling of vehicles on site is unavoidable, a designated and controlled refuelling area will be established at the site. The designated refuelling area will enable low risk refuelling and storage practices to be carried out during the works. The designated refuelling area will contain the following attributes and mitigation measures as a minimum requirement: <ul style="list-style-type: none"> ○ The designated refuelling area will be located a minimum distance of 50m from any surface waters or site drainage features. ○ The designated refuelling area will be bunded to 110% volume capacity of fuels stored at the site. ○ The bunded area will be drained by an oil interceptor that will be controlled by a pen stock valve that will be opened to discharge storm water from the bund. • Management and maintenance of the oil interceptor and associated drainage will be carried out by a suitably licensed contractor on a regular basis, including decommissioning following construction. • Any oil contaminated water will be disposed of at an appropriate licensed waste disposal site. • Any minor spillage during this process will be cleaned up immediately. • Vehicles will not be left unattended whilst refuelling. • All machinery will be checked regularly for any leaks or signs of wear and tear. • Containers will be properly secured to prevent unauthorised access and misuse. An effective spillage procedure will be put in place with all staff properly

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>briefed. Any waste will be collected, stored in appropriate containers and will be reused, recycled or disposed of offsite in an authorized facility.</p> <p>As a precautionary measure, to mitigate against potential spills at other areas of the site, the following mitigation measures will be implemented:</p> <ul style="list-style-type: none"> • Oil absorbent booms and spill kits will be available adjacent to all surface water features associated with the development. • Spill kits will also be available at construction areas such as at turbine erection locations, the temporary construction compound, onsite substation, spoil storage areas and Met Mast location etc. • Spill kits will contain a minimum of oil absorbent pads, oil absorbent booms, oil absorbent granules, and heavy-duty refuse bags for collection and appropriate disposal of contaminated matter. • Should an accidental spill occur during the construction phase of the development, such incidents will be addressed immediately, this will include the cessation of works in the area of the spillage until the issue has been resolved. • Spill kits will be kept in each construction vehicle at the site and will be readily available to all operators. • No materials, contaminated or otherwise, will be left on the site. • Suitable receptacles for hydrocarbon contaminated materials will also be available at the site. • A detailed spill response plan will be prepared by the appointed contractor as part of the site-specific CEMP.
MM41	Release of Horizontal Direction Drilling Fluid	9.5.2	<ul style="list-style-type: none"> • All chemical fluids used in the HDD boring process are to be inert to the environment (environmentally safe) and follow the relevant legislation. • Only environmentally acceptable drilling fluids will be used in the HDD process e.g., Biodegradable with low to no bentonite concentrations. • The contractor will also be responsible for a Fluid Management procedure which will include: <ul style="list-style-type: none"> ○ Drilling Fluid program and MSDS

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Management of spoil including volume on site, specialised site storage ○ Management of drilling fluid displacement (expected volumes and proposed storage)
MM42	Release of wastewater sanitation contaminants	9.5.2	<ul style="list-style-type: none"> • The wastewater/sewerage will be collected and held in a sealed storage holding tank, fitted with a high-level alarm. • All wastewater will be emptied periodically and tankered off-site by a licensed waste collector to the local wastewater sanitation plant for treatment. There will be no onsite treatment of wastewater. A wastewater or sewerage leakage is not anticipated in a properly managed site.
MM43	Construction and cementitious materials	9.5.2	<ul style="list-style-type: none"> • The procurement, transport and use of any cement or concrete will be planned fully in advance of commencing works by the contractor's Environmental Manager and supervised at all times by the developer appointed Environmental Clerk of Works (EnvCoW). This entails minimising quantities on Site, planning delivery routes and washout stations. • Precast concrete will be used wherever possible <i>i.e.</i>, formed offsite. • The use of lean mix concrete will be minimised, limited to the requirement of turbine foundations. The risk of runoff will be minimal, as concrete will be contained in an enclosed, excavated area. • Vehicles transporting cement or concrete to the site will pass through a designated wash out station and be visually inspected for signs of excess cementitious material prior to being granted access to the site. • Drivers of such vehicles will be instructed to ensure that all vehicles are washed down in a controlled environment prior to the departure from the source site, such as at concrete batching plants. • Concrete will be poured during meteorological dry periods/seasons in so far as practical and reasonably foreseeable. This will reduce the potential for surface water run off being significantly affected by freshly poured concrete. This will require limiting these works to dry meteorological conditions <i>i.e.</i>, avoid foreseen sustained rainfall (any foreseen rainfall event longer than 4-hour duration) and/or any foreseen intense rainfall event (>3mm/hour, yellow on Met Éireann rain forecast maps), and do not proceed during any yellow (or worse) rainfall

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>warning issued by Met Éireann. This also will avoid such conditions while concrete is curing, in so far as practical.</p> <ul style="list-style-type: none"> • Pouring of concrete into standing water within excavations will not be undertaken. • Excavations will be prepared before pouring of concrete by pumping standing water out of excavations to the buffered surface water discharge systems in place. • Any shuttering installed to contain the concrete during pouring will be installed to a high standard with minimal potential for leaks. • No surplus concrete will be stored or deposited anywhere on site. Such material will be returned to the source location or disposed of off-site appropriately. • Raw or uncured waste concrete will be disposed of by removal from the site and returned to the source location or disposed of appropriately at a suitably licensed facility. • Designated washout of concrete trucks shall be strictly confined to the batching facility and will not be located within the vicinity of watercourses or drainage channels. Only the chutes will be cleaned prior to departure from Site and this will take place at a designated area at the Temporary Construction Compound. The contents will be allowed to settle and the supernatant will be removed off site by licenced generator to a licenced waste water treatment plant. • Temporary storage of cement bound sand (if required for construction of the substation building) will be on hardstand areas only where there is no direct drainage to surface waters and where the area has been bunded e.g., using sandbags and geotextile sheeting or silt fencing to contain any solids in run-off. • Spill kits will be readily available, and any spillages or deposits will be cleaned/removed as soon as possible and disposed of appropriately.
MM44	Proposed water crossings	9.5.2	<ul style="list-style-type: none"> • There will be a strict requirement to carry out works at this location during seasonally dry conditions. • Exposed soils and fill materials will be reinstated and/or will have erosion control installed as part of the design and sufficient time as to be in place prior to the next seasonally wet period. This will minimise the potential for flood events to effect on the construction works, plant machinery or operators etc,

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			and will minimise the potential for entrainment of soils or other materials in high water flow during potential flood events.
MM45	Instream works	9.5.2	<ul style="list-style-type: none"> Contracted operators will draft method statements and risk assessments in line with mitigation outlined in this report and in consultation with relevant guidance prior to commencing works (as part of the watercourse crossing consent application). The construction area will be isolated, this means; the water feature (streams / drains) will be temporarily dammed upstream of the watercourse crossing and flow will be diverted by means of a flume / pipe by gravity or pumped (this is referred to as over pumping) downstream of the watercourse crossing and construction area. Following the successful upstream damming, a downstream dam or barrier will also be established. The downstream barrier will ensure contaminated runoff in the isolated work area can be contained and managed and will block surface water back flow in lower lying or flatter areas. In order to ensure isolation and over pumping is carried out effectively, the methodology must ensure that dams are secure / sufficiently supported, and that pumping of water can continue uninterrupted and that pumps are capable of keeping up with the discharge rate of the surface water feature. Water ingress into the construction area will be managed and collected by established sumps immediately downstream of the works (upstream of the downstream barrier). Runoff within the construction area will likely be heavily laden with suspended solids. Where required, dewatering (pumping out or extracting) of such waters will be discharged to an inline settlement tank, or preestablished stilling pond to remove suspended solids before being discharged (Appendix 9.5 Tiles 11 and 12). No extracted or pumped or treated construction water from the isolated construction area will be discharged directly to the surface water network associated with the site (This is in accordance with Local Government (Water Pollution) Act, 1977 as amended). Operation of machinery in-stream will be kept to an absolute minimum and avoided where possible. Where in stream works are required, the area will be isolated by means of over pumping or drainage diversion (Appendix 9.5 Tile 16).

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • In stream works will be carried out during periods of sustained dry meteorological conditions and will not commence if sustained wet conditions or if wet conditions are forecast. • Works in relation to watercourse crossings will be planned and carried out as efficiently as possible. • Only precast concrete will be used for in stream works. • Settlement tanks adequately equipped with hydrocarbon removal functionality will be on standby as required.
MM46	Groundwater contamination	9.5.2	<p>In order to mitigate against potential groundwater contamination by hydrocarbons, the following mitigation measures are recommended:</p> <ul style="list-style-type: none"> • No fuel storage should occur at the site whenever feasible and refuelling of plant and equipment should occur off site at a controlled fuelling station. • In instances where on site refuelling is unavoidable, then the bunded on site designated refuelling area must be used. The designated refuelling area must be bunded to 110% volume capacity of fuels stored at the site. • The bunded area will be drained by an oil interceptor that will be controlled by a pen stock valve that will be opened to discharge storm water from the bund. • Management and maintenance of the oil interceptor and associated drainage will be carried out by a suitably licensed contractor on a regular basis. • Any oil contaminated water will be disposed of at an appropriate oil recovery plant. • Any minor spillage during this process will be cleaned up immediately. • Vehicles will not be left unattended whilst refuelling. • For large machinery such as cranes, a drip tray will be used, and spill kits will be on hand. • A site-specific CEMP will be enforced to ensure that equipment, materials and chemical storage areas are inspected and maintained as required on a regular basis.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>The following mitigation measures are recommended in relation to non-hydrocarbon potential contamination of groundwater:</p> <ul style="list-style-type: none"> • All other liquid-based chemicals such as paints, thinners, primers and cleaning products <i>etc.</i> will be stored in locked and labelled bunded chemical storage units. • Sanitation facilities used during the construction phase will be self-contained and supplied with water by tank trucks. These facilities will not interact with the existing hydrological environment in any way and they will be maintained and serviced throughout the construction phase. • Controlled attenuation of suspended solids in settlement ponds and check dams <i>etc.</i> will result in inorganic nutrients (if present in elevated concentrations) such as phosphorus and nitrogen being absorbed and retained by the solids in the water column. This will allow for a reduction of peak inorganic discharges in a controlled and stable run off rate. • Water quality should be monitored for trace metal concentrations prior to, during and after the construction phase. • Implementation of strict grazing control zones for livestock such as cattle and sheep to prevent bacterial contamination of groundwater.
MM47	Monitoring	9.5.2	<p>The following wind farm Site monitoring recommendations will be undertaken by the EnvCoW assigned by the Developer to mitigate against potential effects on the surface water and groundwater receiving environment:</p> <ul style="list-style-type: none"> • During the construction phase, daily inspection of silt traps, buffered outfalls and drainage channels, and daily measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations on the Site (locations close to active working zones). Monitoring of same during times when excavations are being dewatered (likely high in solids) will be done in real time. In this regard, physiochemical properties will be monitored in real time by means of alarmed telemetry e.g., telemetric monitoring at baseline sampling locations and alarm thresholds established in line with water quality reference concentrations/limits which will be set using relevant instruments for example, Surface Water Quality Regulations, <25mg/l Total Suspended Solids (TSS). • Telemetric continuous Monitoring will be carried out as part of Active Management of construction water management and treatment for the duration

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>of the construction phase of the Development. These monitoring systems will travel with the active construction areas / remain with the Active Management infrastructure. The purpose of this is to recycle water if quality is unfavourable and adjust the dewatering and treatment train accordingly until discharge quality is observed to be acceptable. A small degree of tolerance above reference concentrations is acceptable at this location but only if the discharge from the Active Management train discharges to another Passive Management system or to a non-sensitive vegetated area. If discharging within sensitive areas or buffer zones, the quality of discharge from the Active Management train will be in line with prescribed reference limits (e.g., 25mg/l TSS)</p> <ul style="list-style-type: none"> • Telemetric continuous Monitoring at downstream Baseline SW Monitoring Locations will be carried out using telemetry for the duration of the construction phase. Triggering of the threshold at these locations will trigger emergency response and escalation of measures including immediate full Site inspection to ascertain to the potential unknown source (bearing in mind that the quality of managed runoff at the Site will be known by means of live telemetry and handheld meters). Telemetric continuous monitoring at Baseline SW Monitoring Locations will continue into the operational phase until such time it is confirmed the construction phase is complete and there are no further construction activities required on site, and when stable conditions are observed i.e., stable conditions in line with baseline conditions observed for 2 months following the completion of the construction phase. • Post construction: inspection of silt traps, buffered outfalls and drainage channels, measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations at the Site will be carried out at a reasonable frequency (weekly initially gradually reduced based on observed stability of conditions), and will also be scheduled following extreme metrological events. • During the construction phase of the Proposed Development, the Development areas will be monitored daily for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system so that it does not become blocked, eroded or damaged during the construction process.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • A programme of water quality monitoring outlining the selected parameters and monitoring frequency should be agreed with Inland Fisheries Ireland and Clare County Council prior to the commencement of construction. During the construction phase of the Proposed Development, the Development areas and adjacent receiving drainage systems will be monitored daily for evidence of erosion and other adverse effects to natural drainage channels and existing degraded areas whereby soils/peat are exposed and prone to enhanced degradation. • During both the construction phase of the Proposed Development watercourse crossings will be monitored frequently (daily during construction and intermittently during operational phase i.e., weekly / monthly inspections initially) and reduced gradually in line with observed stability and confidence in longer term data obtained. The water course crossings will be monitored in terms of structural integrity and in terms of their impact on respective watercourses. • Site water runoff quality at all surface water monitoring locations will be monitored on a continuous basis during the construction phase of the Development. • Continuous monitoring systems will be in place, particularly in principal surface water features draining the Site. For example, remote sensing, or telemetric monitoring sensors (turbidity) will be employed in this regard. • Telemetric continuous monitoring sampling frequency is generally set at one data point per 15 minutes, however considering the intensive nature of the proposed works, particularly drilling activities, it is recommended that sampling frequency is set at 5 minutes or less with a view to escalating responses to potential discharge quality issues in good time. Data is transmitted to a Proposed Development website which will display data trends over time. Access to the website can be gained and shared via a website link. • A handheld turbidity meter will be available and used to accurately measure the quality of water discharging from the Site at any particular location. The meter will be maintained and calibrated frequently (per the particular unit's calibration requirements / user manual) and will also be used to check and calibrate remote sensors if they are employed. Quality thresholds have been established for the purposes of escalating water quality issues as they arise.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • Rainfall will be monitored (1 no. rainfall gauge required). This unit will be connected with and displayed with other site water quality telemetry data via the telemetry website. • Surface water runoff control infrastructure will be checked and maintained on an ongoing basis, and stilling ponds and check dams will be maintained (de-sludge / settle solids removed) on an ongoing basis, particularly during the construction phase of the Development. • As part of the CEMP, regular checking and maintenance of pollution control measures are required (in line with frequencies outlined above), with an immediate plan for repair or backup if any breaches of design occur. In the event that established infrastructure and measures are failing to reduce suspended solids to an acceptable level, construction works will cease as per the CEMP, until remediation or upgrading works are completed by the Developer. • Handheld meters (Turbidity / Total Suspended Solids (TSS)) will used by the EnvCoW / competent operators during construction works. This will be done with a view to managing water treatment and anticipating potential surcharges in water or TSS loading within the treatment train. Handheld meters will also be used to monitor outfall/discharge quality in the event telemetry systems fail or during system maintenance. Handheld probes will be checked and calibrated regularly. • Where discharge licence is required, monitoring in line with the licence will be done in addition to the other monitoring regimes undertaken as described in sections above. Sampling will include obtaining physical samples at an agreed discharge sampling point and will be sent an accredited laboratory for analysis. Monitoring under licence conditions will not negate the requirement for the other regimes described.
MM48	Emergency Response	9.5.2	<ul style="list-style-type: none"> • Emergency response procedures to potential contamination incidents will be prepared as part of the site-specific CEMP and will be implemented at the site prior to the commencement of the construction phase.
Operational Phase			

Ref No.	Reference Heading	Reference Location	Mitigation Measure
MM49	Monitoring	9.6.3	<ul style="list-style-type: none"> • Telemetric continuous monitoring at Baseline SW Monitoring Locations will continue into the operational phase until such time it is confirmed the construction phase is complete and there are no further construction activities required on site, and when stable conditions are observed i.e.i.e., stable conditions in line with baseline conditions observed for 2 months following the completion of the construction phase. • Stilling ponds and buffered outfalls will be checked on a weekly basis during maintenance visits to the Site. This will continue but will be reduced when stable conditions are observed. The frequency of monitoring will be aligned with ecological monitoring in enhancement areas, following storm events, and otherwise on a quarterly basis at minimum. • Monitoring for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system will continue at a reasonable frequency (weekly initially gradually reduced based on observed stability of conditions). • Monitoring of development areas and adjacent receiving drainage systems be for evidence of erosion and other adverse effects to natural drainage channels and existing degraded areas whereby soils/peat are exposed and prone to enhanced degradation. To continue initially on a weekly basis during the operational phase of the Development, and gradually reduced based on observed stability, however it is envisaged that any potential issues in this regard will be identified and rectified during the construction phase. • During the operational phase of the Proposed Development watercourse crossings will be monitored frequently (intermittently during operational phase i.e., weekly / monthly inspections initially) and reduced gradually in line with observed stability and confidence in longer term data obtained. The water course crossings will be monitored in terms of structural integrity and in terms of their impact on respective watercourses. • Site water runoff quality at all surface water monitoring locations will be monitored during the operational phase until such time that the Site and water quality have stabilised (stable conditions in line with baseline conditions for e.g.,

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			8 consecutive quarterly monitoring events). This monitoring will be carried out at the downstream surface water baseline sampling location.
Decommissioning Phase			
MM50	Development Decommissioning and Reinstatement	9.5.4	<ul style="list-style-type: none"> A site-specific decommissioning plan will also be developed prior to the commencement of any decommissioning activities.
EIAR Chapter 10 – Land Use, Soil and Geology			
Construction Phase			
	Clear fell of afforested areas	10.5.2	<ul style="list-style-type: none"> Use of a phased felling approach and minimisation of erosion of soils by using existing tracks.
MM51	Subsoil / Bedrock Removal	10.5.2.3	<ul style="list-style-type: none"> Best practice will be applied during construction which will minimise the amount of soil and rock excavation. All works will be managed and carried out in accordance with the Construction Environmental Management Plan (CEMP), which will be updated by the civil engineering contractor and agreed prior to any works commencing on site. In those parts of the Site where excavation may intercept areas of peat that are >1.0m depth, a geotechnical engineer/engineering geologist will be onsite to supervise and manage the excavation works and confirm the necessity for supporting newly excavated peat exposures or redirect initial construction phase drainage to maintain ground stability. Bedrock will be re-used for construction of site access tracks and/or turbine hardstands wherever possible. Peat, overburden, and rock will be reused where possible on Site to reinstate excavated areas where appropriate. Where possible, the upper vegetative layer will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the landscaped peat. These measures will prevent the erosion of peat in the short and long term.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • Subsoil and bedrock which are excavated as part of the initial construction (and potential Decommissioning) phase(s) will be reused onsite where possible. • Excavated subsoils and bedrock will be managed in such a way that separate temporary stockpiles will be designated as to not mix individual soils horizons which will, in turn will facilitate reuse on site. • Excess bedrock will be reused as backfill in areas previously excavated, or as backfill in cut and fill operations, for example; site access tracks and turbine hardstands. • Geotechnical testing on imported material will be carried out prior to its reuse onsite particularly for reuse as a running or load bearing surface and will only be reused for those purposes if the suitability of same is conforms to relevant standards. • Peat material excavated will be reused as backfill in areas previously excavated as much as possible, and/or for reinstatement works elsewhere on the Site. To facilitate this the acrotelm (living layer) and the catotelm (lower layer) will be treated as two separate materials. Catotelm peat will be used to backfill, for example around Turbine Foundations once established. Acrotelm peat will be used as a dressing on top of deposited catotelm peat in order to promote and re-establish flora and ensure the acrotelm layer becomes relatively cohesive in terms of localised peat stability (vegetated). • Similarly, all soil and subsoil types or horizons which will be identified during intrusive ground investigations and during actual construction, will be treated as separate materials and arisings separated accordingly. This includes, for example Acrotelm peat, catotelm peat, clays, subsoils (TILLS), weathered rock. • With relation to excavated material removed during the Grid Connection network installation, any earthen (sod) banks to be excavated will be carefully removed and stored separately, maintained and used during reinstatement. Any surplus excavated material from roadways will be disposed of to the licenced facility. • After construction, any areas not required for operation will be reinstated. • Drainage measures will be reinstated as required in order to minimise future erosion of the soils.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> Considering the variability of subsoil and bedrock depths further intrusive ground investigation must be carried out prior to construction in line with infrastructure manufacturer specification in order to confirm the specific ground conditions at each of the infrastructure units.
MM52	Storage and Stockpiles	10.5.2	<ul style="list-style-type: none"> It is expected that during excavation, arisings will be segregated and stored locally before being transported directly to a backfill / deposit area or to a dedicated temporary stockpile area as necessary. Material stored in temporary storage areas will be reused elsewhere on site as backfill, berms, landscaping and reinstatement of construction areas. No permanent stockpiles will remain on site. Surplus material following the completion of the construction phase will be transported offsite and reused as a by-product (through Regulation 27 of the European Communities (Waste Directive) Regulations 2011), or as a waste to a licenced facility. All temporary stockpiles will be positioned on established and existing hardstand areas or in designated areas which are appropriate for short term storage. No temporary stockpile placed on established hardstands in areas of deeper peat (Appendix 10.1 App- B) will be in excess of 1m in height. Whenever possible, soil will be re-used on the site immediately, thereby reducing the need for double handling, reducing the requirements of stockpiles. The excavated rock will be taken to a plant off-site, where it will be crushed and screened. The processed rock material will then be returned to site and used as fill material. Topsoil and peat will be transported to the designated spoil storage areas. Peat will only be stockpiled temporarily in areas of thin or absent peat and only in areas which have been assessed for stability by a suitably experienced geotechnical engineer. Peat should be stockpiled no higher than 2m and follow the recommendations set out in the (NRA, 2014, Section 8.2). The Peat and Spoil Management Plan will ensure that the material arising from any excavation will have a predetermined plan and route for re-use / remediation, or disposal if all potential for reuse / remediation have been exhausted. For the Grid Connection Route, IPP connection route and Turbine delivery route include restricting stockpiles to less than 1.5m in height and will be subject to

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			approval by the Site Manager and Project Ecological Clerk of Works (EnvCoW). Additionally, any excavated material will be later used to backfill the trench where appropriate, any surplus material will be transported to a licensed facility.
MM53	Vehicle Movements	10.5.2	<ul style="list-style-type: none"> • Vehicular movements will be restricted to the footprint of the development and advancing ahead of any constructed hardstand will be minimised in so far as practical. • Ancillary machinery will be kept on established turbine hardstands, and no vehicles will be permitted outside of the footprint of the development and will not move onto land that is not proposed for the development if it can be avoided. • Where vehicular movements are necessary outside of the Proposed Development, ground conditions will be maintained as well as possible. This includes for example replacing sods, smoothing over with excavator bucket etc. Vehicular traffic on Site is reduced through the re-use of excavated material on Site. • For the grid connection route and IPP interconnector, before starting construction, the area around the edge of each joint bay which will be used by heavy vehicles will be surfaced with a terram cover (if required) and stone aggregate to minimise ground damage. • Excavated peat will only be moved short distances from the point of extraction and will be used locally for reinstatement, landscaping of improvement areas, reducing the on-site traffic. Excavated rock (and any glacial till) will be used for access track construction as close to the source of extraction as possible.
MM54	Ground stability	10.5.2	<ul style="list-style-type: none"> • Short term temporary stockpiles will be limited to 1m height and removed for reuse/remediation purposes or transported to the designated Spoil Storage Areas where the height will be 2m. It is envisaged that all material will be reused on Site, unless contaminated (for example, due to accidental hydrocarbon/fuel spill). Therefore, the risk posed by the management of material in terms of peat and slope stability is dramatically reduced. • All Site excavations and construction will be supervised by a geotechnical engineer/ engineering geologist. • The Contractor's methodology statement and risk assessment will be in line with the Construction Environmental Management Plan and will be reviewed

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>and approved by a suitably qualified geotechnical engineer/engineering geologist prior to Site operations.</p> <ul style="list-style-type: none"> • Particular attention and pre-construction assessment (developer / sub-contractor site specific risk assessment and method statement (RAMS) and on-site toolbox talks etc.) and mitigation planning will be given to any new infrastructure, for example, the proposed site access tracks, culverted watercourse crossings and associated hardstand / access track. • Groundwater level (pore water pressure) will be kept low at all times (excavation dewatering) to avoid ground stability risks (subsidence) associated with peat and careful attention will be given to the existing drainage and how structures might affect it. Draining water from the construction area will be done through advanced dewatering techniques. In particular, ponding of water will not be allowed to occur in recent excavations, particularly in any areas encountered where peat is >1m. All deliberate or incidental sumps will be drained to carry water away from the sump following rainfall. • In areas of saturated peatlands, prior to excavation, drains will be established to effectively drain grounds prior to earthworks. Such drains will be positioned at an oblique angle to slope contours to ensure ground stability. Drains on areas of the Site with minimal risk of bog failure as identified by Site Investigations will be positioned at a more acute angle to the slope contour in order to reduce the velocity of surface water drainage. • Peat will be carefully managed particularly when in temporary storage. Temporary storage areas will be isolated from the receiving environment by means of temporary infrastructure such as boundary berms comprised of subsoils sourced at the Site, or similar material. There is potential for large volumes of bog water draining from new stockpiles which will also be managed. Mitigation will include removal of gross solids from runoff prior to bog water intercepting the wind farm drainage network. Temporary measures such as dewatering and pumping through silt bags will be employed to assist this process. Draining of stockpiled peat, in a controlled manner is recommended, (Appendix 2.1), with a view to reducing the weight and mobility of the material, therefore reducing risk in terms of localised stability. Similar measures will be applied to the management of subsoil arisings at the Site.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • Peat is required for reinstatement, therefore acrotelm peat (top living layer, c. 0.5m) will be stripped off the surface of the bog and placed carefully at the margins of the Development along the access track and hardstand margins • Relatively high impact construction activities (e.g., excavations, movement of soils / subsoils / rock) are acceptable to be carried out throughout the year, when taking into account the various restrictions of the Development, (for example, breeding bird seasons). However, considering the variability of metrological conditions and the potential for significant events to occur at any stage of the year, the construction phase will be limited to favourable meteorological conditions. In order to mitigate for particular earth works tasks and suitable meteorological conditions, construction activities will not occur during periods of sustained significant rainfall events, or directly after such events (allowing time for work areas to drain excessive surface water loading and discharge rates reduce). • An emergency response system will be developed for the construction phase of the project, particularly during the early excavation phase. This, at a minimum, will involve 24-hour advance meteorological forecasting (Met Éireann download) linked to a trigger-response system. When a pre-determined rainfall trigger level is exceeded (e.g. one in a 100-year storm event or very heavy rainfall at >25mm/hr), planned responses will be undertaken. These responses will include; cessation of construction until the storm event including storm runoff has passed over. Following heavy rainfall events, and before construction works recommence, the Site will be inspected and corrective measures implemented to ensure safe working conditions, for example dewatering of standing water in open excavations, etc. • Vehicular movements will be restricted to the footprint of the Proposed Development, and advancing ahead of any constructed hardstand will be minimised in so far as practical. • Ancillary machinery will be kept on established hardstands, no vehicles will be permitted outside of the footprint of the Development and will not move onto

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>land that is not proposed for the Development if it can be avoided. Vehicular access to any areas of deep peat (>1m) during construction will be restricted to low ground pressure vehicles, with all construction vehicles travelling on existing access tracks whenever possible.</p> <ul style="list-style-type: none"> • Best practice will be applied during construction which will minimise the risk of ground instability. All works will be managed and carried out in accordance with the CEMP, which will be updated by the civil engineering contractor and agreed prior to any Site works commencing. • A Geotechnical Clerk of Works will be employed during the construction phase in order to continuously monitor areas of peat. • In the event that soil stability issues arise during construction activities, all ongoing construction activities at the particular area of the Site will cease immediately, the assigned geotechnical supervisor will inspect and characterise the issue at hand, corrective measures will be prescribed. • Provision for a peat stability monitoring programme to identify early signs of potential bog slides (pre-failure indicators, for example cracks forming). This will be done in line with Scottish Governments' "Peat Landslide Hazard and Risk Assessments".
MM55	Soil contamination	10.5.2	<ul style="list-style-type: none"> • To control and contain any potential hydrocarbon or other harmful substance spillages by vehicles during construction, it is recommended where possible to refuel plant equipment off the development site, thus mitigating this potential effect by avoidance. • Where fuelling offsite is impractical (e.g., bulldozers, cranes, etc.) and fuelling must occur on Site, all oil and chemical storage facilities will be bunded to 110% volume capacity of fuels stored at the site. A bunded refuelling area (with a Class 1 full retention oil interceptor) will be designated for the purpose of safe fuel storage and fuel transfer to vehicles, located at the Temporary Contractor's Compound near T5. • An Emergency Response Plan will be in place as part of the CEMP before consented works are carried out. • In order to mitigate against possible fuel spills the following elements are to be included:

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Mobile bowzers, tanks and drums will be stored in secure, impermeable storage area, away from drains and open water; ○ Fuel containers will be stored within a secondary containment system e.g., bund for static tanks or a drip tray for mobile stores ○ Ancillary equipment such as hoses, pipes will be contained within the bund ○ Taps, nozzles or valves will be fitted with a lock system ○ Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage ○ Only designated operators will be authorised to refuel plant on site. ● In the event of an accidental spill during the construction, operational or decommissioning phase of the Proposed Development, contamination occurrences will be addressed immediately, this includes the cessation of works in the area of the spillage until the issue is resolved. ● Appropriate spill kits must be provided across the site to deal with the event of a spillage and made available at all times. Spill kits will contain a minimum of; oil absorbent granules, oil absorbent pads, oil absorbent booms, and heavy-duty refuse bags (for collection and appropriate disposal of contaminated matter). Onsite contractors will be trained in their use. The CEMP will reflect the location and type of spill kits. No materials contaminated or otherwise will be left on the Site. Suitable receptacles for hydrocarbon contaminated materials will also be at hand. Upon usage, spill kits will be promptly replaced.
MM56	Release of Wastewater Sanitation Contaminants	10.5.2	<ul style="list-style-type: none"> ● Wastewater/sewerage from the staff welfare facilities located in the temporary construction compound will be collected and held in a sealed storage holding tank, fitted with a high-level alarm. A wastewater or sewerage leakage is not anticipated in a properly managed site.
MM57	Release of cementitious materials	10.5.2	<ul style="list-style-type: none"> ● Precast concrete will be used wherever possible <i>i.e.</i>, formed offsite. Where the use of precast concrete is not possible the following mitigation measures will apply: <ul style="list-style-type: none"> ○ Lean mix concrete, often used to provide protection to main foundations of infrastructure from soil biome, will be minimized, limited to the requirement of turbine foundations if necessary.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ The acquisition, transport and use of any cement or concrete on site will be planned fully in advance of commencing works by the Contractor's Environmental Manager and supervised at all times by the developer appointed Environmental Clerk of Works (EnvCoW). ○ There will be no excess cementitious material on the vehicle which could be deposited on trackways or anywhere else on site. Hence, delivery trucks, tools and equipment will be cleaned at designated washout areas located conveniently and within a controlled area of the site. <p>In addition, the following drainage measures will apply;</p> <ul style="list-style-type: none"> ● Any shuttering installed to contain the concrete during pouring will be installed to a high standard with minimal potential for leaks. ● Concrete will be poured during periods of minimal precipitation. This will reduce the potential for surface water run off being significantly affected by freshly poured concrete. ● Ground crew will have a spill kit readily available, and any spillages or deposits will be cleaned/removed as soon as possible and disposed of appropriately. ● Pouring of concrete into standing water within excavations will not be undertaken. ● Excavations will be prepared before pouring of concrete by pumping standing water out of excavations to the buffered surface water discharge systems in place. ● No surplus concrete will be stored or deposited anywhere on site. Such material will be returned to the source location or disposed of off-site appropriately.
MM58	Material and waste management	10.5.2	<ul style="list-style-type: none"> ● All construction and operation waste materials will be correctly sorted, recycled or disposed of accordance with good site practice and in accordance with the Waste Management Plan within the CEMP. A policy of Reduce, Reuse and Recycle will apply. ● Any vehicles coming onto the Site will be required to be inspected and cleaned before leaving the Temporary Construction Compound before advancing to the destined construction area.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • In the event of a significant contamination or pollution incident e.g., discharge or accidental release of hydrocarbons / fuel to surface water systems, contamination occurrences will be addressed immediately, this includes the cessation of works in the area of the spillage until the issue is resolved. The relevant authorities listed in the Emergency Response Plan and stakeholders will also be promptly informed. • All excavated earth materials, wherever possible, will either be re-used in an environmentally appropriate and safe manner e.g., landscaping and bog restoration or removed from the Site at the end of the construction phase. No permeant stockpiles will be left on the Site. • Any surplus of natural materials (e.g., peat) to be used as backfill or deposited elsewhere in the Site will not be deposited to above existing / original ground level for the area in question. • Excavated materials onsite will be reused and recycled according to the Waste Hierarchy as much as possible. Where it is not possible to do so, any excess materials (road building materials) or artificial (PVC piping, cement materials, electrical wiring etc.) will be taken offsite and disposed of at a licensed facility at the end of the construction phase. A policy of reduce, re-use and recycle will apply. All waste will be segregated and re-used where possible or removed from Site for recycling. Any waste which is not recyclable or compostable will be properly disposed of landfill.
Operational Phase			
MM59	General Overview of Works Mitigation Measures	10.5.3	<ul style="list-style-type: none"> • All wastes from the control building and ancillary facilities will be removed by the appropriate contractor. • The operational team will carry out maintenance works (to site access tracks, onsite substation and turbines) and will put in place control measures to mitigate the risk of hydrocarbon or oil spills during the operational phase of the windfarm. • Any vehicles utilised during the operational phase will be maintained on a weekly basis and checked daily to ensure any damage or leakages are corrected.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
MM60	Monitoring	10.5.3	<ul style="list-style-type: none"> Regular monitoring, similar to the construction phase but on a less frequent basis will be required. For example, the Development will be inspected on a routine quarterly basis and following storm events. Any potential issues arising will be noted and remedial action taken in line with construction phase mitigation.
Decommissioning Phase			
MM61	General Overview of Works Mitigation Measures	10.5.4	<ul style="list-style-type: none"> All physical infrastructure (turbines, substation, mast etc.) will be removed, re-used or recycled as appropriate or upgraded if the Site is to be repowered. Where possible, redundant access tracks, turbine bases and hardstand areas will be reinstated. Some of the site access tracks and hardstanding areas, if not required during operation will be reinstated. Areas of excess soil and rock will be reused in order to match the surrounding land as near as possible. Drainage and slopes will be restored as close to the original ground as possible if it is geotechnically and environmentally beneficial to do so.
EIAR Chapter 11 – Material Assets			
Construction Phase			
MM62	Waste	11.6.1	<p>A Waste Management Plan (WMP) will be prepared which will cover all aspects of waste management during the construction phase.</p> <ul style="list-style-type: none"> The objective of the WMP will be to maximise the reuse of construction materials either onsite or offsite. All waste generated during the construction phase will be managed in accordance with the relevant waste management regulations. Waste generation on site during construction works will be properly supervised with designated waste storage and segregation areas. Materials required will be ordered only as needed to reduce excess materials leading to waste. Where excess materials do arise, these will be returned to the supplier where possible.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> In the unlikely occurrence of hazardous waste during construction, such as waste oils and lubricants, it will be segregated, contained, classified, transported, and disposed of by appropriately permitted waste contractors in accordance with all relevant national and international waste legislation.
MM63	Utilities	11.6.1	Ongoing consultation with Uisce Éireann, Bord Gáis EirGrid, ESB Networks and other relevant service providers within the locality, and compliance with any requirements or guidelines they may have, will ensure a smooth construction schedule without disruption to the local residential and business community.
MM64	Telecommunications	11.6.1	<p>A mitigation measure of re-routing the Enet radio link between Kilseily and Kilonan into ESB Killonan from an alternative Feeder Site has been identified as a feasible mitigation option. Enet were consulted on the proposed mitigation and agreed in principle with the mitigation proposal.</p> <p>Refer to Appendix 11.1: Telecommunications Impact Study.</p>
Operational Phase			
MM65	Waste	11.5.3	<ul style="list-style-type: none"> All waste will be stored appropriately and safely from wind, rain and wild animals that often tear apart rubbish bags. Wastewater from the staff welfare facilities will be collected in a sealed storage tank. All wastewater will be tankered off-site by an authorised waste collector to a wastewater treatment plant.
MM66	Aviation	11.6.1	<ul style="list-style-type: none"> Instrument Flight Procedures: In agreement with the IAA and Shannon Airport, confirmatory studies of the potential for impact of the proposed turbines on the IFPs and ATCSMAC will be carried out by an Aviation Design Specialist (approved by the IAA). The Design Specialist will undertake an IFP and ATC SMAC Safeguarding Assessment and specify the required changes to the IFP to be implemented by Shannon Airport if required. A number of design options to reduce the impact of the proposed development to allow Shannon Airport to continue with safe and efficient vectoring operations may include subject to discussion and review with the IAA: <ul style="list-style-type: none"> Raising the Minimum Vectoring Altitude

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Creating a new sector to address any issues attributable to the proposed wind turbines. ● Once the required changes are agreed and implemented by Shannon Airport the potential for impact will be mitigated. ● In agreement with the IAA and Shannon Airport a confirmatory study of the potential for impact of the proposed turbines on the Woodcock Hill Radar Surveillance Sensor will be carried out by an Aviation Design Specialist (approved by the IAA). Where upgrades are required, the Design Specialist will specify the required changes to the Woodcock Hill software and hardware to be implemented by Shannon Airport if required. A detailed conditions survey by the manufacturer will be undertaken to assist in assessing the requirements. Once the Radar upgrade has been implemented the risk will be fully mitigated. ● If planning consent is granted for the proposed development, the Developer will liaise with the Irish Aviation Authority (as noted in the scoping response) to ensure all aviation requirements, such as a warning lighting scheme, are implemented.
Chapter 12 – Shadow Flicker			
Operational Phase			
MM67	Shadow Flicker	12.7	<p>A shadow flicker control system will be installed and operated as part of the Proposed Development. In this system, specialist software calculates the position of the sun and uses one or more light sensors to measure the intensity of sunlight. When the conditions for shadow flicker to occur at a sensitive receptor within the study area are detected, responsible turbine(s) can be curtailed, and will come to a stop. When these conditions are no longer present, the turbine(s) can be released. It is recognised that there will be a short period (approximately 1 – 2 minutes) where shadow flicker may occur before the turbine(s) shut down, once pause criteria are met.</p>
EIAR Chapter 13 – Noise and Vibration			
Construction Phase			

Ref No.	Reference Heading	Reference Location	Mitigation Measure
MM68	General Overview of Works Mitigation Measures	13.7.1	<p>BS:5228-1, outlines general measures for the reduction of construction noise and vibration levels at source. Most construction activities will be restricted to the hours of 07:00 to 19:00 Monday to Friday and 08:00 to 13:00 on Saturdays, excluding those unlikely to produce substantial noise levels, some turbine deliveries or concrete pours, or as otherwise agreed with Clare County Council. Out of hours works may also be associated with HDD drilling, but the following additional measures will be implemented:</p> <ul style="list-style-type: none"> • HDD drilling works to be undertaken during standard day-time hours where possible and completed in the shortest practical timescale. • Use of Best Practical Means to minimise noise generation at nearest residents, including use of quiet drilling/pumping equipment and/or temporary noise barriers installed around trenchless compounds in order to provide screening for sources located at low heights. • The closest local residents (within 200m of the HDD works) will be kept informed of the likely period during which the work will take place, the times and durations of planned works, measures that are being taken to avoid unnecessary noise and following completion of the works. <p>These measures where relevant will be implemented during the construction and decommission period.</p>
Operational Phase			
MM69	General Overview of Works Mitigation Measures	13.7.2	<ul style="list-style-type: none"> • The selection of the final turbine to be installed at the site will be made on the basis of ensuring relevant noise limits are achieved at the surrounding residential properties.
Decommissioning Phase			
MM70	General Overview of Works Mitigation Measures	13.7.3	<ul style="list-style-type: none"> • Similar mitigation measures will be employed as for the construction phase.
EIAR Chapter 14 – Landscape and Visual			

Ref No.	Reference Heading	Reference Location	Mitigation Measure
Construction Phase			
MM71	General Overview of Works Mitigation Measures	14.7.1	<ul style="list-style-type: none"> The appropriate management and reinstatement of excavations, in a timely manner, will ensure that any adverse effects caused, for example at site entrances or road upgrade locations, are minimised insofar as possible. Progressive reinstatement and landscaping of the site will remediate any short term adverse effects on the local landscape.
EIAR Chapter 15 – Archaeology and Cultural Heritage			
Construction Phase			
MM72	General Overview of Works Mitigation Measures	15.14	<ul style="list-style-type: none"> No groundworks, construction vehicle movements or storage of materials will be carried out within the 50m buffer zones around the recorded monument and the unregistered historic buildings closest to the areas of groundworks identified on the site. A visual barrier will be placed around the buffer zones of the monuments and historic buildings closest to the site during the construction phase. The ruins of the historic farm buildings and 19th century structures identified within and closest to the site boundary will be preserved in situ. Upstanding historic field boundaries within the site will be preserved in situ wherever possible. If a section of a historic field boundary must be removed to facilitate the construction then a representative cross-section of the boundary will be investigated and recorded by a suitably qualified archaeologist prior to removal. All major sub-surface groundworks associated with the proposed development construction works (wind turbine, 1100kV substation location, compound locations, spoil storage areas and construction of new sections of access track) will be subject to a programme of archaeological monitoring. <ul style="list-style-type: none"> This will be carried out by a suitably qualified archaeologist under license and in accordance with the provisions of the National Monuments Acts 2023.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ If significant archaeological material is encountered during the course of archaeological monitoring, then resolution of any such significant material will be determined in consultation with the National Monuments Service (DHLGH) and Clare County Council. ○ Where possible, every reasonable effort will be made to preserve in situ or reduce the effect on any identified archaeological material. Where preservation in situ cannot be achieved, either in whole or in part, then a programme of full archaeological excavation will be implemented to ensure the preservation by record of the portion of the wind farm site that will be directly impacted upon. This work will be carried out by a suitably qualified archaeologist under license and in accordance with the provisions of the National Monuments Acts 2023. ○ A written report will be prepared detailing the results of all archaeological work undertaken and submitted to the National Monument Service (DHLGH) and Clare County Council. ● Licensed archaeological monitoring would likely be required of any open cut trenching for the Grid Connection Route that is required outside of the existing modern public road and along the public road adjacent to the St Vincent de Paul Church. Field boundaries that appear on historic 19th century maps should be preserved in situ where possible and the cable trench for off road sections should be aligned through existing gaps of field boundaries to minimize loss of field boundaries. ● For the TDR, Licensed archaeological monitoring would likely be required of any groundworks required outside of the existing modern public road at the junction of the R463 and the R471. Field boundaries that appear on historic 19th century maps should also be preserved in situ where possible. It is also recommended that the Transport Consultants for this EIAR are to confirm that historic bridges located at Ballincurra Bridge (57) and Ferry Bridge (59) will be able to take the vehicle loads proposed to carry the parts of the Turbine to the Proposed Development.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
EIAR Chapter 16 – Traffic and Transport			
Pre-Commencement & Construction Phase			
MM73	General Overview of Works Mitigation Measures	16.9.2	<ul style="list-style-type: none"> • A detailed Construction Traffic Management Plan (CTMP), incorporating all the mitigation measures set out in the TMP submitted as part of the CTMP, will be finalised and agreed with the relevant road authorities and An Garda Síochána prior to construction works commencing on site. The detailed TMP will include the following: • Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management. • Delivery Programme – a programme of deliveries will be submitted to Clare County Council in advance of the delivery of the turbine components to site. • Communications: Local residents in the area will be informed of any upcoming traffic related matters e.g., temporary lane/road closures (if required) or any night deliveries of turbine components, via letter drops and door knocks. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or Local Authority during normal working hours. An "out of hours" emergency number will also be provided. • Travel Plans – Given the site location, the assessment above has assumed the worst case i.e., that construction workers will drive to the site. The Main Contractor will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the site and identification of an area for parking. • The contractor shall provide advanced warning signs, in accordance with Chapter 8 of the Department of the Environment's Traffic Signs Manual 2019, on the approach to proposed site access locations a minimum of one week prior to construction works commencing at the site. • There will be heras fencing secured to a minimum height of 2 metres alongside the construction compound areas or solid panel hoarding in areas with high/low

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>viewing panels to help reduce unauthorised access to the construction compound.</p> <ul style="list-style-type: none"> • This fence will be checked daily and maintained as necessary and it will be the responsibility of the Site Manager to open and lock the gates each working day to ensure the site is not left open and unattended at any time. • Access to the construction site will be limited to authorised persons. The site will be secured at all times with security with security being employed by the main contractors to ensure no unauthorised access. • Where possible, construction traffic and non-construction traffic will be separated for all modes of transport. Where the construction programme requires mixing of traffic, additional temporary traffic management measures will be put in place. • The majority of access / egress to proposed sites shall be facilitated from the local road networks. To mitigate against possible restrictions in visibility requirements, it is proposed that the contractor shall use a safe system of permanent flag men for the control of traffic during all access / egress operations at each site location, if required. The site marshal, referred to above, will be responsible for this. • Access to the site will be in the location of the proposed development accesses each of which will be accessed via the R471. The contractor will ensure a visibility splay that is appropriate for the local speed limit. • Haulage routes will avoid passing local schools at the start and end of the school day. • In summary, the contractor will be required to ensure that the following elements are implemented: <ul style="list-style-type: none"> ○ Consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements; ○ Provision of temporary signage indicating site access route and locations for contractors and associated suppliers; and

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Provision of general information signage to inform road users and local communities of the nature and locations of the works, including project contact details. • If work must be done in the Public Highway the Main Contractor will ensure that the Main Contractor obtains the necessary licences and permits in time for the works to proceed on time. • The Main Contractor will procure street works accredited and approved contractors to carry out the utility works. In accordance with plans and drawings submitted to the planning authority, and subject to the necessary approval of Uisce Éireann and in agreement with the Roads and Transport Department of the Local Authority (FCC), road works are required to facilitate the Proposed Development. As per drawing 16139- Proposed Drainage layout, it will be necessary to connect to the existing 375mm Foul drainage pipe and surface water (size unspecified) on the R471. • A specific Traffic Management Plan (TMP) will be required by the Local Authority in conjunction with the application for a road opening licence, in advance of carrying out these road works. The TMP design and service will be provided by an independent specialist and will deal with the efficient management of traffic and pedestrians, mitigating all potential safety risks to users, whilst maintaining effective operation of the carriageway. • Hoarding will be checked daily with a weekly thorough inspection. Any defects will be attended to immediately. • The Main Contractor will ensure that there is adequate protection in place to prevent concrete splashing beyond the site boundary when the concrete slabs are being poured. The Main Contractor will carry out a task specific briefing prior to every pour above ground level. • The gateman and traffic marshals will ensure public safety when vehicles are entering and exiting the site. The public will not be allowed to access the site unless they follow the dedicated pedestrian access route on to site. They will be fully protected with appropriate PPE until they reach the security cabin. There is no unauthorised access beyond this point. • In order to reduce impacts on local communities and residents adjacent to the proposed sites, it is proposed that:

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ The contractor will be required to liaise with the management of other construction projects and the Local Authorities to co-ordinate deliveries. ○ The contractor will be required to schedule deliveries in such a way that construction activities and deliveries activities do not run concurrently e.g., avoiding pouring of concrete on the same day as material deliveries in order to reduce the possibility of numbers of construction delivery vehicles arriving on site simultaneously, resulting in build-up of traffic on the road network. ○ The contractor will be required to schedule deliveries to and from the proposed site such that traffic volumes on the surrounding road network are kept to a minimum. ○ HGV deliveries to the Proposed Development site will be suspended on the days of any major event in the area that have the potential to cause larger than normal traffic volumes. ○ The contractor will be required to interact with members of the local community to ensure that deliveries will not conflict with sensitive events such as funerals. ○ HGV deliveries will avoid passing schools at opening and closing times where it is reasonably practicable. <ul style="list-style-type: none"> ● Deliveries of materials to site will generally be between the hours of 08:00 and 19:00 Monday to Friday, and 08:00 to 14:00 on Saturdays. No deliveries will be scheduled for Sundays or Bank Holidays. There may be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times. ● Adherence to posted/legal speed limits will be emphasised to all staff/suppliers and contractors during induction training. ● Drivers of construction vehicles/HGVs will be advised that vehicular movements in locations, such as local community areas, shall be restricted to 50km/h. Special speed limits of 30km/h shall be implemented for construction traffic in sensitive areas such as school locations. Such recommended speed limits will only apply to construction traffic and shall not apply to general traffic. It is not

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>proposed to signpost such speed limits in the interest of clarity for local road users.</p> <ul style="list-style-type: none"> • Spoil will be removed from site using 8-wheeler muck away lorries. The lorries will arrive at site and will be marshalled onto the site by the traffic marshals. The lorries will be loaded with an excavator. The lorries will be covered prior to leaving site. The traffic marshal will escort the vehicle off site and once the vehicle is on its way, the next vehicle will be called in. • It shall be a requirement of the works contract that the contractor will be required to carry out road sweeping operations to remove any project related dirt and material deposited on the road network by construction/delivery vehicles. All material collected will be disposed to a licensed waste facility. • The contractors shall ensure that: <ul style="list-style-type: none"> ○ Loads of materials leaving each site will be evaluated and covered if considered necessary to minimise potential dust impacts during transportation. ○ The transportation contractor shall take all reasonable measures while transporting waste or any other materials likely to cause fugitive losses from a vehicle during transportation to and from site, including but not limited to: <ul style="list-style-type: none"> ○ Covering of all waste or material with suitably secured tarpaulin/ covers to prevent loss; ○ Utilisation of enclosed units to prevent loss; and ○ The roads forming part of the haul routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required. • In addition, the contractor shall, in conjunction with the Local Authority:

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Undertake additional inspections and reviews of the roads forming the haul routes one month prior to the construction phase to record the condition of these roads at that particular time. ○ Such surveys shall comprise, as a minimum, a review of video footage taken at that time, which shall confirm the condition of the road corridor immediately prior to commencement of construction. This shall include video footage of the road wearing course, the appearance and condition of boundary treatments and the condition of any overhead services that will be crossed. Visual inspections and photographic surveys will be undertaken of bridges and culverts that are along the haul roads. ○ Where requested by the Local Authority prior to the commencement of construction operations, pavement condition surveys will also be carried out along roads forming part of the haul route. These will record the baseline structural condition of the road being surveyed immediately prior to construction. ○ Throughout the course of the construction of the Proposed Development, on-going visual inspections and monitoring of the haul roads will be undertaken to ensure any damage caused by construction traffic is recorded and that the relevant Local Authority is notified. Arrangements will be made to repair any such damage to an appropriate standard in a timely manner such that any disruption is minimised. ● Upon completion of the construction of the Proposed Development, the surveys carried out at preconstruction phase shall be repeated and a comparison of the pre and post construction surveys carried out. Where such comparative assessments identify a section of road as having been damaged or as having deteriorated as a result of construction traffic, the construction related damage will be repaired.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • The Main Contractor will establish a holding area on the site that could accommodate up to 2 concrete trucks, the Main Contractor will also provide a traffic marshal at the site. The holding area will be utilised to prevent congestion of the R471 from construction traffic. • All vehicles will be tracked by the traffic marshals who will report back to the logistics manager. The logistics manager will control the deliveries with help from the traffic marshals and the gateman. Unscheduled vehicles will be turned away. If deliveries are taking longer to offload, then the following deliveries will be notified of any timing issues. • A copy of the delivery schedule will be issued to the traffic marshals, gateman and contractors' supervisors every morning so that everyone is aware and can make provision for when their delivery arrives. • The traffic marshals will be trained and competent and they will undergo ongoing assessments by the logistics manager to ensure that they are carrying out their duties with due care diligence. • Construction plant and equipment will only be parked over-night within the site compound. Construction plant and equipment will be checked daily for any visual signs of oil or fuel leakage, as well as wear and tear. • Construction works will be carried out according to a defined schedule agreed with the client and the relevant contractors, with regard to the hours of work outlined above. Any delays or extensions required will be notified at the earliest opportunity to the client and Contractors. • Contractors will ensure that road edges and footpaths are swept on a regular basis. • Should works be required on the external road network, road opening licences will be sought from the Local Authority via the Road Management Office. • All project staff and material suppliers will be required to adhere to the CTMP (which is a live document). As outlined above, the contractor shall agree and implement monitoring measures to confirm the effectiveness of the CTMP.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • All deliveries will be notified to the Contractor’s Project Manager/Traffic Management Co-ordinator in advance with specific times identified. These will be collated and held in a diary by the Co-ordinator who will manage the deliveries daily . The Co-ordinator will highlight any clashes and anticipated busy periods to streamline the processing of deliveries. • On arrival at the agreed locations, drivers must wait and ring for attention in accordance with the relevant site signage. They will then be escorted to the appropriate location for unloading by the contractor’s Banksmen. • Unloading will be carried out at one of the material storage areas. All deliveries, where possible, must be able to be unloaded by forklift or mechanical means. • In accordance with Condition 18 of Board Order ABP-307889-20, site development and building works shall be carried out only between the hours of 0700 to 1900 Mondays to Fridays inclusive, between 0800 to 1400 hours on Saturdays and not at all on Sundays and public holidays. • There may be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times. Where possible, advance warning will be given to Clare County Council in writing if construction activities occur outside of these hours. These will be kept to a minimum. • All access roads used by contractors will be monitored for mud and any construction materials and cleared using a shovel and broom and if required a mechanical road sweeper. • The contractor shall ensure that unobstructed access is provided to all emergency vehicles along all routes and site accesses. The contractor shall provide to the local authorities and emergency services, contact details of the contractor’s personnel responsible for construction traffic management. In the case of an emergency the following procedure shall be followed: <ul style="list-style-type: none"> ○ Emergency Services will be contacted immediately by dialling 112;

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Exact details of the emergency / incident will be given by the caller to the emergency line operator to allow them to assess the situation and respond in an adequate manner; ○ The emergency will then be reported to the Site Team Supervisors and the Safety Officer. All construction traffic shall be notified of the incident (where such occurs off site); ○ Where required, appointed site first aiders will attend the emergency immediately; and ○ The Safety Officer will ensure that the emergency services are en-route. ● The Main Contactor will maintain a log of site complaints detailing: <ul style="list-style-type: none"> ○ Name and address of complainant ○ Time and date complaint was made. ○ Likely cause or source of nuisance ○ Weather conditions, such as wind speed and direction ○ Investigative and follow -up actions. ● The Main Contractor will appointment a Liaison Officer as a single point of contact to engage with the local community and respond to concerns. It will be the role of the Liaison Officer to keep local residents and businesses informed of progress and timing of particular construction activities that may impact on them. ● The contractor shall ensure that close communication with the relevant local authorities and the emergency services shall be maintained throughout the construction phase. Such communications shall include: <ul style="list-style-type: none"> ○ Submissions of proposed traffic management measures for comment and approval;

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ On-going reporting relating to the condition of the road network and updates to construction programming; and ○ Information relating to local and community events that could conflict with proposed traffic management measures and construction traffic in order to implement alternative measures to avoid such conflicts. ● The contractor shall also ensure that the local community is informed of proposed traffic management measures in advance of their implementation. Such information shall be disseminated by posting advertisements in local newspapers and delivering leaflets to houses in the affected areas. Such information shall contain contact information for members of the public to obtain additional information and to provide additional knowledge such as local events, sports fixtures, etc., which may conflict with proposed traffic management measures. ● Traffic management measures specific to the Turbine Delivery Route include the following: <ul style="list-style-type: none"> ○ Identification of a delivery routes and schedules. ○ Details of the alterations required to the infrastructure identified in this report and any other minor alteration identified (hedgerows etc.); and ○ A Test Run to be carried out by the appointed haulage contractor to prove the route in advance of delivery of any turbine equipment. ● Post planning, extensive TDR route proofing will be carried out consultation with An Garda Síochána, the local authority and the appointed haulage contractor. ● Where possible, and with the agreement of the relevant stakeholders, such as roads authorities and An Garda Síochána Traffic Corp, turbine components will

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p>be transported at night when traffic is lightest. Transportation of turbine components will only occur when a specific permit for the transport of oversized cargo has been issued.</p> <ul style="list-style-type: none"> Any temporary accommodating works for the TDR will be carried out in advance of turbine deliveries and following consultation and agreement with the relevant Local Authorities and Roads Authority. For the GCR works, works shall be undertaken on a rolling basis with short sections closed for short periods before moving onto the next section.
Decommissioning Phase			
MM74	Decommissioning	16.9.4	<ul style="list-style-type: none"> A decommissioning plan, including material recycling/disposal and Traffic Management Plan will be prepared for agreement with the Local Authority prior to decommissioning of the wind farm. All decommissioning works are to be carried out in accordance with a decommissioning plan to be prepared prior to the decommissioning phase of the Project and agreed with the planning authority in advance.
EIAR Chapter 17 – Air Quality			
Pre-Commencement Phase			
MM75	Dust Management	17.7.1	<ul style="list-style-type: none"> Before the commencement of construction activities, a CEMP for the construction phase will be prepared and agreed with the planning authority to ensure that the potential for adverse environmental effects on local receptors is minimised. The CEMP will include measures for controlling dust and general pollution from site construction operations. Controls will be applied throughout the construction period to ensure that emissions are mitigated.
MM76	Communications	17.7.1	<ul style="list-style-type: none"> Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. Display the name and contact details of people accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> • Display the head or regional office contact information.
Construction Phase			
MM77	Air Quality Management	17.7.1	<ul style="list-style-type: none"> • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority if requested. • Record any exceptional incidents that cause dust and/or air emissions, either on- or off site and the action taken to resolve the situation in the logbook. • Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. • Undertake regular on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary. • Carry out regular site inspections to monitor compliance with the dust management plan, record inspection results, and make an inspection log available to the local authority if requested. • Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. • Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations and duration (including baseline monitoring) with the local authority.
MM78	Site Maintenance	17.7.1	<ul style="list-style-type: none"> • Erect solid screens or barriers around dusty activities. • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. • Avoid site runoff of water or mud. • Keep site fencing, barriers and scaffolding clean.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site, cover. Cover, seed or fence stockpiles to prevent wind whipping.
MM79	Operating Vehicles/Machinery and Sustainable Travel	17.7.1	<ul style="list-style-type: none"> Ensure all vehicles switch off engines when stationary - no idling vehicles. Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced site access tracks and work areas. Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. Impose and signpost a maximum-speed-limit of 24kmph on surfaced and 16kmph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate). Produce a construction logistics plan to manage the sustainable delivery of goods and materials. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
MM80	Construction Operations	17.7.1	<ul style="list-style-type: none"> Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<p><i>Specific to Earthworks</i></p> <ul style="list-style-type: none"> • Re-vegetate earthworks to stabilise surfaces. • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. • Only remove the cover in small areas during work and not all at once. <p><i>Specific to Construction</i></p> <ul style="list-style-type: none"> • Avoid scabbling (roughening of concrete surfaces) if possible. • Ensure sand and other aggregates are stored in banded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. • For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust. <p><i>Specific to Trackout</i></p> <ul style="list-style-type: none"> • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. • Avoid any dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Record all inspections of haul routes and any subsequent action in a site log book. • Implement a wheel washing system.
MM81	Exhaust Emissions from Plants and Vehicles	17.7.2	<ul style="list-style-type: none"> • Any emissions from Non-Road Mobile Machinery (NRMM) can be reduced by ensuring that any plant used on-site comply with the NO_x, particulate matter and carbon monoxide emissions standards specified in the EU Directive

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			97/68/EC and subsequent amendments as a minimum, where they have net power of between 37kW and 560kW. The emissions standards vary depending on the net power the engine produces.
Decommissioning Phase			
MM82	General Overview of Works Mitigation Measures	17.7.3	<ul style="list-style-type: none"> • Mitigation measures suggested for construction phase (described above) are also relevant for the decommissioning phase to control potential fugitive emissions from the decommissioning works and exhaust emissions from plants and vehicles.
EIAR Chapter 18 – Climate - No specific mitigation measures required			
EIAR Chapter 19 – Major Accidents and Disasters			
MM83	Additional Mitigation Measures	Table 19-5	<ul style="list-style-type: none"> • Communication of design data and risk assessments completed in support of this planning application to the future detailed designers. • A detailed Hazard and Operability (HAZOP) study should be carried out at detailed design stage. The HAZOP should evaluate the mitigation measures in place and address the potential for refinement to reduce the risk associated with this event to a “low” resultant risk level. • The CEMP includes an Emergency Response Plan. • For the operational phase, an Emergency Response Protocol will also be developed for this event. The emergency response planning requirements should include the following requirements at a minimum: <ul style="list-style-type: none"> ○ Response hierarchy: a hierarchy of the roles and responsibilities of the relevant personnel under each category of emergency event. ○ Response assessment: the initial assessment of the emergency event and the required actions, which will be carried out once the alarm / alert has been raised.

Ref No.	Reference Heading	Reference Location	Mitigation Measure
			<ul style="list-style-type: none"> ○ Response procedures: the procedure for the implementation of emergency response actions, as determined by the initial response assessment. ● Protocol for site management in the case of an extreme snow event that is causing access issues. ● Training of personnel in the Emergency Response Protocol. ● An emergency response system will be developed for the construction phase of the project, particularly during the early excavation phase. This, at a minimum, will involve 24-hour advance meteorological forecasting (Met Éireann download) linked to a trigger-response system. When a pre-determined rainfall trigger level is exceeded (e.g., one in a 100-year storm event or very heavy rainfall at >25mm/hr), planned responses will be undertaken. These responses will include; cessation of construction until the storm event including storm runoff has passed over. Following heavy rainfall events, and before construction works recommence, the Site will be inspected and corrective measures implemented to ensure safe working conditions, for example dewatering of standing water in open excavations, etc.