

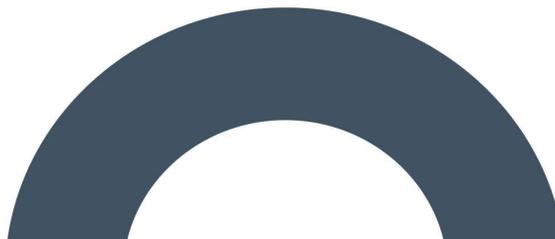
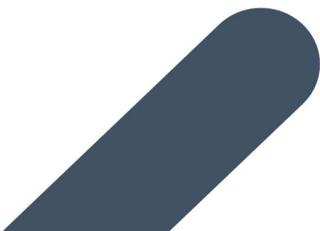
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Environmental Impact Assessment Report (EIAR)

Carrig Renewables Wind Farm

Chapter 18 - Schedule of Mitigation
and Monitoring Measures

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18. SCHEDULE OF MITIGATION AND MONITORING PROPOSALS

18.1 Introduction

All mitigation and monitoring measures relating to the pre-commencement, construction, operational and decommissioning phases of the Proposed Development are set out in the relevant chapters of this EIAR.

All mitigation which will be implemented during the various phases of the project are presented in Table 18-1 below. The mitigation measures have been grouped together according to their environmental field/topic and are presented under the following headings:

- > Construction Management
- > Drainage Design and Management
- > Felling
- > Peat, subsoils and bedrock
- > Flora and Fauna
- > Noise and Vibration
- > Air Quality/Dust
- > Climate
- > Cultural Heritage
- > Traffic

The mitigation proposals in the below format provides an easy to audit list that can be reviewed and reported on during the future phases of the project. The proposal for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as Appendix 4-3 of this EIAR. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

All monitoring measures which will be implemented during the pre-commencement, construction, operational and decommissioning phases of the project are outlined in Table 18-2. All monitoring measures were set out in the relevant chapters of this EIAR. The monitoring proposals are presented in terms of the monitoring requirement, frequency of monitoring and the mechanism for reporting results where applicable. By presenting the monitoring proposals in the below format, it is intended to provide a monitoring schedule that can be reviewed and tracked during all phases of the project to ensure all the required monitoring is completed as required.

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.

EIAR Mitigation Measures

Table 18-1 Schedule of Mitigation

Ref. No.	Reference Heading	Reference Location	Mitigation Measure
EIAR Chapter 4 – Description of the Proposed Development			
Pre-Commencement Phase			
MM1	Environmental Management	EIAR Section 4	All proposed site activities will be provided for in a Construction Environmental Management Plan (CEMP), prepared prior to the commencement of any operations onsite. The CEMP will set out all measures necessary to ensure works are carried out in accordance with the mitigation measures set out in the EIAR and will set out the monitoring and inspections procedures and frequencies.
MM2	Environmental Management	EIAR Section 4	The ECoW will maintain responsibility for monitoring the construction works and the implementation of the CEMP. In addition, a Project Ecologist, Project Hydrologist, Project Archaeologist, Project Geotechnical Engineer will visit the site regularly and report to the ECoW.
MM3	Environmental Management	CEMP Section 4	A Site ECoW will oversee the site works and implementation of the Construction Environmental Management Plan (CEMP) and provide on-site advice on the mitigation measures necessary as necessary to ensure the project proceeds as intended. The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, developer's project manager, and any Authorities or other Agencies, will be agreed by parties where required prior to commencement of construction, and may be further adjusted as required during the course of the project.

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM4	Surface Water Quality	CEMP Section 4	<p>Baseline water quality field testing and laboratory analysis will be undertaken where required prior to commencement of felling and construction at the site. The baseline monitoring programme will be subject to agreement with Tipperary County Council.</p> <p>Baseline laboratory analysis of a range of parameters with relevant regulatory limits and Environmental Quality Standards (EQSs) will also be undertaken as per water monitoring programme for the Proposed Development and each primary watercourse along the route.</p>		
MM5	Concrete Deliveries	EIAR Section 4 CEMP Section 3	The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures.		
MM6	Site Drainage Plan	EIAR Section 4 CEMP Section 4	The Project Hydrologist will prepare detailed drainage design before construction commences.		
MM7	Preparative Site Drainage Management,	EIAR Section 4 CEMP Section 4	<p>The detailed drainage design will specify all materials and equipment necessary to implement the drainage measures effectively, which will be brought on site in advance of any works commencing.</p> <p>An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the detailed drainage design measures as necessary. The detailed drainage measures will be installed prior to, or at the same time as the works they are intended to drain.</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM8	Drainage Inspection	CEMP Section 3	Prior to commencement of works in sub-catchments across the site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage.		
MM9	Drainage Maintenance	EIAR Section 4 CEMP Section 4	An inspection and maintenance plan for the drainage system on site will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the site ECoW or the Project Hydrologist.		
MM10	Earthworks	CEMP Section 3	Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible, drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off.		
MM11	Felling	EIAR Section 4, 7	Construction will not commence during the Breeding Bird season from March to August inclusive. If breeding activity is identified, the nest site will be located, and no works shall be undertaken within a 500m buffer (Forestry Commission Scotland 2006; Ruddock & Whitfield 2007). No works shall be permitted within the buffer until it can be demonstrated that the nest is no longer occupied.		
MM12	Felling Licence	EIAR Section 4	Felling will be carried out under the terms of a licence application to the Forest Service, as per the Forest Service's policy on granting felling licenses for wind farm developments.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM13	Peat Management	EIAR Section 4 CEMP Section 4	<ul style="list-style-type: none"> > Prior to commencing the construction of the excavated roads movement monitoring posts will be installed in areas where the peat depth is greater than 2m. > Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area. 		
Construction Phase					
MM14	Wastewater Management	EIAR Section 4 CEMP Section 2	The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. Full details of the proposed tank alarm system can be submitted to the Planning Authority in advance of any works commencing on-site. The wastewater storage tank alarm will be part of a continuous stream of data from the site's turbines, wind measurement devices and electricity substation that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007(as amended), will be employed to transport wastewater away from the site.		
MM15	Refuelling	EIAR Section 4 CEMP Section 3	<ul style="list-style-type: none"> > On-site refuelling will be carried out using a mobile double skinned, bunded fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site and will be towed around the site by a 4x4 jeep to where machinery is located. It is not practical for all vehicles to travel back to a single refuelling point, given the size of the cranes, excavators, etc. that will be used during the construction of the Proposed Development. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction when not in use. Refuelling operations will be carried out only by designated trained and competent operatives. Mobile anti-pollution 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.</p> <ul style="list-style-type: none"> ➤ Fuels stored on site will be minimised. Storage areas where required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used during construction will be regularly inspected for leaks and fitness for purpose; <p>An emergency plan for the construction phase to deal with accidental spillages is contained within section 5 of the CEMP. Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area.</p>		
MM16	Plant and Equipment Inspections	CEMP Section 3	A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the construction phase.		
MM17	Concrete Deliveries and Management	EIAR Section 4 CEMP Section 3	<p>The following mitigation measures will be implemented to avoid release of cement leachate from the site:</p> <ul style="list-style-type: none"> ➤ No batching of wet-cement products will occur on site; ➤ The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures. ➤ Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible pre-cast elements for culverts and concrete works will be used; ➤ No washing out of any plant used in concrete transport or concreting operations will be allowed on-site; ➤ Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible to dedicated 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>impermeable concrete washout area which requires monitoring and maintenance. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.</p> <ul style="list-style-type: none"> ➤ Use weather forecasting to plan dry days for pouring concrete (see Section 3.2.4.2.2); ➤ The pour site will be free of standing water and plastic covers will be ready in case of sudden rainfall event; <p>The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a concrete washout area, built using straw bales and lined with an impermeable membrane. below. The areas are generally covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents is tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste</p>		
MM18	Road Cleanliness	EIAR Section 4. CEMP Section 3	A road sweeper will be available if any section of the public roads were to be dirtied by trucks associated with the Proposed Development.		
MM19	Watercourse Buffers	EIAR Section 4. CEMP Section 3	All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses.		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM20	Water Discharge	EIAR Section 4	There will be no direct discharges to any natural watercourses, with all drainage waters being dispersed as overland flows.		
MM21	Wastewater Management	EIAR Section 4. CEMP Section 3	During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used on site for toilet facilities. This will be maintained by the service contractor as required and will be removed from the site on completion of the construction phase.		
MM22	Drainage Swales	EIAR Section 4 CEMP Section 3	Swales will be used to intercept and collect run off from construction areas of the site during the construction phase, and channel it to settlement ponds for sediment attenuation as per the drainage design.		
MM23	Interceptor Drains	EIAR Section 4 CEMP Section 3	Interceptor drains will be installed up-gradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site. It will then be directed to areas where it can be re-distributed over the ground as sheet flow as per the drainage design.		
MM24	Check Dams	EIAR Section 4 CEMP Section 3	Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be installed at regular intervals along interceptor drains to restrict flow velocity, minimise channel erosion and promote sedimentation behind the dam as per the drainage design.		
MM25	Level Spreaders,	EIAR Section 4	A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 3	where they are not likely to contribute further to water ingress to construction areas of the site.		
MM26	Vegetation Filters	EIAR Section 4	Vegetation filters, that is areas of existing vegetation, accepting drainage water issuing from level spreaders as sheet flow, will remove any suspended sediment from water channelled via interceptor drains or any remaining sediment in waters channelled via swales and settlement ponds.		
MM27	Settlement Ponds	EIAR Section 4 CEMP Section 3	Settlement ponds, placed either singly or a pair in series, will buffer volumes of run-off discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to water courses as per the drainage design.		
MM28	Dewatering Silt Bag	EIAR Section 4 CEMP Section 3	Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, the majority of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters or sedimats - Sediment entrapment mats, consisting of coir or jute matting - will be placed at the silt bag location to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure.		
MM29	Siltbuster	EIAR Section 4	A “siltbuster” or similar equivalent piece of equipment will be available to filter any water pumped out of excavation areas if necessary, prior to its discharge to stilling ponds or swales. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit.		
MM30	Culvert Upgrades	EIAR Section 4	The following mitigation is proposed for completion of wind farm culvert upgrades: <ul style="list-style-type: none"> ➤ Where possible pre-cast elements for culverts and concrete works will be used; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse; ➤ In all cases, culverts will be oversized to allow mammals to pass through the culvert. ➤ Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. ➤ All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance ➤ All proposed new stream crossings will be bottomless or clear span culverts and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location; ➤ Where the proposed underground cabling route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road; ➤ All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings; ➤ As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document “Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites”, i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of 		



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			<p>suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI);</p> <ul style="list-style-type: none"> > During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas; and, > All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent. 		
MM31	Silt Fences	EIAR Section 4	<ul style="list-style-type: none"> > Silt fences will be emplaced within drains down-gradient of all construction areas. > They will remain in place throughout the entire construction phase. > Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading. > The silt fence designs follow the technical guidance document ‘Control of Water Pollution from Linear Construction Projects’ published by CIRIA (Ciria, No. C648, 1996). Up to three silt fences may be deployed in series. > All silt fencing will be formed using Terrastop Premium or equivalent silt fence product. > Silt fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM32	Sedimats	EIAR Section 4	<ul style="list-style-type: none"> Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure 		
MM33	Hydrocarbon Interceptors	EIAR Section 4	<ul style="list-style-type: none"> A suitably sized hydrocarbon interceptor will be installed wherever it is intended to store hydrocarbons and oils (i.e construction compounds and substation compound) or where it is proposed to park vehicles during the construction and operational phases of the proposed development (i.e construction compounds, substation compound and visitor car park). 		
MM34	Excavation seepages and treatment	EIAR Section 4,	<ul style="list-style-type: none"> Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; If required, pumping of excavation inflows will prevent build-up of water in the excavation; The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, along with use of more specialist treatment systems such as a Siltbags; There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at 		



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			<p>each turbine location through stilling ponds and buffered outfalls onto vegetated surfaces;</p> <ul style="list-style-type: none"> > Buffered outfalls which will be numerous over the site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site; and, > Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface 		
MM35	Peat Management	EIAR Section 4 CEMP Section 4	<p>Proposed New Access Roads</p> <ul style="list-style-type: none"> > Excavation of the new access road to competent strata. > Drainage shall be installed to divert surface and groundwater from the construction > Placement of granular fill-in layers following the designer's specification. The fill thickness is typically 200mm above the existing ground level, in addition to the fill thickness required to backfill the excavation to a suitable competent strata below the existing ground level. The road thickness will be subject to detailed design. > Access roads are to be finished with a granular running surface across the full width of the road. > > A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification. <p>New Floating Roads</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Placement of a geotextile or geogrid directly onto the peat surface following the designer’s specification. ➤ Placement of granular fill and reinforcing geogrids in layers following the designer’s specification (typically 800mm, but which will be subject to detailed design), with due regard to any settlement and deformation of peat anticipated at the access track. ➤ It may be necessary to stage the road construction to maintain peat stability – i.e. to reduce the rate of placement of fill to allow the peat layers to consolidate and increase in strength. ➤ Drains shall be installed within the road to divert surface and groundwater from upslope to downslope. ➤ Stone delivered to the floating road construction shall be end-tipped onto the constructed floating road in a manner as to avoid excessive impact loading on the peat due to concentrated end-tipping. Direct tipping of stone onto the peat shall not be carried out. ➤ Stone will be spread and placed from the constructed floating road onto the peat surface using a bulldozer. ➤ Access roads are to be finished with a granular running surface across the full width of the road. ➤ A layer of geogrid/geotextile may be required within the stone fill as specified by the detailed designer. <p>Upgrade to Existing Founded Roads</p> <ul style="list-style-type: none"> ➤ Excavation on one or both sides of the existing access road to competent strata. ➤ Placement of granular fill and reinforcing geogrids in layers following the designer’s specification (typically 800mm, but which will be subject 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>to detailed design), with due regard to any settlement and deformation of peat anticipated at the access track.</p> <ul style="list-style-type: none"> ➤ Overlay of the existing access road with selected granular fill following the designer's specification. ➤ Where coarse granular fill has been used in the existing floated access road makeup, a layer of geogrid should be placed on top of the existing floated access road. ➤ Access roads are to be finished with a granular running surface across the full width of the road. ➤ A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification. <p>Upgrade to Existing Floated Roads</p> <ul style="list-style-type: none"> ➤ Tree brash and/or a geotextile is placed on one or both sides of the existing access road directly onto the peat surface, following the designer's specification. ➤ Benching of existing road and placement of granular fill and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement of peat anticipated for the widened area. ➤ It may be necessary to stage the widening to maintain peat stability – i.e., to reduce the rate of placement of fill to allow the peat layers to consolidate and increase in strength. ➤ It may be necessary to anchor the geogrids into the existing roads, requiring significant benching of existing roads. ➤ Overlay of the existing access road with selected granular fill following the designer's specification. ➤ Where coarse granular fill has been used in the existing floated access road makeup, a layer of geogrid should be placed on top of the existing floated access road. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The surface of the existing access road should be graded/levelled before the placement of any geogrid/geotextile, where necessary (to prevent damaging the geogrid/geotextile). ➤ Access roads are to be finished with a layer of capping across the full width of the road. ➤ A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification 		
MM37	Peat and Spoil Repository Areas	EIAR Section 4. CEMP Section 3	<p>The following measures which will be implemented during the construction phase of the project will assist in the management of the risks for this site.</p> <ul style="list-style-type: none"> ➤ Care shall be taken during peat excavation to ensure it is segregated from other soil types; therefore, particular care should be taken to review recorded peat depths. ➤ Peat shall be separated and stored by type, namely the acrotelmic and catotelmic layers. ➤ Acrotelm is generally required for landscaping and shall be stripped and temporarily stockpiled for re-use as required. Acrotelm stripping shall be undertaken before the main excavations. ➤ Where possible, the acrotelm shall be placed with the vegetation part of the sod facing the right way up to encourage the growth of plants and vegetation. ➤ All catotelm peat shall be transported immediately on excavation to the designated peat storage areas, ➤ The careful handling and segregation of peat types will help to optimise the re-use of peat, aiding in the retention of structure and integrity of the excavated peat material. ➤ Depending on what vegetation is found on site, more fibrous material may be placed on steeper angles. Unconsolidated peat, generally comprising of catotelmic material, is often not suitable for general dressing, and any unconsolidated peat excavated must only be used for reinstatement where such re-use poses no risk of polluting water 		



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			<p>courses and evidence can be provided that the required water table at the chosen location can be maintained.</p> <ul style="list-style-type: none"> > Construction sequence planning shall minimise the time peat is stockpiled before re-use; however, some temporary peat storage may be required to manage spoil and separate spoil horizons before it can be placed in its reinstatement location. The principles on which the temporary storage of excavated peat should be based upon the storage and handling methodologies set out within this section. Temporary storage must be safe as it protects the structure and integrity of the excavated peat subject to prevailing local conditions. Reinstatement of peat and peat turves will be completed during the Construction Phase at the earliest possible opportunity to avoid prolonged storage. > Any temporary storage locations must be in suitably wet conditions or be irrigated to prevent the peat from desiccating, and precautions should be taken to ensure that turves are not allowed to dry out before reinstatement. The condition of turves should be monitored throughout the duration of storage. Irrigation of peat turves should be agreed upon in advance with the Ecological Clerk of Works (ECoW). Should wetting of turves be required to prevent desiccation, mitigation should be adopted to prevent runoff or discharge to any adjacent watercourses. > Plant movements and haul distances related to earthworks activity and peat excavation shall be kept to a minimum, > Peat stockpiles shall not be allowed to substantially erode or become dry. > Material stockpiles shall be located at least 50m away from watercourses, including site ditches/sheughs, to reduce the potential for sediment to be transferred into the wider hydrological system. > If possible, excavation should be timed to avoid very wet weather, > Peat storage locations have been selected to limit re-handling as far as reasonably possible. 		



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			<ul style="list-style-type: none"> ➤ Excavated peat shall be stored and re-used as close to the immediate area as possible. ➤ The Contractor shall consult the ECoW to agree on locations for material stockpiles and consider minimising impacting sensitive ecological receptors. ➤ The Contractor shall consult the site Geotechnical Engineer and review and take into account Peat Stability Risk Assessment (GDG, 2023) to avoid the risk of peat instability in peat excavations, peat stockpiling and all material stockpiling in areas underlain by peat. ➤ Runoff from stockpiles shall be directed through the site drainage system, including silt fences, settlement ponds and other drainage measures as appropriate. These details will be outlined in the Contractor’s Construction and Environmental Management Plan. <p>Peat Repository Areas</p> <ul style="list-style-type: none"> ➤ Peat storage areas have been identified at locations where the topography (slope angle <math><5^\circ</math>), peat depth, resulting stability assessment and other environmental constraints (including 50m buffer from all watercourses) have allowed. These areas are designated for the permanent storage of up to 1m of peat material, or where topography allows, up to a maximum of 1.5m. ➤ A cell berm should be constructed similarly to the peat storage area detail outlined in Appendix C. This cell berm will help to prevent the flow of saturated peat material. The stone berm will be constructed with a sufficiently coarse granular material or rock to enable the drainage of the stored peat material and prevent any instabilities within the storage area. ➤ The height of the cell berm constructed should be greater than the height of the placed peat & spoil to prevent any surface peat runoff. 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Berms up to 1.75m in height may likely be required, subject to detailed design.</p> <ul style="list-style-type: none"> ➤ The cell berm is subject to the detail designer’s specification; however, some peat excavation or installation of a shear key may be required to prevent global instabilities within the stored material. ➤ Where possible, the surface of the placed peat and spoil should be shaped to allow efficient runoff of surface water from the peat storage areas. ➤ Silting ponds may be required at the lower side/outfall location of the storage areas. ➤ Intermediate berms or buttresses of spoil material may be installed within the peat storage area to aid in the placement and stability of the peat material. These berms should be shaped to align with the contours of the storage area. <p>Spoil Repository Areas</p> <ul style="list-style-type: none"> ➤ Spoil storage areas have been identified at locations where the topography (slope angle <math><5^\circ</math>), peat depth, resulting stability assessment (Factor of Safety of >1.3 for 1.5m peat surcharge) and other environmental constraints (including 50m buffer from all watercourses) have allowed. These areas are designated for permanently storing up to 1.5m of non-peat spoil material. ➤ A cell berm should be constructed similarly to the peat storage area detail outlined in Appendix C. This cell berm will help to prevent the flow of saturated peat material. The stone berm will be constructed with a sufficiently coarse granular material or rock to enable the drainage of the stored peat material and prevent any instabilities within the storage area. 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The height of the cell berm constructed should be greater than the height of the spoil to prevent any surface spoil runoff. Berms up to 1.75m in height may likely be required, subject to detailed design. ➤ The cell berm is subject to the detail designer’s specification; however, some peat excavation or installation of a shear key may be required to prevent global instabilities within the stored material. ➤ Where possible, the surface of the placed peat and spoil should be shaped to allow efficient runoff of surface water from the peat storage areas. ➤ Silting ponds may be required at the lower side/outfall location of the storage areas. ➤ Intermediate berms or buttresses of granular material may be installed within the spoil storage area to aid in the placement and stability of the spoil material. These berms should be shaped to align with the contours of the storage area. 		
Operational Phase					
MM38	Wastewater Management	EIAR Section 4	The removal and disposal of wastewater from the site will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations, 2007.		
MM39	Electrical Substation	EIAR Section 4, CEMP Section	The electrical substation will be bunded appropriately to the volume of oils likely to be stored, and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor.		
Decommissioning Phase					

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM40	Decommissioning	EIAR Chapter 4	Prior to the end of the operational period the Decommissioning Plan (Appendix 4-5 of the EIAR) will be updated in line with decommissioning methodologies that may exist at the time and will be agreed with the competent authority at that time.		
MM41	Decommissioning	EIAR Chapter 4 DP Section 2	On removal of turbines, the covering of the foundation will be completed using locally sourced material imported to site as the required quantity of material does not currently exist at the site. The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation.		
MM42	Decommissioning	EIAR Chapter 4 DP Section 3	<p>The following mitigation measures are proposed to avoid release of hydrocarbons at the site:</p> <ul style="list-style-type: none"> ➤ Road-going vehicles will be refuelled off site wherever possible; ➤ On-site refuelling will be carried out at designated refuelling areas at various locations throughout the site. Machinery will be refuelled directly by a fuel truck that will come to site as required ➤ Only designated trained and competent operatives will be authorised to refuel plant on site. ➤ Fuel volumes stored on site should be minimised. Any fuel storage areas will be bunded appropriately; ➤ The plant used will be regularly inspected for leaks and fitness for purpose; and, ➤ An emergency plan for the decommissioning phase to deal with accidental spillages will be developed (refer to EIAR Section 4). Spill kits will be available to deal with and accidental spillage in and outside the refuelling area. <p>A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase.</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM43	Decommissioning	EIAR Chapter 4	Upon completion of the Proposed Development the temporary construction compound will be decommissioned by backfilling the area with the material arising during excavation, landscaping with topsoil as required.		
Chapter 5: Human Beings					
Pre-Commencement Phase					
MM44	Human Health	EIAR Section 5	Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be identified in line with the engagement plan. Local access to properties will also be maintained throughout any construction works and local residents will also be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum.		
Construction Phase					
MM45	Human Health	EIAR Section 5	<p>The Proposed Development will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including:</p> <ul style="list-style-type: none"> > Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); > Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016); > S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and > Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). <p>A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail.</p>		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM47	Human Health	EIAR Section 5	<ul style="list-style-type: none"> ➤ Local residents will be kept informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; ➤ The core hours for construction activity will be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 Saturday. There will be no working on Sundays and Public Holidays; ➤ Any extraordinary site work occurring outside of the core working hours (for example, crane operations lifting components onto the tower) will be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the site between 19:00 and 07:00, with the exception of abnormal loads that would be scheduled to avoid anticipated periods of high traffic flows; ➤ All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; ➤ Inherently quiet plant will be selected where appropriate and available - all major compressors would be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which would be kept closed whenever the machines are in use; ➤ All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; ➤ Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; ➤ All equipment used on site will be regularly maintained, including maintenance related to noise emissions; ➤ Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and ➤ All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided. 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Operational Phase					
MM48	Human Health	EIAR Section 5	<ul style="list-style-type: none"> ➤ Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. ➤ Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed or are becoming hidden by vegetation or foliage, with prompt action taken as necessary. ➤ Signs will also be erected at suitable locations across the site as required for the ease and safety of operation of the proposed renewable energy development. These signs include: <ul style="list-style-type: none"> ○ Buried cable route markers at 50m (maximum) intervals and change of cable route direction; ○ Directions to relevant turbines at junctions; ○ “No access to Unauthorised Personnel” at appropriate locations; ○ Speed limits signs at site entrance and junctions; ○ “Warning these Premises are alarmed” at appropriate locations; ○ “Danger HV” at appropriate locations; ○ “Warning – Keep clear of structures during electrical storms, high winds or ice conditions” at site entrance; ○ “No unauthorised vehicles beyond this point” at specific site entrances; and ○ Other operational signage required as per site-specific hazards. <p>An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the site and providing for access for emergency services at all times.</p>		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM49	Shadow Flicker	EIA Section 5	<p>Where daily shadow flicker exceedances have been predicted at buildings by the modelling software, a site visit will be undertaken firstly to determine the level of occurrence, existing screening and window orientation.</p> <p>Screening Measures</p> <p>In the event of an occurrence of shadow flicker exceeding guideline threshold values of 30 minutes per day at a residential receptor, mitigation options will be discussed with the affected homeowner, including:</p> <ul style="list-style-type: none"> ➤ Installation of appropriate window blinds in the affected rooms of the residence; ➤ Planting of screening vegetation; ➤ Other site-specific measures which might be agreeable to the affected party and may lead to the desired mitigation. <p>If agreement can be reached with the homeowner, then it would be arranged for the required mitigation to be implemented in cooperation with the affected party as soon as practically possible and for the full costs to be borne by the wind farm operator.</p> <p>Wind Turbine Control Measures</p> <p>If it is not possible to mitigate any identified shadow flicker limit exceedance locally using the measures detailed above, wind turbine control measures will be implemented.</p> <p>The wind farm's SCADA control system can be programmed to shut down any particular turbine at any particular time on any given day to ensure that shadow flickers occurrences at properties which are not naturally screened or cannot be screened with measures outlined above</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Chapter 6: Biodiversity					
Pre-Commencement Phase					
MM50	Invasive Species Management	EIAR Section 6 CEMP Section 3	A pre-construction invasive species survey will be undertaken a part of the proposed project. This will provide updated data in advance of any construction given the intervention time period between the original survey work and any future grant of permission/ construction. Measures will be in place to prevent the spread of these species during the proposed works. In addition, all necessary precautions will be taken to prevent the introduction of invasive species to the site from elsewhere.		
MM51	Fauna	EIAR Section 6	<ul style="list-style-type: none"> ➤ A pre-construction badger survey will be undertaken at the location of the identified sett by a qualified ecologist prior to the commencement of any works to determine if the setts are in use and to identify any additional sett entrances that may have been excavated in the intervening period. ➤ Local NPWS staff will be informed in advance of the exclusion works. ➤ The exclusion will not take place during the breeding season (December to June inclusive) ➤ One way exclusion gates will be installed on each sett entrance. ➤ The one-way gates will be left in place for a period of 21` days and works will proceed immediately after once exclusion of badgers has been confirmed by an Ecologist. ➤ If badgers succeed in re-entering during the 21 day period, the exclusion process and 21-day period must start again. 		
MM52	Fauna	EIAR Section 6	<ul style="list-style-type: none"> ➤ From a precautionary basis, a pre-commencement otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works. 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > Should the surveys identify the presence of an otter holt, the following measures will be undertaken a National Parks and Wildlife Service and a derogation licence will be applied for (although compliance with such a licence has not been relied on in this assessment). > No works will be undertaken within 150m of any holts at which breeding females or cubs are present. > No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence (TII, 2008b). 		
MM53	Bats	Appendix 6-2	NatureScot recommends that a distance of 50m between turbine blade tip and nearest woodland (or other key habitat features) is adequate mitigation. This 50m buffer will be implemented from the outset and monitored as per the post construction monitoring.		
MM54	Bats	EIAR section 6	<ul style="list-style-type: none"> > An inspection survey will be carried out prior to the commencement of the works to ensure no bats are roosting within the trees. > If the inspection survey cannot provide sufficient data to exclude the presence of a roost (i.e. due to lack of access), an activity survey will also be conducted prior to commencement. > Where evidence of bats is identified during the above pre-commencement surveys, a Derogation Licence will be required from NPWS for the continuation of the works. The works will be carried out outside the maternity (May-August) and hibernation (November-March) seasons to avoid the potential for disturbance on bats during sensitive periods of their lifecycle. 		
Construction Phase					

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM55	Bats	EIAR Section 6 Appendix 6-2	<ul style="list-style-type: none"> ➤ Plant machinery will be turned off when not in use and all plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (SI 359/1996). ➤ Exterior lighting, during construction, will be designed to minimize light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. 		
MM56	Aquatic Fauna	EIAR Section 6	In relation to new watercourse crossings, Inland Fisheries Ireland (IFI) will be consulted a minimum of four weeks in advance of the installation of pre-cast concrete bottomless box culverts. The Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters; and the Scottish Natural Heritage (SNH) Good Practice During Wind Farm Construction (SNH, 2019, 4th Edition) will also be adhered to. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI).		
MM57	Invasive Species	EIAR Section 6 CEMP Section 3	<p>The following measures are proposed to establish good site hygiene to ensure the control of any potential spread of invasive species during construction works, if they are identified prior to the commencement of the construction phase:</p> <ul style="list-style-type: none"> ➤ A risk assessment and method statement must be provided by the Contractor prior to commencing works. ➤ Fences will be erected around areas of infestation, as confirmed by test pits, and warning signs shall be erected. 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ A designated wash-down area will be created, where power-washed material from machinery can be contained, collected and disposed of with other contaminated material. This area will contain a washable membrane or hard surface. ➤ Stockpile areas will be chosen to minimise movement of contaminated soil. ➤ Stockpiles will be marked and isolated. ➤ Contaminated areas which will not be excavated will be protected by a root barrier membrane if they are likely to be disturbed by machinery. Root barrier membranes will be protected by a layer of sand above and below and topped with a layer of hardcore. ➤ The use of vehicles with caterpillar tracks within contaminated areas will be avoided to minimise the risk of spreading contaminated material. ➤ An ECoW/suitably qualified ecologist will be on site to monitor and oversee the implementation of invasive species management plans. ➤ Plant and equipment which is operated within an area for the management of materials in contaminated areas should be decontaminated prior to relocating to a different works area. The decontamination procedures should take account of the following: <ul style="list-style-type: none"> ➤ Personnel may only clean down if they are familiar with the plant and rhizome material and can readily identify it. ➤ Decontamination will only occur within designated wash-down areas. ➤ Vehicles will be cleaned using stiff-haired brush and pressure washers, paying special attention to any areas that might retain rhizomes e.g. wheel treads and arches. ➤ All run-off will be isolated and treated as contaminated material. This will be disposed of in already contaminated areas. 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM58	Flora and Fauna	EIAR Section 6	<p>The Proposed Development has the potential to result in enhancement of the surrounding areas through habitat rehabilitation management (as described in the Biodiversity and Enhancement Management Plan) that will be implemented during the construction phase of the Proposed Development and maintained during the operational phase. Details of the management that will be undertaken are provided in the Biodiversity and Enhancement Management Plan in Appendix 6-4 of the EIAR. These include:</p> <ul style="list-style-type: none"> > Replanting areas > Reseeding areas > Artificial Sett 		
Operational Phase					
MM59	Bats	EIAR Section 6 Appendix 6-2	<p>In order to reduce the value of the habitat for bat species in the areas surrounding the turbines, a buffer of at least 50m between the tip of the blade and any trees or other tall vegetation that could provide high quality foraging habitat for bat species will be implemented. A full description of the mitigation measures proposed during operational phase are described in section 6.1 of the Bat report. Details of this mitigation and how it is calculated is provided in Appendix 6-2.</p> <p>Lighting Restrictions</p> <p>The applicant commits to the use of lights during construction, operation and decommissioning (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations:</p> <ul style="list-style-type: none"> > Every light needs to be justifiable, > Limit the use of light to when it is needed, 		



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			<ul style="list-style-type: none"> ➤ Direct the light to where it is needed, ➤ Reduce the light intensity to the minimum needed, ➤ Use light spectra adapted to the environment, ➤ When using white light, use sources with a “warm” colour temperature (less than 3000K). <p>Blade Feathering</p> <p>On a precautionary basis, and in addition to buffers applied to habitat features, it is proposed that all wind turbines are subject to ‘feathering’ of turbine blades when wind speeds are below the cut-in speed of the proposed turbine. This means that the turbine blades are pitched at 90 degrees or parallel to the wind to reduce their rotation speed to below two revolutions per minute while idling. This measure has been shown to significantly reduce bat fatalities (by up to 50%) in some studies (NIEA, 2021).</p> <p>Bat Mitigation and Monitoring Plan</p> <p>Full details of the proposed operational bat monitoring programme for the Proposed Development are provided in Section 6.2.1 of the Bat Report (Appendix 6-2)</p> <ul style="list-style-type: none"> ➤ The post-construction surveys will be carried out as per the pre-construction survey effort. Post-construction monitoring will include static detector surveys, walked survey transects and corpse searching to record any bat fatalities resulting from collision. ➤ Static monitoring shall take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). ➤ Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with NIEA Guidance. This shall include searcher efficiency trials and an assessment of scavenger removal rates to determine the appropriate correction factor to be 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>applied in relation to determining an accurate estimate of collision mortality.</p> <p>Monitoring surveys shall continue in Year 2 and 3, and where a curtailment requirement has been identified, the success of the curtailment strategy shall be assessed in line with the baseline data collected in the preceding year(s).</p>		
Decommissioning Phase					
MM60	Decommissioning	EIAR Section 6	<p>The same mitigation to prevent significant impacts on water quality and associated aquatic fauna and other terrestrial fauna during construction will be applicable to the decommissioning phase. An outline decommissioning plan is contained in the CEMP, Appendix 4.4 of the EIAR. The CEMP for the project provides the details of the mitigation and best practice that will be employed to avoid any potential for significant residual effects on biodiversity during decommissioning of the proposed wind farm.</p>		
Chapter 7 Birds (Appendix 7-1)					
Pre-Commencement Phase					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM61	Birds	Appendix 7-1	During the breeding season (March-August) bird monitoring surveys within the Proposed Development site will take place to a distance of 500 m from the development area. If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase.		
Construction Phase					
MM63	Birds	Appendix 7-6	<p>If winter roosts or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If the roost/nest is found to be active during the construction phase no works shall be undertaken, works will cease within a species-specific buffer of this location (as per Goodship, N.M. and Furness, R.W., 2022) in line with best practice. No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied.</p> <p>All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the ‘no-work zone’ will be made available to all construction staff. The restricted area will also be marked off using hazard-tape fencing to alert all personnel on site to the suspension of works within that area.</p>		
Operational Phase					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM64	Birds	EIAR Section 7	<ul style="list-style-type: none"> ➤ Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). Any requirement for construction works to run into the subsequent breeding season following commencement will be informed by pre-construction bird surveys. ➤ The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022 ➤ During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. ➤ Silt fences will be installed as an additional water protection measure around existing watercourses. ➤ An Environmental Clerk of Works and Project Ecologist will be appointed. Duties will include: <ol style="list-style-type: none"> 1. Organise the undertaking of a pre-construction walkover bird survey to ensure that significant effects on birds will be avoided. 2. Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Wind Farm Site. 3. Oversee management of ornithological issues during the construction period and advise on ornithological issues as they arise. 4. Provide guidance to contractors to ensure legal compliance with respect to protected species onsite. 5. Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress as necessary. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied. 		
Decommissioning Phase					
MM66	Birds	Appendix 7-1	As the decommissioning works will involve works similar to those involved at construction stage, these could result in similar effects on birds. Hence, the mitigation that will be undertaken during construction will also be applied during the decommissioning phase (taking into account changes that may have occurred locally during the operational life of the project).		
EIAR Chapter 8 Land Soils & Geology					
Pre-Commencement Phase					
MM67	Earthworks	EIAR Section 8	<ul style="list-style-type: none"> ➤ Placement of turbines and associated infrastructure in areas with shallower peat has been achieved during the design phase; ➤ Maximum use of the existing road network to reduce peat excavation volumes; ➤ Use of floating roads, where appropriate, to reduce peat excavation volumes; ➤ A minimal volume of peat and subsoil will be removed to allow for infrastructural work to take place in comparison to the total volume 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>present on the site due to optimisation of the layout by mitigation by design (avoidance of deep peat areas);</p> <ul style="list-style-type: none"> > A suitable drainage system to be constructed to ensure continuity of the site hydrology (EIAR Chapter 9). > All temporary cuts/excavations will be carried out such that they are stable or adequately supported. Gravel/rock fill will be used to provide additional support to temporary cuts/excavations where appropriate, as determined by the Project Geotechnical Engineer. Unstable temporary cuts/excavations will not be left unsupported. Where appropriate and necessary, temporary cuts and excavations will be protected against the ingress of water or erosion. > To mitigate against the compaction of soil at the site, prior to the commencement of any earthworks, the work corridor will be pegged, and machinery will stay within this corridor so that peatland / soils outside the work area is not damaged. Excavations will then be carried out from access tracks, where possible, as they are constructed in order to reduce the compaction of soft ground. > Soil excavated from trenches along the proposed grid connection route will be stored with the designated peat repository areas on the Site. The tarmac / asphalt layers will be taken to a licenced facility for disposal or recycling. If feasible, the upper layers of tarmac and asphalt will be excavated separately to the lower engineered fill layers 		
Construction Phase					
MM68	Contamination of Soils	EIAR Section 8	<ul style="list-style-type: none"> > On-site re-fuelling will be undertaken using a double skinned bowser with spill kits kept on site for accidental leakages or spillages; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Only designated trained operatives will be authorised to refuel plant on-site; ➤ Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system; ➤ All fuel storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area; ➤ Fuel, oil and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage; ➤ The electrical control building (at the substation) will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used during construction will be regularly inspected for leaks and fitness for purpose; ➤ Safety data sheets for all chemicals used will be kept on-site; and, ➤ An emergency response plan for the construction phase to deal with accidental spillages is contained within the Construction and Environmental Management Plan (which is contained in Appendix 4.3). 		
MM69	Erosion of soils and peat	EIAR Section 8	<ul style="list-style-type: none"> ➤ The upper vegetative layer (where still present) of excavated peat 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 stored peat within the peat storage areas; ➤ Re-seeding and spreading/planting will also be carried out in these areas; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > Brush/bog mats will be put in place to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur; and, > A full Peat and Spoil Management Plan for the development is included as Appendix 4-2 of this EIAR. 		
MM71	Peat Instability and Failure	EIAR Section 8 Appendix 8-1	<p>The key mitigation with regard peat stability risk at the Proposed Development site was the carrying out of a robust, multidisciplinary site investigation and peat stability risk assessment carried out in accordance with best practice guidance (PLHRAG, Scottish Government, 2017).</p> <p>The following measures which will be implemented during the construction phase of the project will ensure the management of the risks for this site.</p> <ul style="list-style-type: none"> > Appointment of experienced and competent contractors > The site will be supervised by experienced and qualified personnel; > Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a localised peat movement); > Prevent undercutting of slopes and unsupported excavations; > Maintain a managed robust drainage system; > Prevent placement of loads/overburden on marginal ground; > Implementation of safety buffers around deep peat areas; > Adhere to the spoil and peat storage restriction areas detailed in the Geotechnical and Peat Stability Risk Assessment (GDG, 2023); > Set up, maintain and report findings from monitoring systems as outlined in the Geotechnical and Peat Stability Assessment (GDG, 2023); > Ensure construction method statements are developed and agreed before commencement of construction and are followed by the contractor; and, 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Revise and amend the Construction Risk Register as construction progresses to ensure that risks are managed and controlled for the duration of construction. 		
Operational Phase					
MM72	Soils and Geology	EIAR Section 8	Mitigation measures for soils and geology during the operational stage include the use of aggregate from local, authorised quarries for use in road and hardstand maintenance. Oil used in transformers (at the substation and within each turbine) and storage of oils in tanks at the substation could leak during the operational phase and impact on ground/peat and subsoils and groundwater or surface water quality. The substation transformer, and oil storage tanks will be in a concrete bund capable of holding 110% of the stored oil volume. Turbine transformers are located within the turbines, so any leaks would be contained within the turbine structure. These mitigation measures are sufficient to reduce risk to ground/peat/soils and subsoils, and groundwater and surface water quality.		
Decommissioning Phase					
MM73	Decommissioning Phase	EIAR Section 8	Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant.		
EIAR Chapter 9 Hydrology					
Pre-Commencement Phase					
MM74	Earthworks Resulting in Suspended	EIAR Section 9	The key mitigation measure during the construction phase is the avoidance of sensitive aquatic areas where possible, by application of suitable buffer zones (i.e. 50m to main watercourses). All of the key development components within the wind farm site are		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Solids Entrainment in Surface Waters		<p>located significantly away from the delineated 50m watercourse buffer zones with the exception of 3 no. new watercourse crossing locations.</p> <p>Prior to the commencement of the construction works the following key temporary drainage measures will be installed:</p> <ul style="list-style-type: none"> ➤ All existing dry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps; ➤ Clean water interceptor drains will be installed upgradient of the works areas; ➤ Check dams/silt fence arrangements (silt traps) will be placed in all existing drains that have surface water flows and also along existing roadside drains; and, ➤ A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone. <p>The works programme for the initial construction stage of the Proposed Development will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of soil/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.</p> <p>The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:</p> <ul style="list-style-type: none"> ➤ General Forecasts: Available on a national, regional, and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates; 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale; ➤ 3 hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events; ➤ Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3 hour record is given and is updated every 15 minutes. Radar images are not predictive; and, ➤ Consultancy Service: Met Eireann provide a 24 hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. <p>Using the safe threshold rainfall values (threshold limits listed below) will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.</p> <p>Works will be suspended if forecasting suggests any of the following is likely to occur, or if on-site monitoring indicates any of the following has occurred:</p> <ul style="list-style-type: none"> ➤ 10 mm/hr (i.e. high intensity local rainfall events); ➤ 25 mm in a 24 hour period (heavy frontal rainfall lasting most of the day); or, ➤ >half monthly average rainfall in any 7 days. ➤ Prior to, and after, works being suspended the following control measures will be undertaken: ➤ All open excavations will be secured and sealed off; 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Provide temporary or emergency drainage to prevent back-up of surface runoff; and, ➤ Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded. 		
MM73	Excavation Dewatering and Potential Effects on Surface Water Quality	EIAR Section 9	<p>Mitigation by Design: Management of excavation seepage and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The interceptor drainage will be discharged to the wind farm site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; and, ➤ Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work should immediately be stopped and a geotechnical assessment undertaken. 		
MM74	Clear-felling of Coniferous Plantation	EIAR Section 9	<p>Mitigation by Avoidance: There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document “Forestry and Water Quality Guidelines”</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Mitigation by Design: Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:</p> <ul style="list-style-type: none"> ➤ Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ➤ All machinery will be operated by suitably qualified personnel; ➤ Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; ➤ These machines will traverse the site along specified off-road routes (referred to as racks); ➤ The location of racks will be chosen to avoid wet and potentially sensitive areas; ➤ Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; ➤ Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;</p> <ul style="list-style-type: none"> ➤ In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction; ➤ Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; ➤ Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; ➤ Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; ➤ Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; ➤ Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and, ➤ Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors. <p>Pre-emptive Site Drainage Management : The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled</p>		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. Works will be suspended if forecasting suggests any of the following is likely to occur:</p> <ul style="list-style-type: none"> ➤ >10 mm/hr (i.e. high intensity local rainfall events); ➤ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ➤ >half monthly average rainfall in any 7 days. <p>Drain Inspection and Maintenance: The following items will be carried out during pre-felling inspections and after:</p> <ul style="list-style-type: none"> ➤ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines (<i>i.e.</i>, hot spot areas). ➤ Inspections of plant and machinery will be carried out prior to any works to assure all are in good condition. ➤ Inspection of drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. The pre-felling inspection will be carried out during rainfall events. ➤ Following tree felling, all main drains will be inspected to ensure that they are functioning. ➤ Extraction tracks nears drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; ➤ Culverts on drains exiting the site will be unblocked. ➤ All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM75	Potential Release of Hydrocarbons	EIAR Section 9 CEMP Section 3	All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site;		
MM76	Release of Cement-Based Products	EIAR Section 9 CEMP Section 3	<ul style="list-style-type: none"> ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 		
MM77	Potential Effects Associated with Piled Foundations	EIAR Section 9	<p>Mitigation by Design: Management of excavation seepage and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The interceptor drainage will be discharged to the wind farm site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; and, <p>Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work should immediately be stopped and a geotechnical assessment undertaken.</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site > Weather forecasting will be used to plan dry days for pouring concrete; and > The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 		
MM75	Morphological Changes to Surface Water Courses & Drainage Patterns within Wind Farm Site	EIAR Section 9	<ul style="list-style-type: none"> > All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings. > As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document “Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites”, i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI); > Development Works at River Sites”, i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI); 		
MM75	Morphological Changes and	EIAR Section 9	Prior to the commencement of cable trenching or crossing works the following key temporary drainage measures will be installed:		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Surface Water Quality Effects Along Grid Connection Route		<ul style="list-style-type: none"> ➤ All existing roadside drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps; ➤ Culverts, manholes and other drainage inlets will also be temporarily blocked; ➤ A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone. 		
MM75	Potential Effects on Local Groundwater Well Supplies	EIAR Section 9	<ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ The plant used will be regularly inspected for leaks and fitness for purpose; ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 		
MM76	Potential Effects on Designated Sites	EIAR Section 9	<ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. <p>Mitigation by Avoidance: There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document “Forestry and Water Quality Guidelines.”</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Mitigation by Design: Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:</p> <ul style="list-style-type: none"> ➤ Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ➤ All machinery will be operated by suitably qualified personnel; ➤ Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; ➤ These machines will traverse the site along specified off-road routes (referred to as racks); ➤ The location of racks will be chosen to avoid wet and potentially sensitive areas; ➤ Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; ➤ Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;</p> <ul style="list-style-type: none"> ➤ In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction; ➤ Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; ➤ Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; ➤ Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; ➤ Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; ➤ Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and, ➤ Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors. <p>Pre-emptive Site Drainage Management : The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled</p>		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. Works will be suspended if forecasting suggests any of the following is likely to occur:</p> <ul style="list-style-type: none"> ➤ >10 mm/hr (i.e. high intensity local rainfall events); ➤ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ➤ >half monthly average rainfall in any 7 days. <p>Drain Inspection and Maintenance: The following items will be carried out during pre-felling inspections and after:</p> <ul style="list-style-type: none"> ➤ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines (<i>i.e.</i>, hot spot areas). ➤ Inspections of plant and machinery will be carried out prior to any works to assure all are in good condition. ➤ Inspection of drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. The pre-felling inspection will be carried out during rainfall events. ➤ Following tree felling, all main drains will be inspected to ensure that they are functioning. ➤ Extraction tracks nears drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; ➤ Culverts on drains exiting the site will be unblocked. <p>All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.</p>		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM77	Potential Effects on Surface Water and Groundwater WFD Status		<ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. <p>Mitigation by Avoidance: There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document “Forestry and Water Quality Guidelines”</p> <p>Mitigation by Design: Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:</p> <ul style="list-style-type: none"> ➤ Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ➤ All machinery will be operated by suitably qualified personnel; ➤ Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; ➤ These machines will traverse the site along specified off-road routes (referred to as racks); 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The location of racks will be chosen to avoid wet and potentially sensitive areas; ➤ Brush mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brush mat renewal will take place when they become heavily used and worn. Provision will be made for brush mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; ➤ Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground; ➤ In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction; ➤ Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; ➤ Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; ➤ Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; ➤ Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and, ➤ Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors. <p>Pre-emptive Site Drainage Management : The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. Works will be suspended if forecasting suggests any of the following is likely to occur:</p> <ul style="list-style-type: none"> ➤ >10 mm/hr (i.e. high intensity local rainfall events); ➤ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ➤ >half monthly average rainfall in any 7 days. <p>Drain Inspection and Maintenance: The following items will be carried out during pre-felling inspections and after:</p> <ul style="list-style-type: none"> ➤ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines (i.e., hot spot areas). ➤ Inspections of plant and machinery will be carried out prior to any works to assure all are in good condition. 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Inspection of drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. The pre-felling inspection will be carried out during rainfall events. ➤ Following tree felling, all main drains will be inspected to ensure that they are functioning. ➤ Extraction tracks nears drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; ➤ Culverts on drains exiting the site will be unblocked. <p>All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.</p>		
MM76	Site Drainage Management	EIAR Section 9 CEMP Section 3	<p>The works programme for the entire construction stage of the development will take account of weather forecasts and predicted rainfall. Large excavations and movements of soil/subsoil or vegetation stripping will be scaled back or suspended if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount and intensity of rainfall that is forecast. The following relevant forecasting systems are available and will be relied on for said purpose, on a daily basis:</p> <ul style="list-style-type: none"> ➤ General Weather Forecasts: Available from national to county level from Met Éireann (www.met.ie/forecasts). These do not provide quantitative rainfall estimates. ➤ 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events. ➤ Rainfall Radar Images: Images covering the entire country are freely available from the Met Éireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are sequenced but not predictive.</p> <ul style="list-style-type: none"> ➤ Consultancy Service: Met Éireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. <p>Using threshold rainfall values will allow work to be safely controlled from a water management and protection perspective. Works will be suspended if forecasting suggests either of the following is likely to occur:</p> <ul style="list-style-type: none"> ➤ >10 mm/hr (i.e. high intensity local rainfall events); ➤ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); ➤ >half monthly average rainfall in any 7 days. <p>Prior to works being suspended, the following control measures will be completed:</p> <ul style="list-style-type: none"> ➤ Secure all open excavations. ➤ Provide temporary or emergency drainage to prevent back-up of surface runoff. ➤ Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded. 		
Construction Phase					
MM77	Earthworks Resulting in Suspended Solids Entrainment in Surface Waters	EIAR Section 9 CEMP Section 3	<p>Wind Farm Site: The key mitigation measure during the construction phase is the avoidance of sensitive aquatic areas where possible, by application of suitable buffer zones (i.e. 50m to main watercourses). All of the key development components within the wind farm site are located significantly away from the delineated 50m watercourse buffer zones with the exception of 3 no. new watercourse crossing locations.</p> <p>The main elements of interaction with existing drains will be as follows:</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the wind farm site drainage into the existing site drainage network where possible. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion; ➤ Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; ➤ Buffered outfalls which will be numerous over the wind farm site which will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains; and, ➤ Drains running parallel to the existing roads requiring widening will be upgraded. Velocity and silt control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters. <p>Grid Route: The vast majority of the underground electrical cabling connection route options are >50m from any nearby watercourse. Sections of the grid route which are within 50m of a watercourse are confined to existing watercourse crossings at bridges. It is proposed to limit works in any areas located within 50m of any watercourse/waterbody including the stockpiling of excavated soils and subsoils.</p> <p>Water Treatment Train: If the discharge water from construction areas fails to be of a high quality, then a filtration treatment system (such as a ‘siltbuster’ or similar equivalent</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>treatment train (sequence of water treatment processes)) will be used to filter and treat all surface discharge water collected in the dirty water drainage system. This will apply for all of the construction phase.</p> <p>Silt Fences: Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to watercourses of sand and gravel sized sediment, released from excavation of mineral sub-soils of glacial and glacio-fluvial origin, and entrained in surface water runoff. Inspection and maintenance of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be emplaced within drains down-gradient of all construction areas inside the hydrological buffer zones.</p> <p>Silt Bags: Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters.</p> <p>Management of Runoff from Spoil and Peat Repository Areas: It is proposed that excavated soil will be used for landscaping where required. The excess material will then be placed in 5 no. dedicated Peat Repository Areas (PSA) and 3 no. Spoil Repository Areas (SPA).</p> <p>During the initial construction of roads, silt fences, straw bales and biodegradable geogrids will be used to control surface water runoff from works areas.</p> <p>Where applicable, the vegetative top-soil layer of the spoil management areas will be rolled back to facilitate placement of excavated spoil up to a maximum height of 1.0 metres, following which the vegetative-top soils layer will be reinstated. Where reinstatement is not possible, spoil and peat management areas will be sealed with a digger bucket and seeded as soon possible to reduce sediment entrainment in runoff.</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Timing of Site Construction Works: Construction of the wind farm site drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works.</p>		
MM78	Excavation Dewatering and Potential Effects on Surface Water Quality	EIAR Section 9	<p>Proposed Mitigation Measures (By Design) Management of excavation seepage and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The interceptor drainage will be discharged to the wind farm site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; and, ➤ Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work should immediately be stopped and a geotechnical assessment undertaken. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM81	Potential Release of Hydrocarbons	EIAR Section 9 CEMP Section 3	<ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ On-site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double axel custom-built refuelling trailer or truck will be re-filled off site and will be towed/driven around the site to where machinery is located. The 4x4 jeep/fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; ➤ Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the period of the construction; ➤ The substation building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used will be regularly inspected for leaks and fitness for purpose; ➤ An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (refer to Appendix 4-3 of this EIAR). Spill kits will be available to deal with accidental spillages. 		
MM80	Groundwater and Surface Water	EIAR Section 9	<ul style="list-style-type: none"> ➤ During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at the primary construction 		



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	Contamination from Wastewater Disposal	CEMP Section 3	<p>compound, maintained by the providing contractor, and removed from the site on completion of the construction works;</p> <ul style="list-style-type: none"> ➤ Water supply for the site office and other sanitation will be brought to site and removed after use by a licensed contractor to be discharged at a suitable off-site treatment location; and, ➤ No water or wastewater will be sourced on the site, nor discharged to the site. 		
MM79	Release of Cement Based Products	EIAR Section 9 CEMP Section 3	<ul style="list-style-type: none"> ➤ No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place; ➤ Where possible pre-cast elements for culverts and concrete works will be used; ➤ Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds; ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. ➤ The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a concrete washout area, built using straw bales and lined with an impermeable membrane. below. The areas are generally covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents is tankered off-site. Any solid contents that will have been cleaned down 		



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			from the chute will have solidified and can be broken up and disposed of along with other construction waste.		
MM80	Potential Effects Associated with Piled Foundations	EIAR Section 9	<p>Management of excavation seepage and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The interceptor drainage will be discharged to the wind farm site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; and, ➤ Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work should immediately be stopped and a geotechnical assessment undertaken. ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ On-site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double axel custom-built refuelling trailer or truck will be re-filled off site and will be towed/driven around the site to where machinery is located. The 4x4 jeep/fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only 		



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			<p>designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;</p> <ul style="list-style-type: none"> ➤ Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the period of the construction; ➤ The substation building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used will be regularly inspected for leaks and fitness for purpose; ➤ An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (refer to Appendix 4-3 of this EIAR). Spill kits will be available to deal with accidental spillages. <ul style="list-style-type: none"> ➤ No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place; ➤ Where possible pre-cast elements for culverts and concrete works will be used; ➤ Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds; ➤ Weather forecasting will be used to plan dry days for pouring concrete; and 		

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			<ul style="list-style-type: none"> > The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. > The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a concrete washout area, built using straw bales and lined with an impermeable membrane below. The areas are generally covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents is tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste. 		
MM81	Morphological Changes to Surface Water Courses & Drainage Patterns within Wind Farm Site	EIAR Section 9	<ul style="list-style-type: none"> > All proposed new stream crossings will be bottomless or clear span culverts and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location; > Where the proposed underground cabling route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road; > All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings; > As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of 		



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			<p>suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI);</p> <ul style="list-style-type: none"> ➤ Where works are necessary inside the 50m buffer double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of concrete allowed in the vicinity of the crossing construction areas; ➤ All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent. 		
MM82	Morphological Changes and Surface Water Quality Effects Along Grid Connection Route	EIAR Section 9	<p>The following mitigation measures are proposed for the grid connection watercourse crossing works:</p> <ul style="list-style-type: none"> ➤ No stockpiling of construction materials, inside 50m buffer zones, will take place along the grid connection route ➤ No refuelling of machinery or overnight parking of machinery is permitted in this area; ➤ No concrete truck chute cleaning is permitted in this area; ➤ Works will not take place at periods of high rainfall, and will be scaled back or suspended if heavy rain is forecast; ➤ Local road drainage, culverts and manholes will be temporarily blocked during the works; ➤ Machinery deliveries will be arranged using existing structures along the public road; ➤ All machinery operations will take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed or will occur; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Any excess construction material will be immediately removed from the area and sent to a licenced waste facility; ➤ No stockpiling of materials will be permitted in the constraint zones; ➤ Spill kits will be available in each item of plant required to complete the stream crossing; and, ➤ Silt fencing will be erected on ground sloping towards watercourses at the stream crossings if required. <p>Mitigation Measures relating to the use of a mixture of a natural, inert and fully biodegradable drilling fluid such as Clear Bore™ and water for directional drilling:</p> <ul style="list-style-type: none"> ➤ The area around the Clear Bore™ batching, pumping and recycling plants will be bunded using terram and sandbags in order to contain any spillages; ➤ One or more lines of silt fences will be placed between the works area and adjacent rivers and streams on both banks; ➤ Accidental spillage of fluids will be cleaned up immediately and transported off site for disposal at a licensed facility; and, ➤ Adequately sized skips will be used for temporary storage of drilling arisings during directional drilling works. This will ensure containment of drilling arisings and drilling flush. 		
MM87	Potential Effects on Local Groundwater Well Supplies	EIAR Section 4	<p>Measures employed to prevent overdosing and potential chemical carryover:</p> <ul style="list-style-type: none"> ➤ The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur; ➤ Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment; > Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and, > Use of biodegradable chemical agents can be used at very sensitive sites (i.e. adjacent to SACs). 		
Operational Phase					
MM85	Progressive Replacement of Natural Surface with Lower Permeability Surfaces	EIAR Section 9 CEMP Section 3	<p>Proposed Mitigation by Design:</p> <p>The drainage system of the Proposed Development will be installed and constructed in conjunction with the road and hardstanding construction work as described below and as shown on the Drainage drawings submitted with this planning application (Appendix 4-5):</p> <ul style="list-style-type: none"> > Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader; > Swales/road side drains will be used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling; > On steep sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off the road into swales/road side drains; 		



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			<ul style="list-style-type: none"> ➤ Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock; ➤ Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, ➤ Settlement ponds have been designed in consideration of the greenfield runoff rate. 		
MM86	Runoff Resulting in Contamination of Surface Waters	EIAR Section 9	<p>Mitigation Measures in regards to sediment control:</p> <ul style="list-style-type: none"> ➤ In spoil and peat repository areas, the vegetative top-soil layer will be removed and re-instated or reseeded directly after construction, allowing for re-vegetation which will mitigate against erosion. <p>Mitigation Measures in regards to the control of hydrocarbons during maintenance works:</p> <ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ On-site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double axel custom-built refuelling trailer or truck will be re-filled off site and will be towed/driven around the site to where machinery is located. The 4x4 jeep/fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only 		



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			<p>designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;</p> <ul style="list-style-type: none"> ➤ Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the period of the construction; ➤ The substation building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used will be regularly inspected for leaks and fitness for purpose; ➤ An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (refer to Appendix 4-3 of this EIAR). Spill kits will be available to deal with accidental spillages. 		
M88	Assessment of Effects on WFD Objectives	EIAR Section 9	There is no direct discharge from the Proposed Development site to downstream receiving waters. Mitigation for the protection of surface water during the operational phase of the Proposed Development will ensure the qualitative status of the receiving waters will not be altered by the Proposed Development.		
Decommissioning Phase					
MM87	Decommissioning	EIAR Section 9	During decommissioning, it will be possible to reverse or at least reduce some of the potential effects caused during construction, and to a lesser extent operation, by rehabilitating constructed areas such as turbine bases and hardstanding areas. This will be done by re-establishing vegetation, thereby reducing runoff and sediment loads.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures. With these measures, no significant effects on the hydrological and hydrogeological environment will occur during the decommissioning stage of the proposed development.		
Chapter 10 Air					
Construction Phase					
MM88	Exhaust Emissions	EIAR Section 10	<ul style="list-style-type: none"> ▪ All construction vehicles and plant used onsite during the construction phase will be maintained in good operational order. If a vehicle requires repairs this work will be carried out, thereby minimising any emissions that arise. ▪ Turbines components will be transported to the Site on specified routes only, unless otherwise agreed with the Planning Authority. ▪ All machinery will be switched off when not in use. ▪ Users of the Site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants is kept to a minimum. ▪ The majority of aggregate materials for the construction of the Proposed Development will be obtained from the licenced quarries within 25km. This will significantly reduce the amount of emissions associated with vehicle movements. ▪ The MRF facility will be local to the Proposed Development site to reduce the amount of emissions associated with vehicle movements. The nearest licensed waste facility to the Wind Farm Site is located approximately 37km to the east of the Wind Farm Site. ▪ Waste associated with the construction of the Grid Connection underground electrical cabling route will be disposed of at the closest MRF to where waste is generated along the underground electrical cabling route. There closest 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			licensed waste facilities in the vicinity of the underground electrical cabling route, is located approximately 37km to the east.		
MM89	Dust Emissions	EIAR Section 10 CEMP Section 3	<ul style="list-style-type: none"> ▪ A wheel wash facility will be installed on the Proposed Development site and will be used by vehicles before leaving site. ▪ In periods of extended dry weather, dust suppression may be necessary along haul roads, site roads, grid route, road widening sections, substation, and construction compounds and around the designated peat and spoil repository areas to ensure dust does not cause a nuisance. If necessary, such as during periods of dry weather, de-silted water will be taken from stilling ponds in the site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads, turbine bases, peat and spoil repository areas and site compounds to prevent the generation of dust where required. Water bowser movements will be carefully monitored by the Ecological Clerk of Works to avoid, insofar as reasonably possible, increased runoff as outlined in the CEMP. ▪ Areas of excavation will be kept to a minimum and stockpiling of excavated material will be minimised by coordinating excavation, placement of material in peat repository areas. ▪ Turbines components and construction materials will be transported to the site on specified haul routes only, as agreed with the local authority. ▪ The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as deemed necessary by the construction Site Supervisor/Site Manager. ▪ The transport of construction materials may have the potential to generate dust in dry weather conditions. Roads will be watered down to suppress dust particles in the air as deemed necessary by the Site Supervisor/Manager. ▪ The transport of dry excavated material to the peat and spoil repository areas, which may have potential to generate dust will be minimised. If necessary, such as in periods of dry weather, excavated material will be dampened prior to transport to the peat and spoil repository areas. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase 		
Operational Phase					
MM90	Exhaust Emissions	EIAR Section 10	Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order		
Decommissioning Phase					
MM91	Decommissioning Phase	EIAR Section 10	The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts.		
EIAR Chapter 11 Climate Pre-Commencement Phase					
MM90	Greenhouse Gas Emissions	EIAR Section 11	<ul style="list-style-type: none"> All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. When stationary, delivery and on-site vehicles will be required to turn off engines. Turbines and construction materials will be transported to the Site on specified routes only unless otherwise agreed with the Planning Authority. The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the Proposed Development site. Therefore, all wastes streams generated onsite will be deposited into a single waste skip which will be covered. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Proposed Development site to reduce the amount of emissions associated with vehicle movements. The nearest licensed waste facility to the site is located approximately 37km to the east of the site. 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > Waste associated with the construction of the Grid Connection underground electrical cabling route will be disposed of at the closest MRF to where waste is generated along the underground electrical cabling route. There closest licensed waste facilities in the vicinity of the underground electrical cabling route, is located approximately 37km to the east. The majority of aggregate materials for the construction of the Proposed Development will be obtained from the local quarries. This will significantly reduce the number of delivery vehicles accessing the site and the length of such journeys, thereby reducing the amount of emissions associated with vehicle movements. > Where applicable, low carbon intensive construction materials will be sourced and utilised onsite 		
Operational Phase					
MM90	Greenhouse Gas Emissions	EIAR section 11	<ul style="list-style-type: none"> > Ensure that all maintenance and monitoring vehicles will be maintained in good operational order while onsite, and, when stationary, be required to turn off engines thereby minimising any emissions that arise. > As detailed in Appendix 6-4, a Biodiversity Enhancement Plan for the Proposed Development has identified enhancement activities such as planting of hedgerow and woodland, conversion of conifer plantation to broadleaf, rewetting of existing cutover peat habitat and restoration of wetland habitats. 		
Decommissioning Phase					
MM98	Greenhouse Gas Emissions	EIAR Section 11	The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts.		
EIAR Chapter 12 Noise					

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Pre-commencement Phase					
MM92	Construction Noise	EIAR Section 12	Local residents will be kept informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;		
Construction Phase					
MM93	Construction Noise	EIAR Section 12	<p>Good site practices will be implemented to minimise the likely effects. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will be employed onsite:</p> <ul style="list-style-type: none"> ▪ Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; ▪ All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; ▪ Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use; ▪ All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; ▪ Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; ▪ Regularly maintain all equipment used on site, including maintenance related to noise emissions; ▪ Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and ▪ All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided. 		
Operational Phase					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM94	Operational Phase Noise	EIAR Section 12	The exact model of wind turbine, with dimensions within the ranges proposed, to be used for the proposed development will be the result of a future tendering process. Achievement of the noise limits determined by this assessment would be a key determining factor in the final choice of wind turbines for the site. In order to meet the Site Specific Noise limits at NAL9 the two nearest candidate turbine may need to be operated in a lower noise mode for a limited range of wind speeds and wind directions (7 ms ⁻¹ westerlies) in daytime period only. Other wind turbine models would be available which may not require the use of low noise modes.		
Decommissioning Phase					
MM98	Decommissioning Phase Noise	EIAR Section 12	The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts.		
EIAR Chapter 13 Cultural Heritage					
Pre-commencement Phase					
MM95	Sub Surface Archaeological Potential	EIAR Section 13	<ul style="list-style-type: none"> > Pre-development archaeological testing of the proposed turbine bases, hardstands, proposed roads, compounds, substation site and any other Proposed Development components within the Wind Farm Site will be carried out under licence from the National Monuments Service. This is in order to identify any archaeological features at the earliest stage possible in the project to allow time to deal with any requirements such as preservation in situ (redesign / avoidance) or preservation by record (archaeological excavation). Testing within forested areas may only be possible once clear-felling has taken place. > A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the testing. 		
Construction Phase					
MM100	National Monuments	EIAR Section 13	<ul style="list-style-type: none"> Cable trench should be placed on the west side of the public road where it extends past the motte and bailey. Archaeological monitoring of all ground works within the Zone of Notification for the motte and bailey under licence from the National Monuments Service (NMS). A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. 		
MM101	Recorded Monuments within the Wind Farm Site	EIAR Section 13	<ul style="list-style-type: none"> A 20m buffer zone will be maintained around the monuments for the duration of the construction stage of the development. The buffer should comprise durable temporary fencing with 'keep out' signage. The requirement for the buffer zone and associated signage should be included in the CEMP. No ground works or storage of materials or tracking of machinery will take place within the buffer zones. Archaeological monitoring of all ground works associated with the Proposed Development will be carried out under licence from the National Monuments Service (NMS). A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. 		
MM102	Recorded Monuments along the Grid Connection Underground	EIAR Section 13	<ul style="list-style-type: none"> Archaeological monitoring will be carried out along the relevant sections of the underground grid connection electrical cabling route where the latter extends through the ZoN for monuments TN008-005—, TN005-021—, TN005-030001. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Electrical Cabling Route		<ul style="list-style-type: none"> ➤ A report on the monitoring should be compiled on completion of the work and submitted to the NMS and the Planning Authority. ➤ Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) may be required depending on the results of the monitoring. 		
MM103	Sub-surface Archaeology	EIAR Section 13	<ul style="list-style-type: none"> ➤ Archaeological monitoring of all groundworks during the construction stage of the Proposed Development by a licensed archaeologist. ➤ A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. ➤ Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the monitoring. 		
MM104	Protected Structures within 100m of the Grid Connection Underground Electrical Cable Route	EIAR Section 13	<ul style="list-style-type: none"> ➤ Archaeological monitoring of the excavation of the directional drilling entry and exit pits adjacent to Protected Structure TRPS336 railway bridge. ➤ A report on the monitoring should be compiled on completion of the work and submitted to the relevant authorities. ➤ Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) may be required depending on the results of the monitoring. 		
MM105	Features of Local Cultural Heritage Merit	EIAR Section 103	<ul style="list-style-type: none"> ➤ Protective fencing should be placed around the thicket of trees within which the structure CH1 is located for the duration of the construction stage of the Proposed Development. The fencing should be durable with keep out signage. The requirement for the protective fencing and associated signage should be included in the CEMP. 		
Chapter 14 Landscape and Visual					
Pre-Commencement, Construction and Operational Phases					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM101	Mitigation by Design	EIAR Section 14	<p>The Proposed Development layout incorporates the following landscape and visual design considerations for good wind farm design, with a particular focus on site selection:</p> <ul style="list-style-type: none"> ➤ The turbine layout has been designed to create a coherent cluster of turbines, contiguous and connected to each other visually and with consistent spacing in line with the guidance for design and siting of wind farms within Hilly and Flat Farmland Landscape Types in the Wind Energy Development Guidelines (hereafter referred to as the WEDGs) for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG), 2006). ➤ The turbine layout has been designed so as to decrease the horizontal extent of the turbines when viewed within the landscape. This has resulted from early stage landscape feasibility design input, which resulted in the removal of another cluster of four turbines to the north of the current proposed cluster. See Chapter 3 for further details of this. ➤ Strategic siting of the proposed turbines on a flat site, reducing their visual prominence and visual effects in this relatively flat and heavily vegetated landscape, the proposed turbines are strategically sited within a modified working landscape where there is limited visibility (or large set back distances) from large population centres and designated landscape and visual receptors of high sensitivity. ➤ Siting of proposed turbines adheres to the minimum 500 metre set back distance in the Guidelines (DoEHLG, 2006) and also the 4 times tip height set-back distance explicitly set out for residential visual amenity prescribed by the Draft Revised Wind Energy Development Guidelines (hereafter referred to as the draft WEDGs) (Department of Housing, Planning and Local Government (DoHPLG, 2019)). ➤ The intended connection to the national electricity grid is underground thereby eliminating potential landscape and visual effects during the operational phase. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The proposed 38kV substation is sited within the deciduous forestry on site and will be entirely screened from view outside of the immediate proximity to the site. ➤ The internal site road layout makes use of the existing tracks wherever possible (to be upgraded for construction and the delivery of wind turbine components), to minimise the requirement for new tracks within the site. 		
MM102	Landscape Effects	EIAR Section 14	<ul style="list-style-type: none"> ➤ The spatial configuration of the proposed infrastructure footprint has been carefully designed to minimise the loss of valuable landscape receptors on the Proposed Development Site, such as mature woodland, Annex 1 habitats or features of cultural heritage value (see also Chapter 12 – Cultural Heritage). ➤ The internal site road layout makes use of the existing roads and forestry tracks wherever possible, to minimise the requirement for new tracks within the Proposed Development Site. ➤ To minimise cut and fill activities required to construct the Proposed Development, the proposed access roads, and other infrastructure such as hard stands have been designed to align with the existing terrain within the landscape of the Proposed Development Site. ➤ In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. ➤ During initial vegetation stripping, all topsoil material will be temporarily stored on the Proposed Development Site and used for “dressing” the edges of the development infrastructure during reinstatement/regrading, including that of the spoil management areas. This will be particularly important in areas of cut and fill. The stripped topsoil will contain a natural seed source of local provenance and result in the re-establishment of baseline vegetation. 		
Chapter 14 Material Assets					
Pre-Commencement, Construction and Operational Phases					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM96	Traffic & Transport	EIAR Section 15	<p>A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures included as Appendix 15-2 of this EIA, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on Site. In addition, the traffic management measures proposed for the following construction traffic scenarios are set out for the grid connection in Appendix 14-2: Traffic Management Plan for Carrig Renewables Wind Farm Development;</p> <ul style="list-style-type: none"> > Delivery of Abnormally sized loads, > Management of Standard HGVs on L5040 leading to site, > Traffic management measures during construction of cable grid connection <p>Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the construction of the Proposed Development and this person will be the main point of contact for all matters relating to traffic management.</p> <p>Delivery Programme – a programme of deliveries will be submitted to Tipperary County Council and other relevant authorities in advance of deliveries of turbine components to the Proposed Development site. Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse and An Garda Síochána, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required.</p> <p>Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. 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.</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>A Pre and Post Construction Condition Survey – A pre-condition survey of roads associated with the Proposed Development will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority.</p> <p>Implementation of temporary alterations to road network at critical junctions – At locations where required highlighted in Section 15.1.8.</p> <p>Identification of delivery routes – These routes will be agreed and adhered to by all contractors.</p> <p>Travel plan for construction workers to Proposed Development site– While the assessment above has assumed the worst case that construction workers will drive to the Proposed Development site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of a routes to / from the site and identification of an area for parking.</p> <p>Travel plan for construction workers to underground electric cabling route – Due to the transient nature of the underground grid connection construction site which will generally be on a section of the public road, construction workers will be transported to and from the site by the construction company at the beginning and end of each shift.</p> <p>Traffic management measures on L5040 - Marshalling (at site access and eastern end of L5040) and control of traffic will be in operation during all of the 229 construction days, as set out in the TMP included as Appendix 15-2. The holding area proposed at the eastern end of the L5040, and demonstration that existing 3m x 215m visibility splays will be retained at the N52 / L5040 junction, are shown in Figures 15-40 and 15-41. Further details of the proposed measures are provided in the TMP, included as Appendix 15-2.</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Traffic management measures on L-5041 within site boundary – Short term periodic closures of the sections of the L5041 within the Proposed Development site boundary will be required throughout the construction phase. Alternative diversion routes will be available to all local residents along the L-5041 and L5040, and access will be maintained for landowners and turbary rights holders throughout the construction phase.</p> <p>Drivers conduct – All drivers will follow normal rules of the road and will receive toolbox talk regarding the delivery route and planned holding points prior to any deliveries.</p> <p>Normal permitted axial loads – Will not be exceeded.</p> <p>Temporary traffic signs – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including the access junction on the L5363. All measures will be in accordance with the “<i>Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works</i>” (DoT now DoTT&S) and “<i>Guidance for the Control and Management of Traffic at Roadworks</i>” (DoTT&S). A member of construction staff (flagman) will be present at key junctions during peak delivery times.</p> <p>Delivery times of large turbine components - The management plan will include the delivery of large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.</p> <p>Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.</p> <p>Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>including wheel washing facilities on Site and sweeping / cleaning of local roads as required.</p> <p>It is confirmed that details for the Traffic Management Plan for the subject development will be agreed with the Road Section of Tipperary County Council prior to construction and contact will be maintained with the Road and Traffic Section throughout the construction phase.</p>		
MM103	Telecommunications	EIAR Chapter 15	<p>Mitigation by design:</p> <p>Imagine responded to a scoping request from MKO on the 25th of January 2022, noting that they had links in the area. Initial turbine locations were overlapping with the Imagine link, therefore the turbine locations have been altered to ensure that no overlap or interference will occur.</p>		
MM105	Existing Built Services	EIAR Chapter 15	<ul style="list-style-type: none"> ➤ Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works. ➤ Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. ➤ Excavation permits will be completed and all plant operators and general operatives will be inducted and informed as to the location of any services. ➤ The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks. 		
MM106	Aviation	EIAR Chapter 15	<ul style="list-style-type: none"> ➤ The scoping response (04/10/2022) from the Irish Aviation Authority (IAA) set out lighting requirements for turbines. These requirements will be complied with for the Proposed Development and any further details will be agreed in advance of construction with the IAA i.e. crane erection. The coordinates and elevations for built turbines will be supplied to the IAA, as is standard practice for wind farm developments. 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>➤ The scoping response (11/05/2023) from the Department of Defence (DOD) outlines the lighting specifications for turbines. These requirements will be complied with for the Proposed Development and any further details will be agreed in advance of construction with the DOD.</p>		
Decommissioning Phase					
MM102	Decommissioning	EIAR Section 14	In the event that the Proposed Development is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Section 4.11 of Chapter 4. A Decommissioning Plan has been prepared (Appendix 4-5) the detail of which will be agreed with the local authority prior to any decommissioning. This plan will include a material recycling / disposal and traffic management plan will be prepared for agreement with the local authority prior to decommissioning.		
Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
EIAR Chapter 4 – Description of the Proposed Development					
Pre-Commencement Phase					
MM1	Environmental Management	EIAR Section 4	All proposed site activities will be provided for in a Construction Environmental Management Plan (CEMP), prepared prior to the commencement of any operations onsite. The CEMP will set out all measures necessary to ensure works are carried out in accordance with the mitigation measures set out in the EIAR and will set out the monitoring and inspections procedures and frequencies.		
MM2	Environmental Management	EIAR Section 4	The ECoW will maintain responsibility for monitoring the construction works and audit the implementation of the CEMP. In addition, a Project Ecologist, Project Hydrologist, Project Archaeologist, Project Geotechnical Engineer will visit the site regularly and report to the ECoW.		

Tipperary Planning Authority - Infrastructure Department



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM3	Environmental Management	CEMP Section 4	A Site ECoW will oversee the site works and implementation of the Construction Environmental Management Plan (CEMP) and provide on-site advice on the mitigation measures necessary as necessary to ensure the project proceeds as intended. The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, developer's project manager, and any Authorities or other Agencies, will be agreed by parties where required prior to commencement of construction, and may be further adjusted as required during the course of the project.		
MM4	Surface Water Quality	CEMP Section 4	<p>Baseline water quality field testing and laboratory analysis will be undertaken where required prior to commencement of felling and construction at the site. The baseline monitoring programme will be subject to agreement with Tipperary County Council.</p> <p>Baseline laboratory analysis of a range of parameters with relevant regulatory limits and Environmental Quality Standards (EQSs) will also be undertaken as per water monitoring programme for the Proposed Development and each primary watercourse along the route.</p>		
MM5	Concrete Deliveries	EIAR Section 4 CEMP Section 3	The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures.		
MM6	Site Drainage Plan	EIAR Section 4 CEMP Section 4	The Project Hydrologist will prepare detailed drainage design before construction commences.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM7	Preparative Site Drainage Management,	EIAR Section 4 CEMP Section 4	The detailed drainage design will specify all materials and equipment necessary to implement the drainage measures effectively, which will be brought on site in advance of any works commencing. An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the detailed drainage design measures as necessary. The detailed drainage measures will be installed prior to, or at the same time as the works they are intended to drain.		
MM8	Drainage Inspection	CEMP Section 3	Prior to commencement of works in sub-catchments across the site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage.		
MM9	Drainage Maintenance	EIAR Section 4 CEMP Section 4	An inspection and maintenance plan for the drainage system on site will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the site ECoW or the Project Hydrologist.		
MM10	Earthworks	CEMP Section 3	Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible, drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off.		
MM11	Felling	EIAR Section 4, 7	Construction will not commence during the Breeding Bird season from March to August inclusive.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			If breeding activity is identified, the nest site will be located, and no works shall be undertaken within a 500m buffer (Forestry Commission Scotland 2006; Ruddock & Whitfield 2007). No works shall be permitted within the buffer until it can be demonstrated that the nest is no longer occupied.		
MM12	Felling Licence	EIAR Section 4	Felling will be carried out under the terms of a licence application to the Forest Service, as per the Forest Service’s policy on granting felling licenses for wind farm developments.		
MM13	Peat Management	EIAR Section 4 CEMP Section 4	<ul style="list-style-type: none"> ▪ Prior to commencing the construction of the excavated roads movement monitoring posts will be installed in areas where the peat depth is greater than 2m. ▪ Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area. 		
Construction Phase					
MM14	Wastewater Management	EIAR Section 4 CEMP Section 2	The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. Full details of the proposed tank alarm system can be submitted to the Planning Authority in advance of any works commencing on-site. The wastewater storage tank alarm will be part of a continuous stream of data from the site’s turbines, wind measurement devices and electricity substation that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007(as amended), will be employed to transport wastewater away from the site.		
MM15	Refuelling	EIAR Section 4	<ul style="list-style-type: none"> > On-site refuelling will be carried out using a mobile double skinned, banded fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site and will be towed around the site by a 4x4 jeep to where machinery is located. It is not practical for all vehicles to travel back to a single 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 3	<p>refuelling point, given the size of the cranes, excavators, etc. that will be used during the construction of the Proposed Development. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction when not in use. Refuelling operations will be carried out only by designated trained and competent operatives. Mobile anti-pollution measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.</p> <ul style="list-style-type: none"> > Fuels stored on site will be minimised. Storage areas where required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor; > The plant used during construction will be regularly inspected for leaks and fitness for purpose; <p>An emergency plan for the construction phase to deal with accidental spillages is contained within section 5 of the CEMP. Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area.</p>		
MM16	Plant and Equipment Inspections	CEMP Section 3	A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the construction phase.		
MM17	Concrete Deliveries and Management	EIAR Section 4 CEMP Section 3	<p>The following mitigation measures will be implemented to avoid release of cement leachate from the site:</p> <ul style="list-style-type: none"> ▪ No batching of wet-cement products will occur on site; ▪ The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures. ▪ Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Where possible pre-cast elements for culverts and concrete works will be used;</p> <ul style="list-style-type: none"> ▪ No washing out of any plant used in concrete transport or concreting operations will be allowed on-site; ▪ Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible to dedicated impermeable concrete washout area which requires monitoring and maintenance. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. ▪ Use weather forecasting to plan dry days for pouring concrete (see Section 3.2.4.2.2); ▪ The pour site will be free of standing water and plastic covers will be ready in case of sudden rainfall event; <p>The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a concrete washout area, built using straw bales and lined with an impermeable membrane. below. The areas are generally covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents is tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste</p>		
MM18	Road Cleanliness	EIAR Section 4. CEMP Section 3	A road sweeper will be available if any section of the public roads were to be dirtied by trucks associated with the Proposed Development.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM19	Watercourse Buffers	EIAR Section 4. CEMP Section 3	All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses.		
MM20	Water Discharge	EIAR Section 4	There will be no direct discharges to any natural watercourses, with all drainage waters being dispersed as overland flows.		
MM21	Wastewater Management	EIAR Section 4. CEMP Section 3	During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used on site for toilet facilities. This will be maintained by the service contractor as required and will be removed from the site on completion of the construction phase.		
MM22	Drainage Swales	EIAR Section 4 CEMP Section 3	Swales will be used to intercept and collect run off from construction areas of the site during the construction phase, and channel it to settlement ponds for sediment attenuation as per the drainage design.		
MM23	Interceptor Drains	EIAR Section 4 CEMP Section 3	Interceptor drains will be installed up-gradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site. It will then be directed to areas where it can be re-distributed over the ground as sheet flow as per the drainage design.		
MM24	Check Dams	EIAR Section 4	Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be installed at regular intervals along interceptor drains to restrict flow velocity, minimise channel erosion and promote sedimentation behind the dam as per the drainage design.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 3			
MM25	Level Spreaders,	EIAR Section 4 CEMP Section 3	A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations where they are not likely to contribute further to water ingress to construction areas of the site.		
MM26	Piped Slope Drains	EIAR Section 4	Piped slope drains will be used to convey surface runoff from diversion drains safely down slopes to flat areas without causing erosion. Once the runoff reaches the flat areas it will be reconverted to diffuse sheet flow. Level spreaders will only be established on slopes of less than 6% in grade. Piped slope drains will be used to transfer water away from areas where slopes are too steep to use level spreaders.		
MM27	Vegetation Filters	EIAR Section 4	Vegetation filters, that is areas of existing vegetation, accepting drainage water issuing from level spreaders as sheet flow, will remove any suspended sediment from water channelled via interceptor drains or any remaining sediment in waters channelled via swales and settlement ponds.		
MM28	Settlement Ponds	EIAR Section 4 CEMP Section 3	Settlement ponds, placed either singly or a pair in series, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to water courses as per the drainage design.		
MM29	Dewatering Silt Bag	EIAR Section 4 CEMP Section 3	Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, the majority of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters or sedimats - Sediment entrapment mats, consisting of coir or jute matting - will be placed at the silt bag location to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			the full width of the outfall to ensure all water passes through this additional treatment measure.		
MM30	Siltbuster	EIAR Section 4	A “siltbuster” or similar equivalent piece of equipment will be available to filter any water pumped out of excavation areas if necessary, prior to its discharge to stilling ponds or swales. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit.		
MM31	Culvert Upgrades	EIAR Section 4	<p>The following mitigation is proposed for completion of wind farm culvert upgrades:</p> <ul style="list-style-type: none"> ➤ Where possible pre-cast elements for culverts and concrete works will be used; ➤ All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse; ➤ In all cases, culverts will be oversized to allow mammals to pass through the culvert. ➤ Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. ➤ All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance ➤ All proposed new stream crossings will be bottomless or clear span culverts and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location; ➤ Where the proposed underground cabling route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road; ➤ All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings; ➤ As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>document “Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites”, i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI);</p> <ul style="list-style-type: none"> > During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas; and, > All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent. 		
MM32	Silt Fences	EIAR Section 4	<ul style="list-style-type: none"> > Silt fences will be emplaced within drains down-gradient of all construction areas. > They will remain in place throughout the entire construction phase. > Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading. > The silt fence designs follow the technical guidance document ‘Control of Water Pollution from Linear Construction Projects’ published by CIRIA (Ciria, No. C648, 1996). Up to three silt fences may be deployed in series. > All silt fencing will be formed using Terrastop Premium or equivalent silt fence product. > Silt fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it 		
MM33	Sedimats	EIAR Section 4	<ul style="list-style-type: none"> > Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM34	Hydrocarbon Interceptors	EIAR Section 4	<ul style="list-style-type: none"> > A suitably sized hydrocarbon interceptor will be installed wherever it is intended to store hydrocarbons and oils (i.e construction compounds and substation compound) or where it is proposed to park vehicles during the construction and operational phases of the proposed development (i.e construction compounds, substation compound and visitor car park). 		
MM35	Excavation seepages and treatment	EIAR Section 4,	<ul style="list-style-type: none"> > Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; > If required, pumping of excavation inflows will prevent build-up of water in the excavation; > The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; > The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, along with use of more specialist treatment systems such as a Siltbags; > There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; > Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; > Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through stilling ponds and buffered outfalls onto vegetated surfaces; > Buffered outfalls which will be numerous over the site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site; and, <p>Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works.</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Regular buffered outfalls will also be added to these drains to protect downstream surface		
MM36	Peat Management	EIAR Section 4 CEMP Section 4	<p>Proposed New Access Roads</p> <ul style="list-style-type: none"> ▪ Excavation of the new access road to competent strata. ▪ Drainage shall be installed to divert surface and groundwater from the construction ▪ Placement of granular fill-in layers following the designer's specification. The fill thickness is typically 200mm above the existing ground level, in addition to the fill thickness required to backfill the excavation to a suitable competent strata below the existing ground level. The road thickness will be subject to detailed design. ▪ Access roads are to be finished with a granular running surface across the full width of the road. ▪ A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification. <p>New Floating Roads</p> <ul style="list-style-type: none"> ▪ Placement of a geotextile or geogrid directly onto the peat surface following the designer's specification. ▪ Placement of granular fill and reinforcing geogrids in layers following the designer's specification (typically 800mm, but which will be subject to detailed design), with due regard to any settlement and deformation of peat anticipated at the access track. ▪ It may be necessary to stage the road construction to maintain peat stability – i.e. to reduce the rate of placement of fill to allow the peat layers to consolidate and increase in strength. ▪ Drains shall be installed within the road to divert surface and groundwater from upslope to downslope. ▪ Stone delivered to the floating road construction shall be end-tipped onto the constructed floating road in a manner as to avoid excessive impact loading on 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>the peat due to concentrated end-tipping. Direct tipping of stone onto the peat shall not be carried out.</p> <ul style="list-style-type: none"> ▪ Stone will be spread and placed from the constructed floating road onto the peat surface using a bulldozer. ▪ Access roads are to be finished with a granular running surface across the full width of the road. ▪ A layer of geogrid/geotextile may be required within the stone fill as specified by the detailed designer. <p>Upgrade to Existing Founded Roads</p> <ul style="list-style-type: none"> ▪ Excavation on one or both sides of the existing access road to competent strata. ▪ Placement of granular fill and reinforcing geogrids in layers following the designer’s specification (typically 800mm, but which will be subject to detailed design), with due regard to any settlement and deformation of peat anticipated at the access track. ▪ Overlay of the existing access road with selected granular fill following the designer's specification. ▪ Where coarse granular fill has been used in the existing floated access road makeup, a layer of geogrid should be placed on top of the existing floated access road. ▪ Access roads are to be finished with a granular running surface across the full width of the road. ▪ A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer’s specification. <p>Upgrade to Existing Floated Roads</p> <ul style="list-style-type: none"> ▪ Tree brush and/or a geotextile is placed on one or both sides of the existing access road directly onto the peat surface, following the designer’s specification. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Benching of existing road and placement of granular fill and reinforcing geogrids in layers following the designer’s specification, with due regard to any settlement of peat anticipated for the widened area. ▪ It may be necessary to stage the widening to maintain peat stability – i.e., to reduce the rate of placement of fill to allow the peat layers to consolidate and increase in strength. ▪ It may be necessary to anchor the geogrids into the existing roads, requiring significant benching of existing roads. ▪ Overlay of the existing access road with selected granular fill following the designer's specification. ▪ Where coarse granular fill has been used in the existing floated access road makeup, a layer of geogrid should be placed on top of the existing floated access road. ▪ The surface of the existing access road should be graded/levelled before the placement of any geogrid/geotextile, where necessary (to prevent damaging the geogrid/geotextile). ▪ Access roads are to be finished with a layer of capping across the full width of the road. ▪ A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer’s specification 		
MM37	Peat and Spoil Placement Areas	ELAR Section 4. CEMP Section 3	<p>The following measures which will be implemented during the construction phase of the project will assist in the management of the risks for this site.</p> <ul style="list-style-type: none"> ➢ Care shall be taken during peat excavation to ensure it is segregated from other soil types; therefore, particular care should be taken to review recorded peat depths. ➢ Peat shall be separated and stored by type, namely the acrotelmic and catotelmic layers. ➢ Acrotelm is generally required for landscaping and shall be stripped and temporarily stockpiled for re-use as required. Acrotelm stripping shall be undertaken before the main excavations. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Where possible, the acrotelm shall be placed with the vegetation part of the sod facing the right way up to encourage the growth of plants and vegetation. ➤ All catotelm peat shall be transported immediately on excavation to the designated peat storage areas, ➤ The careful handling and segregation of peat types will help to optimise the re-use of peat, aiding in the retention of structure and integrity of the excavated peat material. ➤ Depending on what vegetation is found on site, more fibrous material may be placed on steeper angles. Unconsolidated peat, generally comprising of catotelmic material, is often not suitable for general dressing, and any unconsolidated peat excavated must only be used for reinstatement where such re-use poses no risk of polluting water courses and evidence can be provided that the required water table at the chosen location can be maintained. ➤ Construction sequence planning shall minimise the time peat is stockpiled before re-use; however, some temporary peat storage may be required to manage spoil and separate spoil horizons before it can be placed in its reinstatement location. The principles on which the temporary storage of excavated peat should be based upon the storage and handling methodologies set out within this section. Temporary storage must be safe as it protects the structure and integrity of the excavated peat subject to prevailing local conditions. Reinstatement of peat and peat turves will be completed during the Construction Phase at the earliest possible opportunity to avoid prolonged storage. Any temporary storage locations must be in suitably wet conditions or be irrigated to prevent the peat from desiccating, and precautions should be taken to ensure that turves are not allowed to dry out before reinstatement. The condition of turves should be monitored throughout the duration of storage. Irrigation of peat turves should be agreed upon in advance with the 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Ecological Clerk of Works (ECoW). Should wetting of turves be required to prevent desiccation, mitigation should be adopted to prevent runoff or discharge to any adjacent watercourses.</p> <ul style="list-style-type: none"> > Plant movements and haul distances related to earthworks activity and peat excavation shall be kept to a minimum, > Peat stockpiles shall not be allowed to substantially erode or become dry. > Material stockpiles shall be located at least 50m away from watercourses, including site ditches/sheughs, to reduce the potential for sediment to be transferred into the wider hydrological system. > If possible, excavation should be timed to avoid very wet weather, > Peat storage locations have been selected to limit re-handling as far as reasonably possible. > Excavated peat shall be stored and re-used as close to the immediate area as possible. > The Contractor shall consult the ECoW to agree on locations for material stockpiles and consider minimising impacting sensitive ecological receptors. > The Contractor shall consult the site Geotechnical Engineer and review and take into account Peat Stability Risk Assessment (GDG, 2023) to avoid the risk of peat instability in peat excavations, peat stockpiling and all material stockpiling in areas underlain by peat. > Runoff from stockpiles shall be directed through the site drainage system, including silt fences, settlement ponds and other drainage measures as appropriate. These details will be outlined in the Contractor’s Construction and Environmental Management Plan. <p>Peat Repository Areas</p> <ul style="list-style-type: none"> > Peat storage areas have been identified at locations where the topography (slope angle <math><5^\circ</math>), peat depth, resulting stability assessment and other environmental constraints (including 50m buffer from all watercourses) have 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>allowed. These areas are designated for the permanent storage of up to 1m of peat material, or where topography allows, up to a maximum of 1.5m.</p> <ul style="list-style-type: none"> ➤ A cell berm should be constructed similarly to the peat storage area detail outlined in Appendix C. This cell berm will help to prevent the flow of saturated peat material. The stone berm will be constructed with a sufficiently coarse granular material or rock to enable the drainage of the stored peat material and prevent any instabilities within the storage area. ➤ The height of the cell berm constructed should be greater than the height of the placed peat & spoil to prevent any surface peat runoff. Berms up to 1.75m in height may likely be required, subject to detailed design. ➤ The cell berm is subject to the detail designer's specification; however, some peat excavation or installation of a shear key may be required to prevent global instabilities within the stored material. ➤ Where possible, the surface of the placed peat and spoil should be shaped to allow efficient runoff of surface water from the peat storage areas. ➤ Silting ponds may be required at the lower side/outfall location of the storage areas. ➤ Intermediate berms or buttresses of spoil material may be installed within the peat storage area to aid in the placement and stability of the peat material. These berms should be shaped to align with the contours of the storage area. <p>Spoil Repository Areas</p> <ul style="list-style-type: none"> ➤ Spoil storage areas have been identified at locations where the topography (slope angle <5°), peat depth, resulting stability assessment (Factor of Safety of >1.3 for 1.5m peat surcharge) and other environmental constraints 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>(including 50m buffer from all watercourses) have allowed. These areas are designated for permanently storing up to 1.5m of non-peat spoil material.</p> <ul style="list-style-type: none"> ➤ A cell berm should be constructed similarly to the peat storage area detail outlined in Appendix C. This cell berm will help to prevent the flow of saturated peat material. The stone berm will be constructed with a sufficiently coarse granular material or rock to enable the drainage of the stored peat material and prevent any instabilities within the storage area. ➤ The height of the cell berm constructed should be greater than the height of the spoil to prevent any surface spoil runoff. Berms up to 1.75m in height may likely be required, subject to detailed design. ➤ The cell berm is subject to the detail designer’s specification; however, some peat excavation or installation of a shear key may be required to prevent global instabilities within the stored material. ➤ Where possible, the surface of the placed peat and spoil should be shaped to allow efficient runoff of surface water from the peat storage areas. ➤ Silting ponds may be required at the lower side/outfall location of the storage areas. ➤ Intermediate berms or buttresses of granular material may be installed within the spoil storage area to aid in the placement and stability of the spoil material. These berms should be shaped to align with the contours of the storage area. 		
Operational Phase					
MM38	Wastewater Management	EIAR Section 4	The removal and disposal of wastewater from the site will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations, 2007.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM39	Electrical Substation	EIAR Section 4, CEMP Section	The electrical substation will be bunded appropriately to the volume of oils likely to be stored, and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor.		
Decommissioning Phase					
MM40	Decommissioning	EIAR Chapter 4	Prior to the end of the operational period the Decommissioning Plan (Appendix 4-5 of the EIAR) will be updated in line with decommissioning methodologies that may exist at the time and will agreed with the competent authority at that time.		
MM41	Decommissioning	EIAR Chapter 4 DP Section 2	On removal of turbines, the covering of the foundation will be completed using locally sourced material imported to site as the required quantity of material does not currently exist at the site. The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation.		
MM42	Decommissioning	EIAR Chapter 4 DP Section 3	The following mitigation measures are proposed to avoid release of hydrocarbons at the site: <ul style="list-style-type: none"> > Road-going vehicles will be refuelled off site wherever possible; > On-site refuelling will be carried out at designated refuelling areas at various locations throughout the site. Machinery will be refuelled directly by a fuel truck that will come to site as required > Only designated trained and competent operatives will be authorised to refuel plant on site. > Fuel volumes stored on site should be minimised. Any fuel storage areas will be bunded appropriately; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The plant used will be regularly inspected for leaks and fitness for purpose; and, ➤ An emergency plan for the decommissioning phase to deal with accidental spillages will be developed (refer to EIAR Section 4). Spill kits will be available to deal with and accidental spillage in and outside the refuelling area. <p>A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase.</p>		
MM43	Decommissioning	EIAR Chapter 4	Upon completion of the Proposed Development the temporary construction compound will be decommissioned by backfilling the area with the material arising during excavation, landscaping with topsoil as required.		
Chapter 5: Human Beings					
Pre-Commencement Phase					
MM44	Human Health	EIAR Section 5	Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be identified in line with the engagement plan. Local access to properties will also be maintained throughout any construction works and local residents will also be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum.		
Construction Phase					
MM45	Human Health	EIAR Section 5	<p>The Proposed Development will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including:</p> <ul style="list-style-type: none"> ▪ Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); ▪ Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016); 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and ▪ Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). <p>A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail.</p>		
MM47	Human Health	EIAR Section 5	<ul style="list-style-type: none"> > Local residents will be kept informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; > The core hours for construction activity will be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 Saturday. There will be no working on Sundays and Public Holidays; > Any extraordinary site work occurring outside of the core working hours (for example, crane operations lifting components onto the tower) will be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the site between 19:00 and 07:00, with the exception of abnormal loads that would be scheduled to avoid anticipated periods of high traffic flows; > All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; > Inherently quiet plant will be selected where appropriate and available - all major compressors would be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which would be kept closed whenever the machines are in use; > All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; > Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; > All equipment used on site will be regularly maintained, including maintenance related to noise emissions; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and > All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided. 		
Operational Phase					
MM48	Human Health	EIAR Section 5	<ul style="list-style-type: none"> > Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. > Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed or are becoming hidden by vegetation or foliage, with prompt action taken as necessary. > Signs will also be erected at suitable locations across the site as required for the ease and safety of operation of the proposed renewable energy development. These signs include: <ul style="list-style-type: none"> ○ Buried cable route markers at 50m (maximum) intervals and change of cable route direction; ○ Directions to relevant turbines at junctions; ○ “No access to Unauthorised Personnel” at appropriate locations; ○ Speed limits signs at site entrance and junctions; ○ “Warning these Premises are alarmed” at appropriate locations; ○ “Danger HV” at appropriate locations; ○ “Warning – Keep clear of structures during electrical storms, high winds or ice conditions” at site entrance; ○ “No unauthorised vehicles beyond this point” at specific site entrances; and ○ Other operational signage required as per site-specific hazards. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the site and providing for access for emergency services at all times.		
MM49	Shadow Flicker	EIAR Section 5	<p>Where daily shadow flicker exceedances have been predicted at buildings by the modelling software, a site visit will be undertaken firstly to determine the level of occurrence, existing screening and window orientation.</p> <p>Screening Measures</p> <p>In the event of an occurrence of shadow flicker exceeding guideline threshold values of 30 minutes per day at a residential receptor, mitigation options will be discussed with the affected homeowner, including:</p> <ul style="list-style-type: none"> ▪ Installation of appropriate window blinds in the affected rooms of the residence; ▪ Planting of screening vegetation; ▪ Other site-specific measures which might be agreeable to the affected party and may lead to the desired mitigation. <p>If agreement can be reached with the homeowner, then it would be arranged for the required mitigation to be implemented in cooperation with the affected party as soon as practically possible and for the full costs to be borne by the wind farm operator.</p> <p>Wind Turbine Control Measures</p> <p>If it is not possible to mitigate any identified shadow flicker limit exceedance locally using the measures detailed above, wind turbine control measures will be implemented.</p> <p>The wind farm’s SCADA control system can be programmed to shut down any particular turbine at any particular time on any given day to ensure that shadow</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			flickers occurrences at properties which are not naturally screened or cannot be screened with measures outlined above		
Chapter 6: Biodiversity					
Pre-Commencement Phase					
MM50	Invasive Species Management	EIAR Section 6 CEMP Section 3	A pre-construction invasive species survey will be undertaken a part of the proposed project. This will provide updated data in advance of any construction given the intervention time period between the original survey work and any future grant of permission/ construction. Measures will be in place to prevent the spread of these species during the proposed works. In addition, all necessary precautions will be taken to prevent the introduction of invasive species to the site from elsewhere.		
MM51	Fauna	EIAR Section 6	<ul style="list-style-type: none"> ▪ A pre-construction badger survey will be undertaken at the location of the identified sett by a qualified ecologist prior to the commencement of any works to determine if the setts are in use and to identify any additional sett entrances that may have been excavated in the intervening period. ▪ Local NPWS staff will be informed in advance of the exclusion works. ▪ The exclusion will not take place during the breeding season (December to June inclusive) ▪ One way exclusion gates will be installed on each sett entrance. ▪ The one-way gates will be left in place for a period of 21` days and works will proceed immediately after once exclusion of badgers has been confirmed by an Ecologist. ▪ If badgers succeed in re-entering during the 21 day period, the exclusion process and 21-day period must start again. 		
MM52	Fauna	EIAR Section 6	<ul style="list-style-type: none"> ▪ From a precautionary basis, a pre-commencement otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Should the surveys identify the presence of an otter holt, the following measures will be undertaken a National Parks and Wildlife Service and a derogation licence will be applied for (although compliance with such a licence has not been relied on in this assessment). ▪ No works will be undertaken within 150m of any holts at which breeding females or cubs are present. ▪ No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence (TII, 2008b). 		
MM53	Bats	Appendix 6-2	NatureScot recommends that a distance of 50m between turbine blade tip and nearest woodland (or other key habitat features) is adequate mitigation. This 50m buffer will be implemented from the outset and monitored as per the post construction monitoring.		
MM54	Bats	EIAR section 6	<ul style="list-style-type: none"> ➢ An inspection survey will be carried out prior to the commencement of the works to ensure no bats are roosting within the trees. ➢ If the inspection survey cannot provide sufficient data to exclude the presence of a roost (i.e. due to lack of access), an activity survey will also be conducted prior to commencement. ➢ Where evidence of bats is identified during the above pre-commencement surveys, a Derogation Licence will be required from NPWS for the continuation of the works. The works will be carried out outside the maternity (May-August) and hibernation (November-March) seasons to avoid the potential for disturbance on bats during sensitive periods of their lifecycle. 		
Construction Phase					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM54	Bats	EIAR Section 6 Appendix 6-2	<ul style="list-style-type: none"> Plant machinery will be turned off when not in use and all plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (SI 359/1996). Exterior lighting, during construction, will be designed to minimize light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. 		
MM56	Aquatic Fauna	EIAR Section 6	In relation to new watercourse crossings, Inland Fisheries Ireland (IFI) will be consulted a minimum of four weeks in advance of the installation of pre-cast concrete bottomless box culverts. The Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters; and the Scottish Natural Heritage (SNH) Good Practice During Wind Farm Construction (SNH, 2019, 4th Edition) will also be adhered to. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI).		
MM57	Invasive Species	EIAR Section 6 CEMP Section 3	<p>The following measures are proposed to establish good site hygiene to ensure the control of any potential spread of invasive species during construction works, if they are identified prior to the commencement of the construction phase:</p> <ul style="list-style-type: none"> A risk assessment and method statement must be provided by the Contractor prior to commencing works. Fences will be erected around areas of infestation, as confirmed by test pits, and warning signs shall be erected. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ A designated wash-down area will be created, where power-washed material from machinery can be contained, collected and disposed of with other contaminated material. This area will contain a washable membrane or hard surface. ▪ Stockpile areas will be chosen to minimise movement of contaminated soil. ▪ Stockpiles will be marked and isolated. ▪ Contaminated areas which will not be excavated will be protected by a root barrier membrane if they are likely to be disturbed by machinery. Root barrier membranes will be protected by a layer of sand above and below and topped with a layer of hardcore. ▪ The use of vehicles with caterpillar tracks within contaminated areas will be avoided to minimise the risk of spreading contaminated material. ▪ An ECoW/suitably qualified ecologist will be on site to monitor and oversee the implementation of invasive species management plans. ▪ Plant and equipment which is operated within an area for the management of materials in contaminated areas should be decontaminated prior to relocating to a different works area. The decontamination procedures should take account of the following: <ul style="list-style-type: none"> ▪ Personnel may only clean down if they are familiar with the plant and rhizome material and can readily identify it. ▪ Decontamination will only occur within designated wash-down areas. ▪ Vehicles will be cleaned using stiff-haired brush and pressure washers, paying special attention to any areas that might retain rhizomes e.g. wheel treads and arches. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> All run-off will be isolated and treated as contaminated material. This will be disposed of in already contaminated areas. 		
MM58	Flora and Fauna	EIAR Section 6	<p>The Proposed Development has the potential to result in enhancement of the surrounding areas through habitat rehabilitation management (as described in the Biodiversity and Enhancement Management Plan) that will be implemented during the construction phase of the Proposed Development and maintained during the operational phase. Details of the management that will be undertaken are provided in the Biodiversity and Enhancement Management Plan in Appendix 6-4 of the EIAR. These include:</p> <ul style="list-style-type: none"> > Replanting areas > Reseeding areas > Artificial Sett 		
Operational Phase					
MM59	Bats	EIAR Section 6 Appendix 6-2	<p>In order to reduce the value of the habitat for bat species in the areas surrounding the turbines, a buffer of at least 50m between the tip of the blade and any trees or other tall vegetation that could provide high quality foraging habitat for bat species will be implemented. A full description of the mitigation measures proposed during operational phase are described in section 6.1 of the Bat report. Details of this mitigation and how it is calculated is provided in Appendix 6-2.</p> <p>Lighting Restrictions</p> <p>The applicant commits to the use of lights during construction, operation and decommissioning (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations:</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Every light needs to be justifiable, ➤ Limit the use of light to when it is needed, ➤ Direct the light to where it is needed, ➤ Reduce the light intensity to the minimum needed, ➤ Use light spectra adapted to the environment, ➤ When using white light, use sources with a “warm” colour temperature (less than 3000K). <p>Blade Feathering</p> <p>On a precautionary basis, and in addition to buffers applied to habitat features, it is proposed that all wind turbines are subject to ‘feathering’ of turbine blades when wind speeds are below the cut-in speed of the proposed turbine. This means that the turbine blades are pitched at 90 degrees or parallel to the wind to reduce their rotation speed to below two revolutions per minute while idling. This measure has been shown to significantly reduce bat fatalities (by up to 50%) in some studies (NIEA, 2021).</p> <p>Bat Mitigation and Monitoring Plan</p> <p>Full details of the proposed operational bat monitoring programme for the Proposed Development are provided in Section 6.2.1 of the Bat Report (Appendix 6-2)</p>		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> The post-construction surveys will be carried out as per the pre-construction survey effort. Post-construction monitoring will include static detector surveys, walked survey transects and corpse searching to record any bat fatalities resulting from collision. Static monitoring shall take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with NIEA Guidance. This shall include searcher efficiency trials and an assessment of scavenger removal rates to determine the appropriate correction factor to be applied in relation to determining an accurate estimate of collision mortality. <p>Monitoring surveys shall continue in Year 2 and 3, and where a curtailment requirement has been identified, the success of the curtailment strategy shall be assessed in line with the baseline data collected in the preceding year(s).</p>		
Decommissioning Phase					
MM60	Decommissioning	EIAR Section 6	The same mitigation to prevent significant impacts on water quality and associated aquatic fauna and other terrestrial fauna during construction will be applicable to the decommissioning phase. An outline decommissioning plan is contained in the CEMP, Appendix 4-4 of the EIAR. The CEMP for the project provides the details of the mitigation and best practice that will be employed to avoid any potential for significant residual effects on biodiversity during decommissioning of the proposed wind farm.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Chapter 7 Birds (Appendix 7-1)					
Pre-Commencement Phase					
MM61	Birds	Appendix 7-1	During the breeding season (March-August) bird monitoring surveys within the Proposed Development site will take place to a distance of 500 m from the development area. If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase.		
Construction Phase					
MM63	Birds	Appendix 7-6	<p>If winter roosts or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If the roost/nest is found to be active during the construction phase no works shall be undertaken, works will cease within a species-specific buffer of this location (as per Goodship, N.M. and Furness, R.W., 2022) in line with best practice. No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied.</p> <p>All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the ‘no-work zone’ will be made available to all construction staff. The restricted area will also be marked off using</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			hazard-tape fencing to alert all personnel on site to the suspension of works within that area.		
Operational Phase					
MM64	Birds	EIAR Section 7	<ul style="list-style-type: none"> ➤ Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). Any requirement for construction works to run into the subsequent breeding season following commencement will be informed by pre-construction bird surveys. ➤ The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022 ➤ During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. ➤ Silt fences will be installed as an additional water protection measure around existing watercourses. ➤ An Environmental Clerk of Works and Project Ecologist will be appointed. Duties will include: <ol style="list-style-type: none"> I. Organise the undertaking of a pre-construction walkover bird survey to ensure that significant effects on birds will be avoided. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			II. Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Wind Farm Site. III. Oversee management of ornithological issues during the construction period and advise on ornithological issues as they arise. IV. Provide guidance to contractors to ensure legal compliance with respect to protected species onsite. V. Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress as necessary. > If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.		
Decommissioning Phase					
MM66	Birds	Appendix 7-1	As the decommissioning works will involve works similar to those involved at construction stage, these could result in similar effects on birds. Hence, the mitigation that will be undertaken during construction will also be applied during the decommissioning phase (taking into account changes that may have occurred locally during the operational life of the project).		
EIAR Chapter 8 Land Soils & Geology					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase					
MM67	Earthworks	EIAR Section 8	<ul style="list-style-type: none"> ▪ Placement of turbines and associated infrastructure in areas with shallower peat has been achieved during the design phase; ▪ Maximum use of the existing road network to reduce peat excavation volumes; ▪ Use of floating roads, where appropriate, to reduce peat excavation volumes; ▪ A minimal volume of peat and subsoil will be removed to allow for infrastructural work to take place in comparison to the total volume present on the site due to optimisation of the layout by mitigation by design (avoidance of deep peat areas); ▪ A suitable drainage system to be constructed to ensure continuity of the site hydrology (EIAR Chapter 9). ▪ All temporary cuts/excavations will be carried out such that they are stable or adequately supported. Gravel/rock fill will be used to provide additional support to temporary cuts/excavations where appropriate, as determined by the Project Geotechnical Engineer. Unstable temporary cuts/excavations will not be left unsupported. Where appropriate and necessary, temporary cuts and excavations will be protected against the ingress of water or erosion. ▪ To mitigate against the compaction of soil at the site, prior to the commencement of any earthworks, the work corridor will be pegged, and machinery will stay within this corridor so that peatland / soils outside the work area is not damaged. Excavations will then be carried out from access tracks, where possible, as they are constructed in order to reduce the compaction of soft ground. ▪ Soil excavated from trenches along the proposed grid connection route will be stored with the designated peat repository areas on the Site. The tarmac / asphalt layers will be taken to a licenced facility for 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			disposal or recycling. If feasible, the upper layers of tarmac and asphalt will be excavated separately to the lower engineered fill layers		
Construction Phase					
MM68	Contamination of Soils	EIAR Section 8	<ul style="list-style-type: none"> ➤ On-site re-fuelling will be undertaken using a double skinned bowser with spill kits kept on site for accidental leakages or spillages; ➤ Only designated trained operatives will be authorised to refuel plant on-site; ➤ Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system; ➤ All fuel storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area; ➤ Fuel, oil and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage; ➤ The electrical control building (at the substation) will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used during construction will be regularly inspected for leaks and fitness for purpose; ➤ Safety data sheets for all chemicals used will be kept on-site; and, 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > An emergency response plan for the construction phase to deal with accidental spillages is contained within the Construction and Environmental Management Plan (which is contained in Appendix 4.3). 		
MM69	Erosion of soils and peat	EIAR Section 8	<ul style="list-style-type: none"> > The upper vegetative layer (where still present) of excavated peat 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 stored peat within the peat storage areas; > Re-seeding and spreading/planting will also be carried out in these areas; > Brush/bog mats will be put in place to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur; and, > A full Peat and Spoil Management Plan for the development is included as Appendix 4-2 of this EIAR. 		
MM71	Peat Instability and Failure	EIAR Section 8 Appendix 8-1	<p>The key mitigation with regard peat stability risk at the Proposed Development site was the carrying out of a robust, multidisciplinary site investigation and peat stability risk assessment carried out in accordance with best practice guidance (PLHRAG, Scottish Government, 2017).</p> <p>The following measures which will be implemented during the construction phase of the project will ensure the management of the risks for this site.</p> <ul style="list-style-type: none"> > Appointment of experienced and competent contractors > The site will be supervised by experienced and qualified personnel; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a localised peat movement); ➤ Prevent undercutting of slopes and unsupported excavations; ➤ Maintain a managed robust drainage system; ➤ Prevent placement of loads/overburden on marginal ground; ➤ Implementation of safety buffers around deep peat areas; ➤ Adhere to the spoil and peat storage restriction areas detailed in the Geotechnical and Peat Stability Risk Assessment (GDG, 2023); ➤ Set up, maintain and report findings from monitoring systems as outlined in the Geotechnical and Peat Stability Assessment (GDG, 2023); ➤ Ensure construction method statements are developed and agreed before commencement of construction and are followed by the contractor; and, ➤ Revise and amend the Construction Risk Register as construction progresses to ensure that risks are managed and controlled for the duration of construction. 		
Operational Phase					
MM72	Soils and Geology	EIAR Section 8	<p>Mitigation measures for soils and geology during the operational stage include the use of aggregate from local, authorised quarries for use in road and hardstand maintenance. Oil used in transformers (at the substation and within each turbine) and storage of oils in tanks at the substation could leak during the operational phase and impact on ground/peat and subsoils and groundwater or surface water quality. The substation transformer, and oil storage tanks will be in a concrete bund capable of holding 110% of the stored oil volume. Turbine transformers are located within the turbines, so any leaks would be contained within the turbine structure. These mitigation measures are sufficient to reduce risk to ground/peat/soils and subsoils, and groundwater and surface water quality.</p>		
Decommissioning Phase					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM73	Decommissioning Phase	EIAR Section 8	Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant.		
EIAR Chapter 9 Hydrology Pre-Commencement Phase					
MM74	Earthworks Resulting in Suspended Solids Entrainment in Surface Waters	EIAR Section 9	<p>The key mitigation measure during the construction phase is the avoidance of sensitive aquatic areas where possible, by application of suitable buffer zones (i.e. 50m to main watercourses). All of the key development components within the wind farm site are located significantly away from the delineated 50m watercourse buffer zones with the exception of 3 no. new watercourse crossing locations.</p> <p>Prior to the commencement of the construction works the following key temporary drainage measures will be installed:</p> <ul style="list-style-type: none"> ➤ All existing dry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps; ➤ Clean water interceptor drains will be installed upgradient of the works areas; ➤ Check dams/silt fence arrangements (silt traps) will be placed in all existing drains that have surface water flows and also along existing roadside drains; and, ➤ A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone. <p>The works programme for the initial construction stage of the Proposed Development will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of soil/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which</p>		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>works will be scaled back or suspended will relate directly to the amount of rainfall forecast.</p> <p>The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:</p> <ul style="list-style-type: none"> ➤ General Forecasts: Available on a national, regional, and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates; ➤ MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale; ➤ 3 hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events; ➤ Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3 hour record is given and is updated every 15 minutes. Radar images are not predictive; and, ➤ Consultancy Service: Met Eireann provide a 24 hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. <p>Using the safe threshold rainfall values (threshold limits listed below) will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.</p>		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Works will be suspended if forecasting suggests any of the following is likely to occur, or if on-site monitoring indicates any of the following has occurred:</p> <ul style="list-style-type: none"> ➤ 10 mm/hr (i.e. high intensity local rainfall events); ➤ 25 mm in a 24 hour period (heavy frontal rainfall lasting most of the day); <p>or,</p> <ul style="list-style-type: none"> ➤ >half monthly average rainfall in any 7 days. ➤ Prior to, and after, works being suspended the following control measures will be undertaken: ➤ All open excavations will be secured and sealed off; ➤ Provide temporary or emergency drainage to prevent back-up of surface runoff; and, ➤ Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded. 		
MM73	Excavation Dewatering and Potential Effects on Surface Water Quality	EIAR Section 9	<p>Mitigation by Design: Management of excavation seepage and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The interceptor drainage will be discharged to the wind farm site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; and, ➤ Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work should immediately be stopped and a geotechnical assessment undertaken. 		
MM74	Clear-felling of Coniferous Plantation	EIAR Section 9	<p>Mitigation by Avoidance: There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document “Forestry and Water Quality Guidelines”</p> <p>Mitigation by Design: Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:</p> <ul style="list-style-type: none"> ▪ Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ▪ All machinery will be operated by suitably qualified personnel; ▪ Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; ▪ These machines will traverse the site along specified off-road routes (referred to as racks); ▪ The location of racks will be chosen to avoid wet and potentially sensitive areas; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; ▪ Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground; ▪ In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction; ▪ Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; ▪ Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; ▪ Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; ▪ Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; ▪ Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and, 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors. <p>Pre-emptive Site Drainage Management : The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. Works will be suspended if forecasting suggests any of the following is likely to occur:</p> <ul style="list-style-type: none"> > >10 mm/hr (i.e. high intensity local rainfall events); > >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, > >half monthly average rainfall in any 7 days. <p>Drain Inspection and Maintenance: The following items will be carried out during pre-felling inspections and after:</p> <ul style="list-style-type: none"> ▪ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines (<i>i.e.</i>, hot spot areas). ▪ Inspections of plant and machinery will be carried out prior to any works to assure all are in good condition. ▪ Inspection of drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. The pre-felling inspection will be carried out during rainfall events. ▪ Following tree felling, all main drains will be inspected to ensure that they are functioning. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Extraction tracks near drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; ▪ Culverts on drains exiting the site will be unblocked. ▪ All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall. 		
MM75	Potential Release of Hydrocarbons	EIAR Section 9 CEMP Section 3	All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site;		
MM76	Release of Cement-Based Products	EIAR Section 9 CEMP Section 3	<ul style="list-style-type: none"> ➢ Weather forecasting will be used to plan dry days for pouring concrete; and ➢ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 		
MM77	Potential Effects Associated with Piled Foundations	EIAR Section 9	<p>Mitigation by Design: Management of excavation seepage and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➢ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place ➢ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➢ The interceptor drainage will be discharged to the wind farm site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; and, <p>Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work should immediately be stopped and a geotechnical assessment undertaken.</p> <ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 		
MM75	Morphological Changes to Surface Water Courses & Drainage Patterns within Wind Farm Site	EIAR Section 9	<ul style="list-style-type: none"> ➤ All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings. ➤ As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document “Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites”, i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI); 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> Development Works at River Sites”, i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI); 		
MM75	Morphological Changes and Surface Water Quality Effects Along Grid Connection Route	EIAR Section 9	<p>Prior to the commencement of cable trenching or crossing works the following key temporary drainage measures will be installed:</p> <ul style="list-style-type: none"> All existing roadside drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps; Culverts, manholes and other drainage inlets will also be temporarily blocked; A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone. 		
MM75	Potential Effects on Local Groundwater Well Supplies	EIAR Section 9	<ul style="list-style-type: none"> All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; The plant used will be regularly inspected for leaks and fitness for purpose; Weather forecasting will be used to plan dry days for pouring concrete; and The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM76	Potential Effects on Designated Sites	EIAR Section 9	<ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. <p>Mitigation by Avoidance: There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document “Forestry and Water Quality Guidelines”</p> <p>Mitigation by Design: Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:</p> <ul style="list-style-type: none"> ▪ Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ▪ All machinery will be operated by suitably qualified personnel; ▪ Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; ▪ These machines will traverse the site along specified off-road routes (referred to as racks); ▪ The location of racks will be chosen to avoid wet and potentially sensitive areas; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; ▪ Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground; ▪ In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction; ▪ Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; ▪ Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; ▪ Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; ▪ Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; ▪ Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and, 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors. <p>Pre-emptive Site Drainage Management : The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. Works will be suspended if forecasting suggests any of the following is likely to occur:</p> <ul style="list-style-type: none"> ➤ >10 mm/hr (i.e. high intensity local rainfall events); ➤ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ➤ >half monthly average rainfall in any 7 days. <p>Drain Inspection and Maintenance: The following items will be carried out during pre-felling inspections and after:</p> <ul style="list-style-type: none"> ▪ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines (<i>i.e.</i>, hot spot areas). ▪ Inspections of plant and machinery will be carried out prior to any works to assure all are in good condition. ▪ Inspection of drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. The pre-felling inspection will be carried out during rainfall events. ▪ Following tree felling, all main drains will be inspected to ensure that they are functioning. 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Extraction tracks nears drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; ▪ Culverts on drains exiting the site will be unblocked. <p>All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.</p>		
MM77	Potential Effects on Surface Water and Groundwater WFD Status		<ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. <p>Mitigation by Avoidance: There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document “Forestry and Water Quality Guidelines”</p> <p>Mitigation by Design: Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:</p> <ul style="list-style-type: none"> ▪ Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ▪ All machinery will be operated by suitably qualified personnel; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; ▪ These machines will traverse the site along specified off-road routes (referred to as racks); ▪ The location of racks will be chosen to avoid wet and potentially sensitive areas; ▪ Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; ▪ Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground; ▪ In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction; ▪ Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; ▪ Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; ▪ Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; ▪ Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and, ▪ Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors. <p>Pre-emptive Site Drainage Management : The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. Works will be suspended if forecasting suggests any of the following is likely to occur:</p> <ul style="list-style-type: none"> > >10 mm/hr (i.e. high intensity local rainfall events); > >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, > >half monthly average rainfall in any 7 days. <p>Drain Inspection and Maintenance: The following items will be carried out during pre-felling inspections and after:</p> <ul style="list-style-type: none"> ▪ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines (<i>i.e.</i>, hot spot areas). 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ▪ Inspections of plant and machinery will be carried out prior to any works to assure all are in good condition. ▪ Inspection of drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. The pre-felling inspection will be carried out during rainfall events. ▪ Following tree felling, all main drains will be inspected to ensure that they are functioning. ▪ Extraction tracks nears drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; ▪ Culverts on drains exiting the site will be unblocked. <p>All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.</p>		
MM76	Site Drainage Management	EIAR Section 9 CEMP Section 3	<p>The works programme for the entire construction stage of the development will take account of weather forecasts and predicted rainfall. Large excavations and movements of soil/subsoil or vegetation stripping will be scaled back or suspended if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount and intensity of rainfall that is forecast. The following relevant forecasting systems are available and will be relied on for said purpose, on a daily basis:</p> <ul style="list-style-type: none"> ➢ General Weather Forecasts: Available from national to county level from Met Éireann (www.met.ie/forecasts). These do not provide quantitative rainfall estimates. ➢ 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events. ➢ Rainfall Radar Images: Images covering the entire country are freely available from the Met Éireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are sequenced but not predictive.</p> <ul style="list-style-type: none"> ➤ Consultancy Service: Met Éireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. <p>Using threshold rainfall values will allow work to be safely controlled from a water management and protection perspective. Works will be suspended if forecasting suggests either of the following is likely to occur:</p> <ul style="list-style-type: none"> ➤ >10 mm/hr (i.e. high intensity local rainfall events); ➤ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); ➤ >half monthly average rainfall in any 7 days. <p>Prior to works being suspended, the following control measures will be completed:</p> <ul style="list-style-type: none"> ➤ Secure all open excavations. ➤ Provide temporary or emergency drainage to prevent back-up of surface runoff. ➤ Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded. 		
Construction Phase					
MM77	Earthworks Resulting in Suspended Solids Entrainment in Surface Waters	EIAR Section 9 CEMP Section 3	<p>Wind Farm Site: The key mitigation measure during the construction phase is the avoidance of sensitive aquatic areas where possible, by application of suitable buffer zones (i.e. 50m to main watercourses). All of the key development components within the wind farm site are located significantly away from the delineated 50m watercourse buffer zones with the exception of 3 no. new watercourse crossing locations.</p> <p>The main elements of interaction with existing drains will be as follows:</p>		



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			<ul style="list-style-type: none"> ➤ Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the wind farm site drainage into the existing site drainage network where possible. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion; ➤ Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; ➤ Buffered outfalls which will be numerous over the wind farm site which will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains; and, ➤ Drains running parallel to the existing roads requiring widening will be upgraded. Velocity and silt control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters. <p>Grid Route: The vast majority of the underground electrical cabling connection route options are >50m from any nearby watercourse. Sections of the grid route which are within 50m of a watercourse are confined to existing watercourse crossings at bridges. It is proposed to limit works in any areas located within 50m of any watercourse/waterbody including the stockpiling of excavated soils and subsoils.</p> <p>Water Treatment Train: If the discharge water from construction areas fails to be of a high quality, then a filtration treatment system (such as a 'siltbuster' or similar</p>		

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			<p>equivalent treatment train (sequence of water treatment processes)) will be used to filter and treat all surface discharge water collected in the dirty water drainage system. This will apply for all of the construction phase.</p> <p>Silt Fences: Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to watercourses of sand and gravel sized sediment, released from excavation of mineral sub-soils of glacial and glacio-fluvial origin, and entrained in surface water runoff. Inspection and maintenance of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be emplaced within drains down-gradient of all construction areas inside the hydrological buffer zones.</p> <p>Silt Bags: Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters.</p> <p>Management of Runoff from Spoil and Peat Repository Areas: It is proposed that excavated soil will be used for landscaping where required. The excess material will then be placed in 5 no. dedicated Peat Repository Areas (PSA) and 3 no. Spoil Repository Areas (SPA).</p> <p>During the initial construction of roads, silt fences, straw bales and biodegradable geogrids will be used to control surface water runoff from works areas.</p> <p>Where applicable, the vegetative top-soil layer of the spoil management areas will be rolled back to facilitate placement of excavated spoil up to a maximum height of 1.0 metres, following which the vegetative-top soils layer will be reinstated. Where reinstatement is not possible, spoil and peat management areas will be sealed with a</p>		

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			<p>digger bucket and seeded as soon possible to reduce sediment entrainment in runoff.</p> <p>Timing of Site Construction Works: Construction of the wind farm site drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works.</p>		
MM78	Excavation Dewatering and Potential Effects on Surface Water Quality	EIAR Section 9	<p>Proposed Mitigation Measures (By Design)</p> <p>Management of excavation seepage and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The interceptor drainage will be discharged to the wind farm site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; and, ➤ Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			excavation work should immediately be stopped and a geotechnical assessment undertaken.		
MM81	Potential Release of Hydrocarbons	EIAR Section 9 CEMP Section 3	<ul style="list-style-type: none"> > All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; > On-site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double axel custom-built refuelling trailer or truck will be re-filled off site and will be towed/driven around the site to where machinery is located. The 4x4 jeep/fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; > Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the period of the construction; > The substation building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; > The plant used will be regularly inspected for leaks and fitness for purpose; > An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Management Plan (refer to Appendix 4-3 of this EIAR). Spill kits will be available to deal with accidental spillages.		
MM80	Groundwater and Surface Water Contamination from Wastewater Disposal	EIAR Section 9 CEMP Section 3	<ul style="list-style-type: none"> ➤ During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at the primary construction compound, maintained by the providing contractor, and removed from the site on completion of the construction works; ➤ Water supply for the site office and other sanitation will be brought to site and removed after use by a licensed contractor to be discharged at a suitable off-site treatment location; and, ➤ No water or wastewater will be sourced on the site, nor discharged to the site. 		
MM79	Release of Cement Based Products	EIAR Section 9 CEMP Section 3	<ul style="list-style-type: none"> ➤ No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place; ➤ Where possible pre-cast elements for culverts and concrete works will be used; ➤ Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds; ➤ Weather forecasting will be used to plan dry days for pouring concrete; and ➤ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a concrete washout area, built using straw bales and lined with an impermeable membrane, below. The areas are generally covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents is tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste. 		
MM80	Potential Effects Associated with Piled Foundations	EIAR Section 9	<p>Management of excavation seepage and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The interceptor drainage will be discharged to the wind farm site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; and, ➤ Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work should immediately be stopped and a geotechnical assessment undertaken. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ On-site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double axel custom-built refuelling trailer or truck will be re-filled off site and will be towed/driven around the site to where machinery is located. The 4x4 jeep/fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; ➤ Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the period of the construction; ➤ The substation building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used will be regularly inspected for leaks and fitness for purpose; ➤ An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (refer to Appendix 4-3 of this EIAR). Spill kits will be available to deal with accidental spillages. 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➢ No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place; ➢ Where possible pre-cast elements for culverts and concrete works will be used; ➢ Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds; ➢ Weather forecasting will be used to plan dry days for pouring concrete; and ➢ The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. ➢ The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a concrete washout area, built using straw bales and lined with an impermeable membrane. below. The areas are generally covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents is tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste. 		
MM81	Morphological Changes to Surface Water	EIAR Section 9	<ul style="list-style-type: none"> ▪ All proposed new stream crossings will be bottomless or clear span culverts and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location; 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Courses & Drainage Patterns within Wind Farm Site		<ul style="list-style-type: none"> ▪ Where the proposed underground cabling route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road; ▪ All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings; ▪ As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document “Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites”, i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI); ▪ Where works are necessary inside the 50m buffer double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of concrete allowed in the vicinity of the crossing construction areas; ▪ All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent. 		
MM82	Morphological Changes and Surface Water Quality Effects Along Grid Connection Route	EIAR Section 9	<p>The following mitigation measures are proposed for the grid connection watercourse crossing works:</p> <ul style="list-style-type: none"> ➢ No stockpiling of construction materials, inside 50m buffer zones, will take place along the grid connection route 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ No refuelling of machinery or overnight parking of machinery is permitted in this area; ➤ No concrete truck chute cleaning is permitted in this area; ➤ Works will not take place at periods of high rainfall, and will be scaled back or suspended if heavy rain is forecast; ➤ Local road drainage, culverts and manholes will be temporarily blocked during the works; ➤ Machinery deliveries will be arranged using existing structures along the public road; ➤ All machinery operations will take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed or will occur; ➤ Any excess construction material will be immediately removed from the area and sent to a licenced waste facility; ➤ No stockpiling of materials will be permitted in the constraint zones; ➤ Spill kits will be available in each item of plant required to complete the stream crossing; and, ➤ Silt fencing will be erected on ground sloping towards watercourses at the stream crossings if required. <p>Mitigation Measures relating to the use of a mixture of a natural, inert and fully biodegradable drilling fluid such as Clear Bore™ and water for directional drilling:</p> <ul style="list-style-type: none"> ➤ The area around the Clear Bore™ batching, pumping and recycling plants will be bunded using terram and sandbags in order to contain any spillages; ➤ One or more lines of silt fences will be placed between the works area and adjacent rivers and streams on both banks; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Accidental spillage of fluids will be cleaned up immediately and transported off site for disposal at a licensed facility; and, ➤ Adequately sized skips will be used for temporary storage of drilling arisings during directional drilling works. This will ensure containment of drilling arisings and drilling flush. 		
MM87	Potential Effects on Local Groundwater Well Supplies	EIAR Section 4	<p>Measures employed to prevent overdosing and potential chemical carryover:</p> <ul style="list-style-type: none"> ➤ The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur; ➤ Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system; ➤ Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment; ➤ Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and, ➤ Use of biodegradable chemical agents can be used at very sensitive sites (i.e. adjacent to SACs). 		
Operational Phase					
MM85	Progressive Replacement of Natural Surface with Lower Permeability Surfaces	EIAR Section 9 CEMP Section 3	<p>Proposed Mitigation by Design:</p> <p>The drainage system of the Proposed Development will be installed and constructed in conjunction with the road and hardstanding construction work as described below and as shown on the Drainage drawings submitted with this planning application (Appendix 4-5):</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader; ➤ Swales/road side drains will be used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling; ➤ On steep sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off the road into swales/road side drains; ➤ Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock; ➤ Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, ➤ Settlement ponds have been designed in consideration of the greenfield runoff rate. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM86	Runoff Resulting in Contamination of Surface Waters	EIAR Section 9	<p>Mitigation Measures in regards to sediment control:</p> <ul style="list-style-type: none"> ➤ In spoil and peat repository areas, the vegetative top-soil layer will be removed and re-instated or reseeded directly after construction, allowing for re-vegetation which will mitigate against erosion. <p>Mitigation Measures in regards to the control of hydrocarbons during maintenance works:</p> <ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ On-site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double axel custom-built refuelling trailer or truck will be re-filled off site and will be towed/driven around the site to where machinery is located. The 4x4 jeep/fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; ➤ Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the period of the construction; ➤ The substation building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used will be regularly inspected for leaks and fitness for purpose; 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (refer to Appendix 4-3 of this EIAR). Spill kits will be available to deal with accidental spillages. 		
M88	Assessment of Effects on WFD Objectives	EIAR Section 9	There is no direct discharge from the Proposed Development site to downstream receiving waters. Mitigation for the protection of surface water during the operational phase of the Proposed Development will ensure the qualitative status of the receiving waters will not be altered by the Proposed Development.		
Decommissioning Phase					
MM87	Decommissioning	EIAR Section 9	<p>During decommissioning, it will be possible to reverse or at least reduce some of the potential effects caused during construction, and to a lesser extent operation, by rehabilitating constructed areas such as turbine bases and hardstanding areas. This will be done by re-establishing vegetation, thereby reducing runoff and sediment loads.</p> <p>Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures. With these measures, no significant effects on the hydrological and hydrogeological environment will occur during the decommissioning stage of the proposed development.</p>		
Chapter 10 Air					
Construction Phase					
MM88	Exhaust Emissions	EIAR Section 10	<ul style="list-style-type: none"> All construction vehicles and plant used onsite during the construction phase will be maintained in good operational order. If a vehicle 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>requires repairs this work will be carried out, thereby minimising any emissions that arise.</p> <ul style="list-style-type: none"> ▪ Turbines components will be transported to the Site on specified routes only, unless otherwise agreed with the Planning Authority. ▪ All machinery will be switched off when not in use. ▪ Users of the Site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants is kept to a minimum. ▪ The majority of aggregate materials for the construction of the Proposed Development will be obtained from the licenced quarries within 25km. This will significantly reduce the amount of emissions associated with vehicle movements. ▪ The MRF facility will be local to the Proposed Development site to reduce the amount of emissions associated with vehicle movements. The nearest licensed waste facility to the Wind Farm Site is located approximately 37km to the east of the Wind Farm Site. ▪ Waste associated with the construction of the Grid Connection underground electrical cabling route will be disposed of at the closest MRF to where waste is generated along the underground electrical cabling route. There closest licensed waste facilities in the vicinity of the underground electrical cabling route, is located approximately 37km to the east. 		
MM89	Dust Emissions	EIAR Section 10 CEMP Section 3	<ul style="list-style-type: none"> ▪ A wheel wash facility will be installed on the Proposed Development site and will be used by vehicles before leaving site. ▪ In periods of extended dry weather, dust suppression may be necessary along haul roads, site roads, grid route, road widening sections, substation, and construction compounds and around the designated peat and spoil repository areas to ensure dust does not cause a nuisance. If necessary, such as during periods of dry weather, de-silted water will be taken from stilling ponds in the site’s drainage system and will be pumped into a bowser or water spreader to dampen down haul 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>roads, turbine bases, peat and spoil repository areas and site compounds to prevent the generation of dust where required. Water bowser movements will be carefully monitored by the Ecological Clerk of Works to avoid, insofar as reasonably possible, increased runoff as outlined in the CEMP.</p> <ul style="list-style-type: none"> ▪ Areas of excavation will be kept to a minimum and stockpiling of excavated material will be minimised by coordinating excavation, placement of material in peat repository areas. ▪ Turbines components and construction materials will be transported to the site on specified haul routes only, as agreed with the local authority. ▪ The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as deemed necessary by the construction Site Supervisor/Site Manager. ▪ The transport of construction materials may have the potential to generate dust in dry weather conditions. Roads will be watered down to suppress dust particles in the air as deemed necessary by the Site Supervisor/Manager. ▪ The transport of dry excavated material to the peat and spoil repository areas, which may have potential to generate dust will be minimised. If necessary, such as in periods of dry weather, excavated material will be dampened prior to transport to the peat and spoil repository areas. ▪ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase 		
Operational Phase					
MM90	Exhaust Emissions	EIAR Section 10	Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order		
Decommissioning Phase					
MM91	Decommissioning Phase	EIAR Section 10	The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts.		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
EIAR Chapter 11 Climate					
Pre-Commencement Phase					
MM90	Greenhouse Gas Emissions	EIAR Section 11	<ul style="list-style-type: none"> ➤ All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. ➤ When stationary, delivery and on-site vehicles will be required to turn off engines. ➤ Turbines and construction materials will be transported to the Site on specified routes only unless otherwise agreed with the Planning Authority. ➤ The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the Proposed Development site. Therefore, all wastes streams generated onsite will be deposited into a single waste skip which will be covered. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. ➤ The MRF facility will be local to the Proposed Development site to reduce the amount of emissions associated with vehicle movements. The nearest licensed waste facility to the site is located approximately 37km to the east of the site. ➤ Waste associated with the construction of the Grid Connection underground electrical cabling route will be disposed of at the closest MRF to where waste is generated along the underground electrical cabling route. There closest licensed waste facilities in the vicinity of the underground electrical cabling route, is located approximately 37km to the east. The majority of aggregate materials for the construction of the Proposed Development will be obtained from a local quarry. This will significantly reduce the number of delivery vehicles accessing the site and 		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>the length of such journeys, thereby reducing the amount of emissions associated with vehicle movements.</p> <ul style="list-style-type: none"> ➤ Where applicable, low carbon intensive construction materials will be sourced and utilised onsite 		
Operational Phase					
MM90	Greenhouse Gas Emissions	EIAR section 11	<ul style="list-style-type: none"> ➤ Ensure that all maintenance and monitoring vehicles will be maintained in good operational order while onsite, and, when stationary, be required to turn off engines thereby minimising any emissions that arise. ➤ As detailed in Appendix 6-4, a Biodiversity Enhancement Plan for the Proposed Development has identified enhancement activities such as planting of hedgerow and woodland, conversion of conifer plantation to broadleaf, rewetting of existing cutover peat habitat and restoration of wetland habitats. 		
Decommissioning Phase					
MM98	Greenhouse Gas Emissions	EIAR Section 11	The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts.		
EIAR Chapter 12 Noise					
Pre-commencement Phase					
MM92	Construction Noise	EIAR Section 12	Local residents will be kept informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;		
Construction Phase					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM93	Construction Noise	EIAR Section 12	<p>Good site practices will be implemented to minimise the likely effects. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will be employed onsite:</p> <ul style="list-style-type: none"> ▪ Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; ▪ All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; ▪ Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use; ▪ All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; ▪ Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; ▪ Regularly maintain all equipment used on site, including maintenance related to noise emissions; ▪ Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and ▪ All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided. 		
Operational Phase					
MM94	Operational Phase Noise	EIAR Section 12	<p>The exact model of wind turbine, with dimensions within the ranges proposed, to be used for the proposed development will be the result of a future tendering process. Achievement of the noise limits determined by this assessment would be a key determining factor in the final choice of wind turbines for the site. In order to meet the Site Specific Noise limits at NAL9 the two nearest candidate turbine may need to be operated in a lower noise mode for a limited range of wind speeds and</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			wind directions (7 ms ⁻¹ westerlies) in daytime period only. Other wind turbine models would be available which may not require the use of low noise modes.		
Decommissioning Phase					
MM98	Decommissioning Phase Noise	EIAR Section 12	The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts.		
EIAR Chapter 13 Cultural Heritage					
Pre-commencement Phase					
MM95	Sub Surface Archaeological Potential	EIAR Section 13	<ul style="list-style-type: none"> ➤ Pre-development archaeological testing of the proposed turbine bases, hardstands, proposed roads, compounds, substation site and any other Proposed Development components within the Wind Farm Site will be carried out under licence from the National Monuments Service. This is in order to identify any archaeological features at the earliest stage possible in the project to allow time to deal with any requirements such as preservation in situ (redesign / avoidance) or preservation by record (archaeological excavation). Testing within forested areas may only be possible once clear-felling has taken place. ➤ A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority. ➤ Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the testing. 		
Construction Phase					



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM100	National Monuments	EIAR Section 13	<ul style="list-style-type: none"> ➤ Cable trench should be placed on the west side of the public road where it extends past the motte and bailey. ➤ Archaeological monitoring of all ground works within the Zone of Notification for the motte and bailey under licence from the National Monuments Service (NMS). A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. 		
MM101	Recorded Monuments within the Wind Farm Site	EIAR Section 13	<ul style="list-style-type: none"> ➤ A 20m buffer zone will be maintained around the monuments for the duration of the construction stage of the development. The buffer should comprise durable temporary fencing with 'keep out' signage. The requirement for the buffer zone and associated signage should be included in the CEMP. ➤ No ground works or storage of materials or tracking of machinery will take place within the buffer zones. ➤ Archaeological monitoring of all ground works associated with the Proposed Development will be carried out under licence from the National Monuments Service (NMS). A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. 		
MM102	Recorded Monuments along the Grid Connection Underground Electrical Cabling Route	EIAR Section 13	<ul style="list-style-type: none"> ➤ Archaeological monitoring will be carried out along the relevant sections of the underground grid connection electrical cabling route where the latter extends through the ZoN for monuments TN008-005—, TN005-021—, TN005-030001. ➤ A report on the monitoring should be compiled on completion of the work and submitted to the NMS and the Planning Authority. ➤ Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) may be required depending on the results of the monitoring. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM103	Sub-surface Archaeology	EIAR Section 13	<ul style="list-style-type: none"> ➤ Archaeological monitoring of all groundworks during the construction stage of the Proposed Development by a licensed archaeologist. ➤ A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. ➤ Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the monitoring. 		
MM104	Protected Structures within 100m of the Grid Connection Underground Electrical Cable Route	EIAR Section 13	<ul style="list-style-type: none"> ➤ Archaeological monitoring of the excavation of the directional drilling entry and exit pits adjacent to Protected Structure TRPS336 railway bridge. ➤ A report on the monitoring should be compiled on completion of the work and submitted to the relevant authorities. ➤ Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) may be required depending on the results of the monitoring. 		
MM105	Features of Local Cultural Heritage Merit	EIAR Section 103	<ul style="list-style-type: none"> ➤ Protective fencing should be placed around the thicket of trees within which the structure CH1 is located for the duration of the construction stage of the Proposed Development. The fencing should be durable with keep out signage. The requirement for the protective fencing and associated signage should be included in the CEMP. 		
Chapter 14 Landscape and Visual					
Pre-Commencement, Construction and Operational Phases					
MM101	Mitigation by Design	EIAR Section 14	The Proposed Development layout incorporates the following landscape and visual design considerations for good wind farm design, with a particular focus on site selection:		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The turbine layout has been designed to create a coherent cluster of turbines, contiguous and connected to each other visually and with consistent spacing in line with the guidance for design and siting of wind farms within Hilly and Flat Farmland Landscape Types in the Wind Energy Development Guidelines (hereafter referred to as the WEDGs) for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG), 2006). ➤ The turbine layout has been designed so as to decrease the horizontal extent of the turbines when viewed within the landscape. This has resulted from early stage landscape feasibility design input, which resulted in the removal of another cluster of four turbines to the north of the current proposed cluster. See Chapter 3 for further details of this. ➤ Strategic siting of the proposed turbines on a flat site, reducing their visual prominence and visual effects in this relatively flat and heavily vegetated landscape, the proposed turbines are strategically sited within a modified working landscape where there is limited visibility (or large set back distances) from large population centres and designated landscape and visual receptors of high sensitivity. ➤ Siting of proposed turbines adheres to the minimum 500 metre set back distance in the Guidelines (DoEHLG, 2006) and also the 4 times tip height set-back distance explicitly set out for residential visual amenity prescribed by the Draft Revised Wind Energy Development Guidelines (hereafter referred to as the draft WEDGs) (Department of Housing, Planning and Local Government (DoHPLG, 2019)). ➤ The intended connection to the national electricity grid is underground thereby eliminating potential landscape and visual effects during the operational phase. 		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > The proposed 38kV substation is sited within the deciduous forestry on site and will be entirely screened from view outside of the immediate proximity to the site. > The internal site road layout makes use of the existing tracks wherever possible (to be upgraded for construction and the delivery of wind turbine components), to minimise the requirement for new tracks within the site. 		
MM102	Landscape Effects	EIAR Section 14	<ul style="list-style-type: none"> > The spatial configuration of the proposed infrastructure footprint has been carefully designed to minimise the loss of valuable landscape receptors on the Proposed Development Site, such as mature woodland, Annex 1 habitats or features of cultural heritage value (see also Chapter 12 – Cultural Heritage). > The internal site road layout makes use of the existing roads and forestry tracks wherever possible, to minimise the requirement for new tracks within the Proposed Development Site. > To minimise cut and fill activities required to construct the Proposed Development, the proposed access roads, and other infrastructure such as hard stands have been designed to align with the existing terrain within the landscape of the Proposed Development Site. > In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. > During initial vegetation stripping, all topsoil material will be temporarily stored on the Proposed Development Site and used for “dressing” the edges of the development infrastructure during reinstatement/regrading, including that of the spoil management areas. This will be particularly important in areas of cut and fill. The stripped topsoil will contain a natural seed source of local 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			provenance and result in the re-establishment of baseline vegetation.		
Chapter 14 Material Assets					
Pre-Commencement, Construction and Operational Phases					
MM96	Traffic & Transport	EIAR Section 14	<p>Mitigation by Design:</p> <ul style="list-style-type: none"> > Selection of the most appropriate delivery route to transport the wind turbine components, requiring the minimum remedial works to accommodate the vehicles. <p>A detailed Traffic Management Plan (TMP) incorporating all the mitigation measures is included as Appendix 15-2 of this EIAR, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on Site. In addition, the traffic management measures proposed for the following construction traffic scenarios are set out Grid connection in Appendix 14-2: Traffic Management Plan for Carrig Renewables Wind Farm Development;</p> <ul style="list-style-type: none"> > Delivery of Abnormally sized loads, > Management of Standard HGVs on L5040 leading to site, > Traffic management measures during construction of cable grid connection <p>Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the construction of the Proposed Development and this person will be the main point of contact for all matters relating to traffic management.</p> <p>Delivery Programme – a programme of deliveries will be submitted to Tipperary County Council and other relevant authorities in advance of deliveries of turbine</p>		



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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>components to the Proposed Development site. Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse and An Garda Siochana, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required.</p> <p>Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. 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.</p> <p>A Pre and Post Construction Condition Survey – A pre-condition survey of roads associated with the Proposed Development will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority.</p> <p>Implementation of temporary alterations to road network at critical junctions for the delivery of large components.</p> <p>Identification of delivery routes – These routes will be agreed and adhered to by all contractors.</p> <p>Travel plan for construction workers to Proposed Development Site– While the assessment above has assumed the worst case that construction workers will drive to the Proposed Development site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of a routes to / from the site and identification of an area for parking</p>		

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Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Travel plan for construction workers to underground electric cabling route – Due to the transient nature of the underground grid connection construction site which will generally be on a section of the public road, construction workers will be transported to and from the site by the construction company at the beginning and end of each shift.</p> <p>Traffic management measures on L5040 - Marshalling (at site access and eastern end of L5040) and control of traffic will be in operation during all of the 229 construction days, as set out in the TMP included as Appendix 15-2.</p> <p>Traffic management measures on L-5041 within site boundary – Short term periodic closures of the sections of the L5041 within the Proposed Development site boundary will be required throughout the construction phase. Alternative diversion routes will be available to all local residents along the L-5041 and L5040, and access will be maintained for landowners and turbary rights holders throughout the construction phase.</p> <p>Drivers – Will follow normal rules of the road and to receive toolbox talk regarding the delivery route and planned hold points prior to any deliveries.</p> <p>Normal permitted axial loads - Not to be exceeded.</p> <p>Temporary traffic signs – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including the access junction on the L5363. All measures will be in accordance with the <i>“Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works”</i> (DoT now DoTT&S) and <i>“Guidance for the Control and Management of Traffic at Roadworks”</i> (DoTT&S). A member of construction staff (flagman) will be present at key junctions during peak delivery times.</p>		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Delivery times of large turbine components - The management plan will include the delivery of large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.</p> <p>Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.</p> <p>Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on Site and sweeping / cleaning of local roads as required.</p> <p>It is confirmed that details for the Traffic Management Plan for the subject development will be agreed with the Road Section of Tipperary County Council prior to construction and contact will be maintained with the Road and Traffic Section throughout the construction phase.</p>		
MM103	Telecommunications	EIAR Chapter 15	<p>Mitigation by design: Imagine responded to a scoping request from MKO on the 25th of January 2022, noting that they had links in the area. Initial turbine locations were overlapping with the Imagine link, therefore the turbine locations have been altered to ensure that no overlap or interference will occur.</p>		
MM105	Existing Built Services	EIAR Chapter 15	<ul style="list-style-type: none"> > Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works. > Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. > Excavation permits will be completed and all plant operators and general operatives will be inducted and informed as to the location of any services. 		



Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks. 		
MM106	Aviation	EIAR Chapter 15	<ul style="list-style-type: none"> > The scoping response (04/10/2022) from the Irish Aviation Authority (IAA) set out lighting requirements for turbines. These requirements will be complied with for the Proposed Development and any further details will be agreed in advance of construction with the IAA i.e. crane erection. The coordinates and elevations for built turbines will be supplied to the IAA, as is standard practice for wind farm developments. > The scoping response (11/05/2023) from the Department of Defence (DOD) outlines the lighting specifications for turbines. These requirements will be complied with for the Proposed Development and any further details will be agreed in advance of construction with the DOD. 		
Decommissioning Phase					
MM102	Decommissioning	EIAR Section 14	In the event that the Proposed Development is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Section 4.11 of Chapter 4. A Decommissioning Plan has been prepared (Appendix 4-6) the detail of which will be agreed with the local authority prior to any decommissioning. This plan will include a material recycling / disposal and traffic management plan will be prepared for agreement with the local authority prior to decommissioning.		



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EIAR Monitoring Measures

Table 18-2 Monitoring Schedule

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
Pre-Construction Phase						
MX1	Drainage Maintenance	EIAR Section 4 SWMP Section 4	An inspection and maintenance plan for the drainage system on site will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the site ECoW or the Project Hydrologist.	On going	Monthly	Project Hydrologist
MX2	Clear Felling of Coniferous Plantation	EIAR Section 9 SWMP Section 3	The following items shall be carried out during inspection pre-felling and after: <ul style="list-style-type: none"> ➤ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines; ➤ Inspection of all areas reported as having unusual ground conditions; ➤ Inspection of main drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches shall be identified. Ideally the pre-felling inspection shall be carried out during rainfall; ➤ Following tree felling all main drains shall be inspected to ensure that they are functioning; 	As Required	Monthly	ECoW

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Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> ➤ Extraction tracks near drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; ➤ Culverts on drains exiting the site will be unblocked; and, <p>All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.</p>			
MX3	Drainage Inspection	SWMP Section 4	Prior to commencement of works in sub-catchments across the site main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage.	As Required	Monthly	Project Hydrologist
MX4	Surface Water Monitoring	SWMP Section 4	Baseline sampling will be completed on at least two occasions and these will coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell.	Twice	As Required	Project Hydrologist
MX5	Invasive Species	EIAR Section 6 CEMP Section 3	A pre-commencement invasive species survey shall be completed for the site.	Once	As required	Project Ecologist
MX6	Birds	EIAR Section 7	Pre-construction surveys will be undertaken prior to the initiation of works at the wind farm. The survey will include a thorough walkover survey to a 500m radius of the Proposed Development footprint and all works areas, where access allows. If winter roosting or breeding activity of birds of high	Once	As required	Project Ornithologist



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If it is found to be active during the construction phase, no works shall be undertaken within a disturbance buffer in line with industry best practice (e.g. Forestry Commission Scotland, 2006; Ruddock and Whitfield, 2007; Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied..			
Construction Phase						
MX7	Archaeological Monitoring	EIAR Section 13	Archaeological monitoring of all ground works associated with the Proposed Development will be carried out under licence from the National Monuments Service (NMS). A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority	As Required	As Required	Project Archaeologist
MX8	Water Quality and Monitoring	CEMP Section 3 SWMP Section 4	The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW on-site. The ECoW or Project Hydrologist will respond to changing weather, ground or drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained in so far as is possible.	Daily	As Necessary	ECoW
MX9	Water Quality and Monitoring	EIAR Section 9 SWMP Section 4	Daily surface water monitoring forms will be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.	Daily	As Necessary	ECoW



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			Monthly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures during construction phase;			
MX10	Surface Water Quality	CEMP Section 4 SWMP Section 4	Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken as per water monitoring programme for the overall windfarm development and each primary watercourse along the route. This will not be restricted to just these locations around the immediate wind farm site with further sampling points added as deemed necessary by the ECoW, in consultation with the Project Hydrologist and Site Manager, as the construction phase progresses.	As Required	Monthly	ECoW
MX11	Surface water Quality Monitoring	SWMP Section 4	Field chemistry measurements of unstable parameters, (pH, conductivity, temperature) will be taken at the surface water monitoring locations, as per water monitoring programme for the overall wind farm development and each primary watercourse along the route and also at all installed sonde locations. These analyses will be carried out by either the ECoW or the Project Hydrologist. In-situ field monitoring will be completed on a weekly basis. In-situ field monitoring will also be completed after major rainfall events, i.e., after events of >25mm rainfall in any 24-hour period. The Project Hydrologist will monitor and advise on the readings collected by in-situ field monitoring.	Daily	As Necessary	ECoW
MX12	Clear felling of Coniferous Plantation	EIAR Section 9	Checking and maintenance of roads and culverts will be ongoing through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works.	As Required	Monthly	ECoW



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
MX13	Plant and Equipment Inspections	EIAR Section 9 CEMP Section 4	The plant used should be regularly inspected for fuel leaks, unnecessary noise generation and general fitness for purpose.	As Required	Monthly	ECoW
MX14	Plant and Equipment Inspections	CEMP Section 3	Local areas of the haul route will be condition monitored and maintained, if necessary.	Daily	Monthly	ECoW
MX15	Flora and Fauna	CEMP Section 4	<p>A Project Ecologist will be appointed. The responsibilities and duties of the Project Ecologist will include the following:</p> <ul style="list-style-type: none"> ➤ Review and input to the final construction phase CEMP in respect of ecological matters; ➤ In liaison with Environmental Clerk of Works, oversee and provide advice on all relevant ecology mitigation measures set out in the EIAR and planning permission conditions; ➤ Regular inspection and monitoring of the development, through all phases of construction/operation and provide ecological advice as required; ➤ Carry out ecological monitoring and survey work as may be required by the planning authority. 	As required	As required	Project Ecologist
MX16	Noise and Vibration	CEMP Section 4	Monitoring typical levels of noise and vibration during critical periods and at sensitive locations will be carried out.	Daily	Monthly	ECoW
MX17	Land, Soils and Geology	CEMP Section 4	The responsibilities and duties of the Geotechnical Engineer or Geologist will include the following:	As required	As required	Project Geologist



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> ➤ Visit site regularly, or at least once a month during the construction phase, to complete geotechnical audits and reviews and report any issues to the Site Supervisor/Construction Manager; ➤ Ensuring that identified hazards are listed in the Construction Risk Register and that these are subject to ongoing monitoring; and, ➤ Ongoing inspection and monitoring of the development, particularly in areas of peatland and the temporary stockpile areas, through all phases of construction (including pre, during and post construction) and ensure construction is carried out as specified in the EIAR, NIS and in relevant planning conditions. 			
MX 18	Water	CEMP Section4	<p>The responsibilities and duties of the Project Hydrologist will include the following:</p> <ul style="list-style-type: none"> ➤ Assist in compiling a detailed drainage design before construction commences and attend the site to set out and assist with micro siting of drainage controls. This will be completed over several site visits at the start of the construction phase; ➤ Review and input to the final construction phase CEMP in respect of drainage and water quality management; 	Monthly	Monthly	Project Hydrologist



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> ➤ Following the initial stage of drainage construction regular site visits will be required, at least once a month, to complete hydrological and water quality audits and reviews and report any issues noted to the Site Supervisor/Construction Manager; and, ➤ Complete ongoing inspection and monitoring of the development, particularly in areas of drainage control, through all phases of construction (including pre, during and post construction) and ensure construction is carried out as specified in the EIAR, and in relevant planning conditions. 			
Operational Phase						
MX17	Surface Water Quality	SWMP Section 4	Monthly sampling for laboratory analysis for a range of parameters adopted during pre-commencement and construction phases will continue for six months during the operational phase. The Project Hydrologist will monitor and advise on the readings being received from the testing laboratory.	Monthly	Monthly	ECoW
MX18	Drainage Inspections	SWMP Section 4	The drainage system will be monitored in the operational phase until such a time that all areas that have been reinstated become re-vegetated and the natural drainage regime has been restored.	Monthly	Monthly	ECoW
MX20	Ornithology	EIAR Section 7	A detailed post-construction Bird Monitoring Programme has been prepared for the operational phase of the proposed development (please refer to Appendix 7-6 for further details). The programme of works will monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project. Surveys will be scheduled to	Years 1, 2, 3, 5	Monthly	Project Ornithologist



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<p>coincide with Years 1, 2, 3, 5, 10 and 15 of the lifetime of the wind farm. Monitoring measures are broadly based on guidelines issued by NatureScot (2009, 2017). The following individual components are proposed:</p> <ul style="list-style-type: none"> ➤ Vantage point surveys to monitor flight activity in the vicinity of the turbines; ➤ Breeding walkover surveys to monitor breeding bird activity at the Wind Farm Site; ➤ Breeding barn owl surveys to monitor the identified barn owl nest; ➤ Whooper swan roost surveys to monitor the identified whooper swan roost location; <p>Collision monitoring, including carcass searches with trained dogs to monitor bird fatalities due to collision. These will include searcher efficiency and scavenger removal trails as a best practice measure.</p>			
MX21	Bats	EIAR Section 6	<p><u>Bat Monitoring Plan</u></p> <p>To assess the effects of the Proposed Development on bat activity, at least 3 years of post-construction monitoring is proposed. Post-construction monitoring will include static detector surveys, walked survey transects and corpse searching to record any bat fatalities resulting from collision.</p> <p>The results of post-construction monitoring shall be utilised to assess any potential changes in bat activity patterns and to monitor the implementation of the mitigation strategy. Results of Year 1 surveys will assess whether adaptations to the monitoring plan are required, and further mitigations such as curtailment will be considered. If a curtailment requirement is identified, a programme can be devised around key activity</p>	Years 1, 2, 3	Annually	Project Ecologist



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<p>periods and weather parameters, as well as a potential increase in buffers.</p> <p>At the end of each year, the efficacy of the mitigation and monitoring plan will be reviewed, and any identified efficiencies incorporated into the programme. This approach allows for an evidence-based review of the potential for bat fatalities at the Proposed Development site, post construction, to ensure that the necessary measures, based on a new baseline post-construction, are implemented for the protection of bat species locally. The effectiveness of any mitigation/curtailment needs to be monitored in order to determine (a) whether it is working effectively (i.e. the level of bat mortality is incidental), and (b) whether the curtailment regime can be refined such that turbine down-time can be minimised whilst ensuring that it remains effective at preventing casualties.</p>			
MX22	Flora and Fauna	EIAR Section 6	<p>Monitoring of the artificial badger sett by a qualified ecologist will be undertaken during the 6 months in advance of upgrade works to the road in the vicinity of the existing sett. The monitoring will be carried out to ensure that the local badger population have become acquainted with the new sett. Monitoring will be carried out periodically (for example, once per month), to monitor badger activity in the vicinity of the new sett. Baiting techniques can also be used to encourage use of the sett.</p> <p>To confirm that habitat creation and enhancement has been successful, all areas of replanting will be monitored post-restoration. These areas will be inspected following the main growing season (i.e. in September) for the first five years of growth. This will be undertaken in partnership between the</p>	As required	As required	Project Ecologist



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<p>developer, the Project Ecologist and the Landowner. The proposed management actions will be conveyed to the developer and each of the landowners, and management alterations implemented as required to achieve the targets of the management plan.</p> <p>Hedgerows and replanted trees will be inspected following the main growing season (i.e. in September) for the first five years of growth, where the requirement for replacement planting will be assessed. If any shrubs are dead or damaged these will be replaced using the same species within the next planting season. Recommendations for ongoing or remedial management required will be specified within an Annual Environmental Report.</p> <p>In summary, monitoring and baiting for the artificial badger sett will be carried out approx. once per month for 6 months in advance of construction of the road upgrade works close to turbines 6 and 7. Post construction of the wind farm development and implementation of replanting measures, inspections of the replanted hedgerows and trees will be carried out once per year around September in years 1,2,3,4 and 5.</p>			
Decommissioning Phase						
MX23	Decommissioning	DP Section 3	The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.	As required	As required	Site Manager
MX24	Decommissioning	DP Section 3	Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of any material proposed	As required	As required	Project Ecologist



Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			for use as part of foundation backfilling. The invasive species survey will also be undertaken along the cable route to identify invasive species at joint bay locations where excavation to expose the cabling for removal will be required.			

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