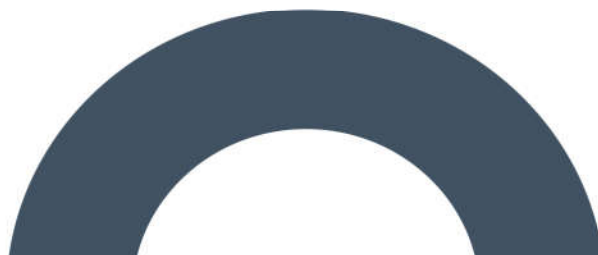
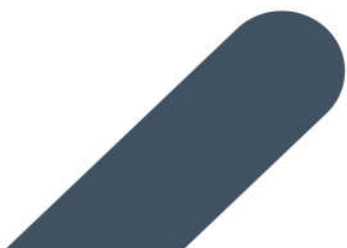


Glenora Wind Farm - Environmental Impact Assessment Report (EIAR)

Schedule of Mitigation





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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 17-1 below. The mitigation measures have been grouped together according to their EIAR Chapter and project phase and are presented under the following headings:

- > Pre-Commencement Phase
- > Construction Phase
- > Operational Phase
- > Decommissioning Phase

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 17-2. 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.

18.2 EIAR Mitigation Measures

Table 17-1 Schedule of Mitigation

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 activities on the site of the Proposed Development will be provided for in an environmental management plan. A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development and is included in Appendix 4-3 of this EIAR. The CEMP sets out the key environmental considerations to be taken into account by the contractor during construction of the proposed development. The CEMP also details the mitigation measures to be implemented in order to comply with the environmental commitments outlined in the EIAR.		
MM2	Environmental Management	EIAR Section 4	The on-site construction staff will be responsible for implementing the mitigation measures specified in the EIAR and compiled in the Audit Report. Their implementation will be overseen by the ECoW or supervising hydrogeologists, environmental scientists, ecologists or geotechnical engineers, depending on who is best placed to advise on the implementation. The system of auditing referred to above ensures that the mitigation measures are maintained for the duration of the construction phase, and into the operational phase where necessary.		
MM3	Drainage Inspection	CEMP Section 4 SWMP 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. It is proposed to complete these inspections on a catchment by catchment basis as the construction works develop across the site, as works in all areas will not commence simultaneously. Drainage and associated pollution control measures will be implemented onsite in conjunction with the main construction works. 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.		
MM4	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.		
MM5	Site Drainage Plan	EIAR Section 4 CEMP Section 4	A detailed drainage design for the Proposed Development, incorporating all principles and measures outlined in Section 4.7 of the EIAR, has been prepared, and is included in Appendix A of Appendix 4-5 of this EIAR.		
MM6	Preparative Site Drainage Management,	CEMP Section 4 SWMP Section 3	All materials and equipment necessary to implement the drainage measures outlined above 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 drainage design measures as necessary. The drainage measures outlined in the above will be installed prior to, or at the same time as the works they are intended to drain.		
MM7	Drainage Maintenance	EIAR Section 4 CEMP Section 4	Prior to the commencement of construction an inspection and maintenance plan for the on-site drainage system will be prepared by the ECoW in consultation with the Project Hydrologist. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM8	Waste Management	EIAR Section 4	Prior to the commencement of the development, a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan.		
MM9	Felling	EIAR Section 4, 7	In the interest of breeding birds, construction will not commence during the Breeding Bird season from April to July inclusive. Construction may commence at any stage from August onwards to the end of March, so that construction activities are ongoing by the time the next breeding bird season comes around and can continue throughout the next breeding season. Should any of the species identified as Important Ecological Features be recorded breeding within the given distances of the works area, a buffer zone (using above distances) will be established around the expected location of the nest (location identified as far as is possible without causing disturbance to the bird) and all works will be restricted within the zone until it can be demonstrated by an ornithologist that the species has completed the breeding cycle in the identified area. Any restricted area that is required to be set up will be marked clearly using hazard tape fencing and all site staff will be alerted through toolbox talks.		
MM10	Felling Licence	EIAR Section 4 CEMP Section 4	The tree felling activities required as part of the Proposed Development will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the “Forestry Act” and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service’s policy on granting felling licenses for wind farm developments.		
MM11	Peat Management	CEMP Section 2	Prior to commencing the construction of the excavated roads movement monitoring posts will be installed in areas where the peat depth is greater than 2.0m. Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area. Prior to commencing floating road construction movement monitoring posts will be installed in areas where the peat depth is greater than 2.0m.		
MM12	Invasive Species Management	CEMP Section 3	To establish good site hygiene to ensure the control of any potential spread of invasive species during construction works, a risk assessment and method statement must be provided by the Contractor prior to commencing works.		
MM13	Traffic Management	EIAR Section 4	Prior to the Traffic Management Plan being finalised, a full dry run of the transport operation along the proposed route will be completed using vehicles with attachments to simulate the dimensions of the wind turbine transportation vehicles. This dry run will inform the Traffic Management Plan submitted for agreement with the local authority. All turbine deliveries will be provided for in a transport management plan which will have to be prepared in advance of the construction stage, when the exact transport arrangements are known, delivery dates confirmed and escort proposals in place. Such a transport management plan will be submitted to the Planning Authority for agreement in advance of any abnormal loads using the local roads, and will provide for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls.		
MM14	Health and Safety	EIAR Section 4	All relevant Site Health & Safety procedures, in accordance with the relevant Health and Safety Legislation and guidance (listed in Section 5.8.2.1 of this EIAR), including the preparation of the Health & Safety Plan, erection of the relevant and appropriate signage on site, inductions and toolbox talks will take place prior to and throughout the construction phase of the proposed development.		
Construction Phase					
MM15	Wastewater Management	EIAR Section 4	Temporary toilets, located within staff portacabins, will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by a permitted waste collector to wastewater treatment plants.		
MM16	Refuelling	EIAR Section 4 CEMP Section 3	➤ On-site refuelling of machinery will be carried out at dedicated refuelling locations using a mobile double skinned fuel bowser. The fuel bowser, a double-axle 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 construction machinery 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 wind farm. 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 compound when not in use.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays, spill kits and fuel absorbent mats will be used during all refuelling operations. ➤ Fuels volumes stored on site will be minimised. The fuel storage areas, within the temporary construction compounds, 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 electrical control buildings (at the substation compound) will be bunded appropriately to the volume of oils likely to be stored, and to prevent leakage 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; and, ➤ An emergency plan for the construction phase to deal with accidental spillages will be developed (refer to Section 5 of this CEMP). Spill kits will be available to deal with any accidental spillage in and outside the refuelling area. 		
MM17	Concrete Deliveries and Management	EIAR Section 4 CEMP Section 3	<p>The following mitigation measures will be implemented in full 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. A dedicated concrete wash out area will be established with signage to allow the wash out of concrete delivery vehicle chutes before exiting the site. 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; ➤ Ensure pour site is 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, and proposed to be 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 will be broken up and disposed of along with other construction waste (refer to Section 3.9 below). <p>The 50m wide river buffer zone will be in place for the duration of the construction phase. No construction activity will occur within the buffer zone with the exception of bridge and culvert construction. The buffer zone will:</p> <ul style="list-style-type: none"> ➤ Prevent any cement-based products accidentally entrained in the construction phase drainage system entering directly into watercourses, achieved in part by ending drain discharge outside the 50m buffer zone and allowing percolation across the vegetation of the buffer zone; ➤ Provide a buffer against accidental direct pollution of surface waters by any pollutants, or by pollutants entrained in surface water run-off. 		
MM18	Road Cleanliness	EIAR Section 4	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. Buffer zones of 50m around rivers and streams, respectively, have been used to inform the layout of the Proposed Development.		
MM20	Water Discharge	EIAR Section 4 CEMP Section 3	There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from natural watercourse and lakes.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM21	Drainage Swales	EIAR Section 4 CEMP Section 3	Drainage swales will be installed downgradient of any works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and picked up silt and sediment. Swales will intercept the potentially silt-laden water from the excavations and construction areas of the site and prevent it reaching natural watercourses. Drainage swales will be installed in advance of any main construction works commencing. The material excavated to make the swale will be compacted on the downslope edge of the drain to form a diversion dike.		
MM22	Interceptor Drains	EIAR Section 4 CEMP Section 3	Interceptor drains will be installed upgradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area. The interceptor drains will be installed in advance of any main construction works commencing. The material excavated to make the drain will be compacted on the downslope edge of the drain to form a diversion dike.		
MM23	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. Check dams are designed to reduce velocity and control erosion and are not specifically designed or intended to trap sediment, although sediment is likely to build up. If necessary, any excess sediment build up behind the dams will be removed. For this reason, check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.		
MM24	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.		
MM25	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.		
MM26	Vegetation Filters	EIAR Section 4	Vegetation filters are the existing vegetated areas of land that will be used to accept surface water runoff from upgradient areas. The selection of suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions. Vegetation filters will carry outflow from the level spreaders as overland sheet flow, removing any suspended solids and discharging to the groundwater system by diffuse infiltration. Vegetation filters will not be used in isolation for waters that are likely to have higher silt loadings. In such cases, silt-bearing water will already have passed through stilling ponds prior to diffuse discharge to the vegetation filters via a level spreader.		
MM27	Stilling Ponds	EIAR Section 4 CEMP Section 3	Stilling or settlement ponds will be used to attenuate runoff from works areas of the site of the Proposed Development during the construction phase and will remain in place to handle runoff from roads and hardstanding areas of the proposed development during the operational phase.		
MM28	Dewatering Silt Bag	EIAR Section 4	Dewatering silt bags are an additional drainage measure that can be used downgradient of the stilling ponds at the end of the drainage swale channels and will be located, wherever it is deemed appropriate, throughout the site. The water will flow, via a pipe, from the stilling ponds into the silt bag. The silt bag will allow the		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			water to flow through the geotextile fabric and will trap any of the finer silt and sediment remaining in the water after it has gone through the previous drainage measures. The dewatering silt bags will ensure that there will be no loss of peaty silt into the stream.		
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	Sedimats	EIAR Section 4	Sediment entrapment mats, consisting of coir or jute matting, will be placed at the outlet of the silt bag 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		
MM31	Culverts	EIAR Section 4	<p>The following mitigation is proposed for completion of wind farm culvert upgrades:</p> <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. ➤ The size of culverts will be influenced by the depth of the track or road sub-base. In some cases, two or more smaller diameter culverts may be used where this depth is limited, though this will be avoided as they will have a higher associated risk of blockage than a single, larger pipe. ➤ 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. ➤ It is proposed to construct clear-span crossings watercourse crossings along the wind farm access roads using a bottomless box culvert. The locations of these crossings are shown on the layout drawings included in Appendix 4-1 of this EIAR. The clearspan watercourse crossing methodologies presented below will ensure that no instream works are necessary. ➤ The watercourse crossings will be constructed to the specifications of the OPW bridge design guidelines ‘Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945’, and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. ➤ The service crossings will be constructed in accordance with Gas Networks Ireland Code of Practice 2021. These crossing designs will be approved by GNI before works commence on site. ➤ Confirmatory inspections of each proposed new watercourse crossing location will be carried out by the project civil/structural engineer and the project hydrologist prior to the construction of each crossing. ➤ The watercourse crossings will be constructed to the specifications of the OPW bridge design guidelines ‘Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945’, and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within suitable backfill material. 		
MM32	Silt Fences	EIAR Section 4	<ul style="list-style-type: none"> ➤ Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the 50-metre buffer zone of a natural watercourse, which is inevitable where existing roads in proximity to watercourses are to be upgraded as part of the proposed development. These areas include around existing culverts, around the headwaters of watercourses, and the proposed locations are indicated on the detailed drainage design drawings included in Appendix A of Appendix 4-5 of this EIAR. ➤ 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. ➤ Site 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	Hydrocarbon Interceptors	EIAR Section 4	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).		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM34	Excavation seepages and treatment	EIAR Section 4	<ul style="list-style-type: none"> ➤ There will be no direct discharges to any natural watercourses, with all drainage waters being dispersed as overland flows. ➤ A five-metre-wide working area will be required around each turbine base, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur. Some of the material excavated to create the working area will be stored locally for later reuse in backfilling the working area around the turbine foundation. The excavated material will be sealed using the back of the excavator bucket to ensure no water is trapped within the material and it will be surrounded by silt fences to ensure sediment-laden run-off does not occur. ➤ A two to three-metre-wide working area will be required around each hardstanding area, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur. Material excavated to create the working area will be stored locally for later reuse in backfilling the working area around the turbine foundation. The excavated material will be covered with polythene sheets and surrounded by silt fences to ensure sediment-laden run-off does not occur. ➤ Interceptor drains will be installed upgradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area. 		
MM35	Peat Management	EIAR Section 4 CEMP Section 2, 3	<ul style="list-style-type: none"> ➤ Excavation will take place to a competent stratum beneath the peat. ➤ Prior to commencing the construction of excavated roads, movement monitoring posts will be installed in areas where the peat depth is greater than 2.0m. ➤ Road construction will be carried out in sections of approximately 50m lengths i.e., no more than 50m of access road should be excavated without re-placement with stone fill. ➤ Once excavated, peat will be temporarily stored in localised areas adjacent to excavations for roads and hardstands before being placed into the permanent peat storage areas within the borrow pits. All peat placement areas will be upslope of founded roads/hardstands and will be inspected by the Projects Geotechnical Engineer before material is stored in the area. ➤ Excavation of materials with respect to control of peat stability: <ul style="list-style-type: none"> ○ Where acrotelm (top about 0.3 to 0.4m of peat) is required for landscaping it will be stripped and temporarily stockpiled for re-use as required. Acrotelm stripping will be undertaken prior to main excavations. ○ Where possible, the acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation. ○ All catotelm peat (peat below about 0.3 to 0.4m depth) will be transported immediately on excavation to the designated peat placement areas. ➤ Excavated side slopes in peat will not be greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction. Where areas of weaker peat are encountered then slacker slopes will be required. Battering of the side slopes of the excavations will be carried out as the excavation progresses. ➤ End-tipping of stone onto the road during the construction/upgrading of the access road will be carefully monitored to ensure that excessive impact loading, which may adversely affect the adjacent peat, is limited. ➤ The excavated access road will be constructed with a minimum of 800mm of selected granular fill. Granular fill to be placed and compacted in layers in accordance with the TII Specification for Road Works. ➤ Access roads will be finished with a layer of capping across the full width of the roads. ➤ A layer of geogrid/geotextile may be required at the surface of the competent stratum where cohesive material is present to prevent mixing of the underlying material with the granular fill ➤ Where slopes of greater than 5 degrees are encountered along with relatively deep peat (i.e. greater than 2m) and where it is proposed to construct the access road perpendicular to the slope contours it is best practice to start construction at the bottom of the slope and work towards the top, where possible. This method avoids any unnecessary loading to the adjacent peat and greatly reduces any risk of peat instability. ➤ A final surface layer will be placed over the excavated road and graded to accommodate wind turbine construction and delivery traffic. ➤ Prior to commencing floating road construction movement monitoring posts will be installed in areas where the peat depth is greater than 2.0m. Base geogrid will be laid directly onto the existing peat surface along the line of the road in accordance with geogrid provider's requirements. ➤ Following the detailed design of the floated access roads it may be deemed necessary to include pressure berms either side of the access road in some of the deeper peat areas. The inclusion of a 2 to 5m wide pressure berm (typically 0.5m in height) either side of the access road will reduce the likelihood of potential bearing failures beneath the access road. ➤ Stone delivered to the floating road construction areas will be end-tipped onto the constructed floating road. Direct tipping of stone onto the peat will not be carried out. ➤ To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating road will be tipped over at least 10m length of constructed floating road. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > Where it is not possible to end-tip over a 10m length of constructed floating road then dumpers delivering stone to the floating road will carry a reduced stone load (not greater than half full) until such time as end-tipping can be carried out over a 10m length of constructed floating road. > No stockpiling of materials will take place on or adjacent to floated access roads so as to avoid bearing failure of the underlying peat. > End-tipping of stone onto the road during the construction/upgrading of the access road will be carefully monitored to ensure that excessive impact loading, which may adversely affect the underlying peat, is limited. > In the event of excessive vertical displacement of the road during/following construction then mitigation measures will be required to ensure the stability of the road. This will include: <ul style="list-style-type: none"> o Introduction of pressure berms either side of the road (that are 2m to 5m wide by 0.5m deep stone layer). o Where peat is relatively willow then excavate peat and replace with suitable fill. o Slowing the rate of construction. > Settlement of a floated access road is expected and will likely be in order of several 100mm in the deeper peat area; as such it will be necessary to re-level the road at convenient intervals during the works. The magnitude and extent of the settlement is likely to be greater in areas of deeper peat with the rate of settlement reducing over time. Prior to completion of the works, the road will be re-levelled using crushed stone. 		
MM36	Peat and Spoil Placement Areas	EIAR Section 4 CEMP Section 2	<ul style="list-style-type: none"> > Excavated peat will be placed/spread across the clearfell areas around 9 no. of the proposed turbines. These locations are shown in Drawing P20-312-0600-GLEN-0005. > The peat placed within the areas shown on Drawing P20-312-0600-GLEN-0005 will be restricted to a maximum height of 1.3m. Weak/liquified peat will be placed within the proposed borrow pits and not stored within these areas. > The placement of excavated peat will be avoided without first establishing the adequacy of the ground to support the load. The placement of peat and spoil within the placement areas will require the use of long reach excavators, low ground pressure machinery and possibly bog mats in particular for drainage works. > Where there is any doubt as to the stability of the peat surface then no material will be placed on to the peat surface. The risk of peat instability is reduced by not placing any loading onto the peat surface. > It will be ensured that the surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat will be carried out as placement of peat within the peat placement area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat. > Finished/shaped side slopes in the placed peat and spoil will be not greater than 1 (v): 4 (h). This slope inclination will be reviewed during construction, as appropriate. > The acrotelm will be placed on the finished surface with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the placed peat and spoil within the placement areas. > An interceptor drain will be installed upslope of the designated peat placement areas to divert any surface water away from these areas. This will help ensure stability of the placed peat and reduce the likelihood of debris run-off. 		
Operational Phase					
MM37	Wastewater Management	EIAR Section 4	It is not proposed to treat wastewater on site. Wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. It is not proposed to treat wastewater on-site. 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.		
MM38	Electrical Substation	EIAR Section 4 CEMP Section 3	<p>A hydrocarbon interceptor is a trap used to filter out hydrocarbons from surfacewater runoff. 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).</p> <p>The electrical control buildings (at the substation compound) will be bunded appropriately to the volume of oils likely to be stored, and to prevent leakage to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor;</p>		
Decommissioning Phase					
MM39	Decommissioning	EIAR Chapter 4	The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will agreed with the competent authority at that time.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM40	Turbine Foundations	EIAR Chapter 4 DP Section 2	On the dismantling of turbines, it is not intended to remove the concrete foundation from the ground. It is considered that its removal will be the least preferred option in terms of potential effects on the environment. Therefore, the 22 no. turbine foundations will be backfilled and covered, following the dismantling and removal of the wind turbines, with soil material. The very small volumes of soil material will be sourced locally and imported to site on heavy good vehicles (HGVs). 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.		
MM41	Refuelling: Fuel and Hazardous Materials Storage	EIAR Chapter 4 DP Section 3	The following mitigation measures, which are the same as those proposed for the construction phase, 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. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. ➤ Fuel volumes stored on site will be minimised. 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 Section 4 below). Spill kits will be available to deal with an accidental spillage in and outside the refuelling area. ➤ 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. 		
MM42	Dust Control	EIAR Chapter 4 DP Section 3	Proposed measures to control dust, which are the same as those proposed for the construction phase, include: <ul style="list-style-type: none"> ➤ Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions; ➤ The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by the ECoW for cleanliness, and cleaned as necessary; ➤ Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind; ➤ Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods; ➤ Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions; ➤ The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary; ➤ All construction related traffic will have speed restrictions on un-surfaced roads to 15 kph; ➤ Daily inspection of construction sites to examine dust measures and their effectiveness. ➤ When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper; and, ➤ All vehicles leaving the construction areas of the site will pass through a wheel washing area prior to entering the local road network. 		
MM43	Noise Control	EIAR Section 4 DP Section 3	Proposed measures, which are the same as those proposed for the construction phase, to control noise include: <ul style="list-style-type: none"> ➤ Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts. ➤ Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All plant and equipment to be used on-site will be modern equipment and will comply with the S.I. No. 359/1996 - European Communities (Construction Plant and Equipment) (Permissible Noise Levels) (Amendment) Regulations. ➤ Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers. ➤ All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works. ➤ Compressors will be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools will be fitted with suitable silencers. ➤ Machines, which are used intermittently, will be shut down during those periods when they are not in use. ➤ Training will be provided by the Site Manager to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation; 		

Chapter 5: Human Beings

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
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> <p>All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer will ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting site access during construction. Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate warning signs will be posted, directing all visitors to the site manager. Appropriate warning measures including 'goalposts' will be used as appropriate to prevent contact with any overhead lines that traverse the site.</p> <p>The scale and scope of the project requires that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006'.</p> <p>The PSDP appointed for the construction stage will be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):</p> <ul style="list-style-type: none"> ➤ Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project; ➤ Where possible, eliminate the hazards or reduce the risks; ➤ Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan; ➤ Ensure that the work of designers is coordinated to ensure safety; ➤ Organise co-operation between designers; ➤ Prepare a written Safety and Health Plan; ➤ Prepare a safety file for the completed structure and give it to the client; and ➤ Notify the Authority and the client of non-compliance with any written directions issued. <p>The PSCS appointed for the construction stage will be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):</p> <ul style="list-style-type: none"> ➤ Development of the Safety and Health Plan for the construction stage with updating where required as work progresses; ➤ Compile and develop safety file information ➤ Reporting of accidents / incidents; ➤ Weekly site meeting with PSCS; ➤ Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out: ➤ Induction of all site staff including any new staff enlisted for the project from time to time; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Toolbox talks as necessary; ➤ Maintenance of a file which lists personnel on site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date; ➤ Report on site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance; ➤ Monitor the compliance of contractors and others and take corrective action where necessary; and ➤ Notify the Authority and the client of non-compliance with any written directions issued. 		
MM46	Human Health	EIAR Section 5	Signage indicating the designated pedestrian route site along the Western Way will be in place during the construction phase of the development. Likewise, appropriate construction site warning signage and health and safety signage will be in place along the Western Way and on the approach to the construction site at all times during the construction phase to ensure that any potential impacts pertaining to existing amenity access is mitigated against. Furthermore, all health and safety procedures as detailed in Chapter 5 (section 5.10.2.1) will be strictly adhered to ensure not only the safety of construction staff but any users of the Western Way during the construction phase.		
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. 		
MM48	Human Health	EIAR Section 5	<p>The majority of aggregate material for the construction of roads and turbine bases will be sourced from the proposed borrow pit located within the main site of the proposed wind farm development, therefore limiting the distance needed to transport this material to the site. Truck wheels will be washed to remove mud and dirt before leaving the site. All plant and materials vehicles will be stored in the compound area or other dedicated areas. Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. Construction traffic will be restricted to defined routes and a speed limit will be implemented.</p> <p>In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. If necessary, water will be taken from the site's drainage system, and will be pumped into a bowser or water spreader to dampen down haul roads and the temporary site compound to prevent the generation of dust. Silty or oily water will not be used for dust suppression, because this would transfer the pollutants to the haul roads and generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.</p> <p>The active construction area along the intended grid connection route options will be small, ranging from 150-300m in length at any one time. Should separate crews be used during the construction phase they will generally be separated by 1-2km. All construction machinery will be maintained in good operational order while on-site, minimising any emissions that are likely to arise. Aggregate materials for the construction of the cabling route will be sourced locally to reduce the amount of emissions associated with vehicle movements.</p>		
MM49	Human Health	EIAR Section 5	A traffic management plan (included as Appendix 15-2) will be developed and implemented to ensure any impact is short term in duration and slight in significance along the intended grid connection route. 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. In relation to the cable laying works, the works area in any one day will be approximately 100-150m in length and so the potential for significant disruption is limited.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Operational Phase					
MM50	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>		
MM51	Shadow Flicker	EIAR Section 5	<p>The shadow flicker prediction model indicates that zero shadow flicker would occur from the Proposed Development.. In the event that properties are constructed within the area on the Proposed Development and shadow flicker occurs the following mitigation measures are proposed below.</p> <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. Upon commissioning of the proposed wind farm, the shadow flicker prediction data will be used to select dates on which a shadow flicker event could be observed at one or multiple affected properties and the following process will be adhered to.</p> <ol style="list-style-type: none"> 1. Recording the weather conditions at the time of the site visit, including wind speeds and direction (i.e. blue sky, intermittent clouds, overcast, moderate breeze, light breeze, still etc.). 2. Recording the house number, time and duration of site visit and the observation point GPS coordinates. 3. Recording the nature of the sensitive receptor, its orientation, windows, landscaping in the vicinity, any elements of the built environment in the vicinity, vegetation. 4. In the event of shadow flicker being noted as occurring the details of the duration (times) of the occurrence will be recorded 5. The data will then be sent to the wind farm operational team to confirm that the model and SCADA system are working. 6. Following 12 months of full operation of the Proposed Development a report can be prepared for the Local Authority describing the shadow flicker mitigation measures used at the wind farm and confirming the implementation and successful operation of the system. <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>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<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>Wind turbines will be fitted with shadow flicker control units to allow the turbines to be controlled to prevent the occurrence of shadow flicker at properties surrounding the wind farm. The shadow flicker control units will be added to any required turbines and are not cost prohibitive.</p> <p>A shadow flicker control unit allows a wind farm’s turbines to be programmed and controlled using the wind farm’s SCADA control system to change a particular turbine’s operating mode during certain conditions or times, or even turn the turbine off if necessary.</p>		
Chapter 6: Biodiversity					
Pre-Commencement Phase					
MM52	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.		
MM53	Fauna - Badger	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. ➤ The sett will be monitored for 2 weeks prior to construction using a camera trap to determine if it is in use. ➤ If the sett is found to be in use exclusion measures will be put in place prior to construction in line with NRA (2005b) Guidelines to ensure that the sett is evacuated. ➤ As per NRA guidelines exclusion from an active sett will only be carried out during the period of July to November inclusive in order to avoid the badger breeding season. ➤ During the breeding season (December to June inclusive) no works will be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts. ➤ Exclusion zone fencing and appropriate signage will be put in place around the main sett to the south of the substation which lies outside the construction footprint. This will ensure that there will be no vehicles tracking in the area and no temporary storage of construction materials that could impact the sett. 		
MM54	Fauna - Otter	EIAR Section 6	<p>Whilst no otter were recorded at the locations of the proposed water crossings during the surveys undertaken, it is noted that this is a mobile species and could potential migrate into the site. As such, prior to the commencement of construction works associated with the installation of watercourse crossings, the following measures will be undertaken for the avoidance of disturbance/displacement and direct mortality and to ensure that no otter holts/ breeding sites have been established since the original surveys undertaken (TII, 2008b):</p> <ul style="list-style-type: none"> ➤ From a precautionary basis, a pre-commencement confirmatory otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works. ➤ 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) will be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance will also not take place within 15m of such holts, except under licence (TII, 2008b). <p>All of the above works will be undertaken or supervised by an appropriately qualified ecologist.</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM55	Fauna - 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. The success of the buffer mitigation will be assessed as part of post construction monitoring and updated where necessary.		
Construction Phase					
MM56	Fauna - 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. 		
MM57	Peatland and Associated Habitats	EIAR Section 6	The Proposed Development provides for the restoration of approximately of 40ha of peatland habitat in the northern section of the site, through drain blocking measures and the removal of removal of encroaching conifers (establishing as a result of natural seed dispersal). This is fully described in the Biodiversity Management and Enhancement Plan (BMEP). The BMEP will improve the ecological condition of the existing degraded peatland habitat in the northern section of the site. The location and extent of the habitat enhancement area is mapped in the BMEP, available in Appendix 6-6 of the EIAR.		
MM58	Invasive Species	EIAR Section 6	<p>Good construction site hygiene will be employed to prevent introduction of problematic invasive alien plant species (e.g., Japanese knotweed, Rhododendron, Giant Rhubarb etc.) by thoroughly washing vehicles prior to entering the site.</p> <p>Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.</p> <p>The treatment and control of invasive alien species will follow guidelines issued by the National Roads Authority – The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA 2010).</p>		
MM59	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).		
MM60	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 6-6 of the EIAR. These include:</p> <ul style="list-style-type: none"> ➤ Conifer Felling ➤ Drain Blocking ➤ Removal of Rhododendron ➤ Timing of Works ➤ Vegetation Monitoring ➤ Hydrological Monitoring 		
Operational Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM61	Fauna - 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>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> <p>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.</p> <p>Static monitoring shall take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021).</p> <p>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> <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					
MM62	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					
MM63	Birds	Appendix 7-1	<p>During the breeding season (March-August) bird monitoring surveys within the proposed wind farm development site will take place to a distance of up to 1 km from the proposed wind farm development site.</p> <p>The purpose of the surveys is to confirm the locations of breeding territories prior to construction to ensure that mitigation is successfully implemented (see Section 5.2) to avoid disturbance effects on breeding activities as a result of the works.</p> <p>The survey for breeding birds on the adjoining bog to the west and southeast will follow methodology of Brown and Shepherd (1993) and will take place in the April to July period (4 visits) in the season before works, including tree felling, commence. This schedule will provide guidance to the contractor on where restrictive zones are likely to be required</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM64	Birds	Appendix 7-1	<p>As noted in Section 2.9.4 (Breeding Season Distribution and Abundance Surveys), targeted surveys for breeding raptors were not undertaken within the Proposed Development site or within a 2 km radius of the site. Owing to the high conservation status of merlin, and noting the difficulties associated with survey for breeding merlin (as highlighted by Lusby et al. 2011), particular focus will be placed on locating possible territories within a distance of at least 1 km of the works area. The survey, which will take place in the period April to July, prior to any works on site commencing including tree felling, will comprise a combination of traditional search methods (after Hardey et al. 2009) and vantage point watches focused on suitable habitat within 1 km maximum of the vantage point location (see Lusby et al. 2011). The merlin survey will be undertaken by field workers with experience of surveying birds of prey.</p> <p>Survey limitations were also identified with establishing the status of breeding woodcock on site (see Section 2.9.4.3). A full survey for breeding woodcock, following Gilbert et al. (1998), will be undertaken in the breeding season prior to any works, including tree felling, commencing on site.</p>		
Construction Phase					
MM65	Birds	Appendix 7-1	<p>The present study has identified potential significant disturbance effects on various breeding species which are listed as Important Ecological Features as a result of the construction works (see Section 4.2.2). These species are sparrowhawk, buzzard, merlin, kestrel, red grouse, golden plover, and snipe (woodcock, while not recorded, is included as focused baseline survey was not carried out). Best available evidence has been reviewed (see Section 4.2.2) and it is suggested that these species could be disturbed by works, including tree felling, up to and including the at the following distances:</p> <ul style="list-style-type: none"> > Sparrowhawk 200 m > Buzzard 200 m > Merlin 500 m > Kestrel 200 m > Red Grouse 500 m > Golden Plover 500 m > Snipe 400 m > Woodcock 100 - 200 m <p>Should any of these species be recorded breeding within the given distances of the works area (as established through confirmatory surveys before and/or during construction – see Sections 5.6 & 5.7), a buffer zone (using above distances) will be established around the expected location of the nest (location identified as far as is possible without causing disturbance to the bird) and all works will be restricted within the zone until it can be demonstrated by an ornithologist that the species has completed the breeding cycle in the identified area. Any restricted area that is required to be set up will be marked clearly using hazard tape fencing and all site staff will be alerted through toolbox talks.</p> <p>The above mitigation, which will apply from March to August (inclusive), will ensure that the works will not have significant adverse effects on the identified IEFs.</p>		
MM66	Birds	Appendix 7-1	<p>A range of passerine bird species breed within the site, including meadow pipit (Red-listed). As noted, (Section 4.2.3), disturbance to, or destruction of, active nests during construction activities could contravene Section 22 of the Wildlife Acts 1976 to 2021. Clearance of trees and ground vegetation will take place outside of the bird breeding season (1st March – 31st August) to minimise the possibility of disturbance and destruction to occupied bird nests during the construction phase.</p> <p>However, it is possible that some ground may still need to be cleared of vegetation during the breeding season or that previously cleared ground will have developed colonising vegetation (such as brambles) which could attract nesting birds such as wren. Such these occurrences arise, the following protocol will be followed:</p> <ul style="list-style-type: none"> > The area will be surveyed by a qualified ecologist with ornithological experience up to 10 days before any clearance. Should an active nest be located, the area will be restricted from works by a distance where it is considered that the works would not cause disturbance or abandonment of the nest. Such distances, which will vary according to species and local topography, will be determined by the ornithologist. The restriction will be maintained until it is established that any young birds present have fledged. > Should an instance arise where the placement of a restriction would have significant implications for the time frame of the project, and where no alternative mitigation is available to prevent disturbance to the nest, the ecologist will evaluate the situation in the context of the conservation status of the species and the 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			stage of breeding, i.e. nest with eggs, nest with young chicks, nest with large young near fledging stage, and will advise on the best approach in the context of the Wildlife Acts. In such cases, the local representative of NPWS will be consulted.		
Operational Phase					
MM67	Birds	Appendix 7-1	Areas of forest around turbines which are cleared of trees will be managed to prevent establishment of scrub and rank vegetation which would encourage small mammals and birds and attract species such as kestrel to hunt near the turbines and increase risk of collision. This maintenance will be carried out on an annual basis by mowing or strimming. The managed areas around turbines which will be implemented as mitigation for bats will suffice for birds as well. This approach has proved highly effective at several wind farms in central-eastern Spain where the number of collisions with lesser kestrel decreased by 75% to 100% after the ground was superficially tilled to a distance of 80 m from the turbine base (Pescador et al. 2019).		
Decommissioning Phase					
MM68	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 in bird populations and distributions that may have occurred locally during the operational life of the project).		
EIAR Chapter 8 Land Soils & Geology					
Construction Phase					
MM69	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 and borrow pit volumes; ➤ The minimum possible 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; ➤ Construction of the Proposed Development will be undertaken in Phases, where each Phase comprises works around 5-7 turbines at any one time, allowing borrow pits to be developed and backfilled in stages. ➤ 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 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 taken to a licenced facility for disposal or recycling where required. If feasible, the upper layers of tarmac and asphalt will be excavated separately to the lower engineered fill layers 		
MM70	Contamination of Soils	EIAR Section 8	<ul style="list-style-type: none"> ➤ Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station; ➤ On site re-fuelling will be undertaken using a double skinned bowser with spill kits on the ready for accidental leakages or spillages; ➤ On site re-fuelling will be undertaken by suitably trained personnel only under a permit to refuel system; ➤ Fuels stored on site will be minimised. Storage areas located at the temporary compounds 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 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; ➤ The plant used during construction 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"> ➤ All waste tar material arising from the chipping and resurfacing of the public road portion of the temporary construction access road will be removed off-site and taken to licenced waste facility; ➤ An emergency plan for the construction phase to deal with accidental spillages is contained within the Construction and Environmental Management Plan (Appendix 4-4 of this EIAR). Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area. 		
MM71	Erosion of soils	EIAR Section 8	<p>Peat removed from turbine locations and access roads will be used for landscaping, spread within the proposed peat placement areas around certain turbines and used to reinstate the 3 no. proposed borrow pits. The acrotelm 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 borrow pits. Reseeding and spreading/planting of heather and moss cuttings will also be carried out in these areas. These measures will prevent erosion of stored peat in the long term. A full Peat and Spoil Management Plan for the Proposed Development is included as Appendix 4-2 of this EIAR.</p> <p>Any excess temporary mounded peat in storage for long periods will be sealed using the back of an excavator bucket. This will minimise erosion of soil. Silt fences will be installed around stockpiles to limit movement of entrained sediment in surface water runoff. The use of bunds around earthworks and mounds will prevent egress of water from the works.</p> <p>To mitigate against erosion of the exposed soil or rock, all excavations will be constructed and backfilled as quickly as possible, although this will depend on the nature of the excavation – a hardstand excavation can be backfilled immediately, however a turbine base excavation will remain open for a prolonged period of time as the base is constructed. Excavations will stop during or prior to heavy rainfall events. To mitigate against possible contamination of the exposed soils and bedrock, refuelling of machinery and plant will only occur at designated refuelling areas.</p> <p>In order to minimise erosion of mineral subsoils stripping of peat will not take place during extremely wet periods as defined in the Chapter 9 of this EIAR (to prevent increased silt rich runoff). Drainage systems (as described in Section 4.7 of Chapter 4 of this EIAR) will be required to limit runoff impacts during the construction phase.</p> <p>During tree felling, brash mats will be used to support vehicles on soft ground, reducing peat and mineral soil 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.</p>		
MM72	Peat Instability	EIAR Section 8	<p>Firstly, 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>Also, the lessons learned from historical peat slide events have been incorporated into the design of this project and the construction methodologies to be implemented. These lessons show that it is important that the existing site drainage is maintained during construction to avoid a similar failure to that on Shass Mountain, which occurred following heavy rainfall, and this is referenced in the Risk Assessments for the turbines/access roads (Appendix 8-1).</p> <p>Based on the control measures given in the FT Peat Stability Assessment (Appendix 8-1) report being strictly adhered to during construction and the detailed stability assessment carried out for the peat slopes which showed that the site has an acceptable margin of safety, there is a low risk of peat instability/failure at the Proposed Development site.</p> <p>The risk assessment at each turbine and infrastructure location identified a number of control measures to reduce further the potential risk of peat failure. Access roads to turbines will be subject to the same relevant control measures that apply to the nearest turbine as detailed in the FT Peat Stability Assessment Report.</p> <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"> ➤ Appointment of experienced and competent contractors; ➤ The site will be supervised by experienced and qualified personnel, including a Project Geotechnical Engineer; ➤ Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a peat movement); ➤ Prevent undercutting of slopes and unsupported excavations. 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. Open excavations will be inspected on a daily basis. ➤ Excavation will be carried out from access roads or hardstanding areas to avoid tracking of construction plant across areas of soft ground/peat. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Excavations which could have the potential to undermine the up-slope component of an existing slope will be sufficiently supported to resist lateral slippage and careful attention will be given to the existing drainage. ➤ Maintain a managed robust drainage system; ➤ Prevent placement of loads/overburden on marginal ground as detailed in the peat stability assessment report; ➤ Set up, maintain and report findings from monitoring systems (as described in the Peat & Spoil Management Plan, Appendix 8.2); ➤ Undertake strength testing of peat directly prior to access road construction for new access roads, both founded and floating. ➤ Earthworks will not be commenced when heavy or sustained rainfall is forecast. A rainfall gauge will be installed on site to provide a record of rainfall intensity. An inspection of site stability and drainage by the Project Geotechnical Engineer will be carried out on site when a daily rainfall of over 15mm is recorded on site, works will only recommence after heavy rain with the prior approval of the Project Geotechnical Engineer following an inspection. ➤ Engineer and Contractor to ensure that construction method statements are followed; and, ➤ Revise the Geotechnical Risk Register, as necessary as construction progresses. 		
Operational Phase					
MM73	Soils and Geology	EIAR Section 8	Mitigation measures for soils and geology during the operational stage include the use of aggregate from 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. These mitigation measures are sufficient to reduce risk to ground/peat/soils and subsoils, and groundwater and surface water quality.		
Decommissioning Phase					
MM74	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					
MM75	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 will be implemented wherever clear-felling is planned. The objective will be to mitigate the risk of mobilising suspended solids and nutrients into drains and surface water courses, as follows:</p> <ul style="list-style-type: none"> ➤ Small felling areas (<25ha), sequencing of felling to avoid intense felling in one subcatchment ➤ Limiting felling areas and sequencing the felling to avoid intense felling in one subcatchment. ➤ Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance. ➤ Sediment/Silt traps will be strategically placed downslope within forestry drains near streams before ground preparation. The purpose is to slow water flow, increase residence time, and allow settling of silt. No direct discharge of such ditches to watercourses will occur. ➤ Crossing of streams away from bridges and culverts will not be permitted. Checking and maintenance of roads and culverts will be on-going throughout felling activity. No tracking of vehicles through watercourses will occur. Existing interceptor drains will also not be disturbed. ➤ Clay, soil and silts will be removed from roads during wet periods and dust will be suppressed during dry spells. ➤ Main drains that accommodate the discharge from collector drains will include rock armour, as required, where there are steep gradients. ➤ On steep slopes and where felling inside the 50 metre buffer is required, double or triple sediment traps will be installed. All drainage channels will taper out before entering the buffer zone. This ensures that discharged water fans out over the buffer zone before entering the aquatic zone, with sediment filtered out by ground vegetation within the zone. ➤ 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. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of in dedicated disposal areas. ➤ Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled. ➤ Brush management/removal. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Brash mats will be used to support vehicles on soft ground, reducing soil erosion and avoiding the formation of rutted areas. 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, extraction will be suspended during periods of high rainfall. ➤ Timber will be stacked in dry areas and outside a 50 metre buffer. Straw bales and check dams will be emplaced on the downgradient side of timber storage/processing sites. ➤ Works will not be conducted during significant rainfall events (see Section 9.4.2.2) in order to minimise entrainment of exposed sediment in surface water run-off. ➤ Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when tree-felling operations have been completed. <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 conducted 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 conducted during rainfall events. ➤ Following tree felling, all main drains will be inspected to ensure that they are functioning. ➤ Extraction tracks nears drains will 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. 		
MM76	Earthworks	EIAR Section 9	<p>Mitigation by Avoidance: Works areas will be kept at least 50 m from watercourses to the extent possible. The proposed setback distance/buffer will serve to avoid:</p> <ul style="list-style-type: none"> ➤ Direct physical damage to watercourses and associated releases of sediment. ➤ Direct entry of suspended sediments from earthworks into watercourses. ➤ Direct entry of suspended sediments from the drainage system into watercourses, which is achieved in part by ending drain discharges outside the buffer and allowing percolation across the vegetation within the buffer. <p>Risks and effects of earthworks are made greater during storm events. Hence, earthworks will not be conducted during significant storm events. The works programme for the entire construction stage of the Proposed Development will take account of weather forecasts, notably predicted rainfall. Large excavations and movements of soil/subsoil or vegetation stripping will be scaled back or suspended if heavy rain is forecast. Decisions to suspend works will be made from review of weather forecasts and visual observations, as judged and decided upon by the project hydrologist and/or environmental clerk of works.</p> <p>The checking and communication of weather forecasts are part of the CEMP. Prior to suspending works for climatic reasons, the following control measures will be completed:</p> <ul style="list-style-type: none"> ➤ Open excavations will be secured. ➤ Temporary or emergency drainage will be provided to prevent back-up of surface runoff in work areas. ➤ Working for up to 12 hours after heavy rainfall events will be avoided to ensure drainage systems are not overloaded. Decisions are subject to visual inspection and judgement by the resident (supervising) engineer. The intent and objective is to control erosion, avoid collapses of embankments, and limit the mobilisation and transport of sediments. <p>Mitigation by Design: Key mitigation by design measures that will be implemented comprise source controls, in-line controls and treatment systems, as follows:</p> <ul style="list-style-type: none"> ➤ <u>Source control measures</u> cover working areas, staging areas and stockpiles. Methods that will be employed are diversion drains, flume pipes, sand bags, oyster bags filled with gravel, and filter fabrics. Flexibility to adapt methods will be required based on location-specific conditions, as judged by supervising engineers from visual inspection. ➤ <u>In-Line controls</u> involve settling of suspended sediments and particulate organic matter with the use of silt fences, straw bales, sand or oyster bags, weirs, baffles, and check dams. Flow limiters and sump pumping systems may be employed where needs arise in order to maintain the hydraulic functioning of the existing drain system. ➤ <u>Treatment systems</u> involve sediment traps and temporary sumps/attenuation ponds. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Moreover, soil accumulations will be removed from access roads during wet periods and dust will be suppressed during dry spells.</p> <p>If discharge water fails to be of a high quality during regular inspection, then a filtration treatment system such as a “Siltbuster” or equivalent will be used to filter discharge water before release to watercourses. This applies for the entire construction phase.</p> <p>For discharges near watercourses, within the 50 m buffer, and including discharges of greenfield runoff, double silt fences will be employed. These will be inspected and maintained, and remain in place throughout the entire construction phase.</p> <p>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 outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. Sedimats will extend the full width of the outfall to ensure all water passes through this additional treatment measure. Level spreaders will be designed for each outfall.</p> <p>Management of Runoff from Peat and Spoil Placement Areas: Excavated peat and spoil will be used for landscaping, spread within the proposed peat placement areas around certain turbines and used to reinstate the 3 no. borrow pits. A Peat and Spoil Management Plan which describes details of the excavations is presented in Appendix 4-2.</p> <p>During the initial placement of peat and spoil, silt fences, straw bales and biodegradable matting will be used to control runoff from reinstatement areas. ‘Siltbuster’ treatment trains will be employed if previous treatment is not to a high quality, as stated above.</p> <p>Drainage from peat placement areas will ultimately be routed to swales and settlement ponds with storage and settlement designed for a 6-hour duration, 1 in 10 year storm event. Peat and spoil placement areas will be vegetated to reduce sediment entrainment in runoff, which will further help to reduce risks of sediment mobilisation.</p> <p>Field Inspection: An inspection and maintenance plan for the construction drainage system will be prepared in advance of commencement of works. Regular inspections of installed drainage systems will be undertaken, especially after heavy rainfall, to check for damage and blockages, and ensure there is no escape or build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.</p> <p>Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. Checks will be conducted on a daily basis.</p>		
MM77	Culverts	EIAR Section 9	<p>Mitigation Measures by Avoidance: Machinery and personnel are kept out of the river directly. Direct in-stream works will be avoided.</p> <p>Mitigation Measures by Design: All works will be conducted in accordance with the CEMP which incorporates the best practice IFI “Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters” (IFI, 2016). Related activity incorporates many of the same measures that are presented in Section 9.4.2.2 (earthworks). Moreover:</p> <ul style="list-style-type: none"> ➤ All stream crossings will be bottomless-box or clear span culverts. Existing banks will remain undisturbed. ➤ Based on IFI (2016), the relevant work period is July to September inclusive, <i>i.e.</i>, the relatively drier summer period. Any deviation that may be temporarily necessary will be done in discussion with the IFI. ➤ During near-stream construction works, double-row silt fences will be emplaced immediately downgradient of work areas for the duration of activity. ➤ All new 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. <p>Underground cabling routes within the Wind Farm Site (e.g. from turbines) will follow access roads and cables will pass within the structure of the road and associated culverts.</p>		
MM78	Grid Connection Installation	EIAR Section 9	<p>In-stream works will be avoided in all cases. With regard to HDD, 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 will be implemented in full, as follows:</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<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. ➤ 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. 		
MM79	Hydraulic Effects of Drainage	EIAR Section 9	Development footprints have been reduced to a minimum and interceptor drains will be shallow (<1.5 m) which serves to reduce the relative risk of drainage effects. The drainage system will be integrated with the existing drainage network in the forest to the maximum extent possible. All construction works will be supervised.		
MM80	Pumping from Open Pits	EIAR Section 9	<p>Mitigation by Avoidance: An upslope interceptor drain will be established upslope of the excavation area to prevent greenfield runoff into the excavations. Berms will also be used, as necessary.</p> <p>Mitigation by Design: The water pumped by sump pumps will pass through silt bags before being discharged into the swale. As the water pass through the silt bags, the majority of sediment and organic matter is retained by geotextile fabric. The silt bags will be used with natural vegetation filters or sedimats. The sedimats will be secured to the ground surface using stakes/pegs. They will extend to the full width of the outfall to ensure that all water passes through this treatment measure. Level spreaders will be installed for each outfall.</p> <p>The footprints of excavations for infrastructure foundation works and hardstanding have been planned to be as small as practicable. Excavations will be backfilled after completion of installations, which will serve to restore water levels and drainage patterns, hence reduce the temporary drainage effects.</p>		
MM81	Accidental Spills or Leaks	EIAR Section 9	<p>Mitigation Measures by Design: The prevention of, and responses to, accidental spills and leaks of fuel and other chemicals are covered by the CEMP and SWMP. The following mitigation measures will be implemented:</p> <ul style="list-style-type: none"> ➤ Trained personnel will conduct onsite refuelling only. ➤ Onsite refuelling of machinery will be done by mobile double-skinned fuel bowsers. ➤ Drip trays and fuel absorbent mats will be available and used during all refuelling operations ➤ A permit for the fuel system will be put in place. ➤ Fuels stored onsite will be minimised. Fuel storage areas will be bunded to contain 110%v of the fuel storage volume for the time period of the construction. Rainwater will not be allowed to accumulate within the bund, and will thus be fitted with a storm drainage system and appropriate oil interceptor. ➤ The plant used during construction will be regularly inspected for leaks and fitness for purpose. ➤ Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area. 		
MM82	Release of Cement-Based Products	EIAR Section 9	<p>Mitigation Measures by Avoidance:</p> <ul style="list-style-type: none"> ➤ Concrete will be delivered in sealed concrete delivery trucks. Batching of wet-cement products will not occur on site. ➤ Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place. ➤ Pre-cast elements for culverts and concrete works will be used. ➤ Concrete trucks will not be washed out on site but will be directed back to their batching plant for washout. <p>Mitigation Measures by Design:</p> <ul style="list-style-type: none"> ➤ 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 washout ponds. ➤ Where temporary lined impermeable containment areas are used, such containment areas are built using straw bales and lined with an impermeable membrane. These are covered when not in use to prevent rainwater collecting. ➤ Pour sites of cement will be kept free of standing water, and plastic covers will be ready in case of sudden rainfall events. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>Concrete deliveries are often conducted outside of normal working hours in order to limit traffic effects on roads. Concrete pouring for turbine foundations is normally completed in a single day per turbine. The placed concrete begins curing straight away after placement and vibrations, it is solid in 24-48 hours, and it reaches its full strength after 28 days. As such, leakage from the formwork to the surrounding ground is not possible.</p> <p>Risks of pollution will be further reduced as follows:</p> <ul style="list-style-type: none"> ➤ Concrete will not be transported around the site in open trailers or dumpers so as to avoid spillage while in transport. ➤ All concrete used in the construction of turbine bases will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete locally to the location where it is needed. ➤ Arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, confirming routes, prohibiting on-site washout and discussing emergency procedures. ➤ Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the site. ➤ Weather forecasting will be used to assist in planning large concrete pours and large pours will be avoided where prolonged periods of heavy rain is forecast. ➤ Concrete pumps and machine buckets from slewing over watercourses will be restricted while placing concrete. ➤ Excavations will be sufficiently dewatered before concreting begins and dewatering will continue while concrete sets. ➤ Covers will be available for freshly placed concrete to avoid the surface washing away in heavy rain. ➤ Any potential, small surplus of concrete will be disposed of after completion of a pour in suitable locations away from any watercourse or sensitive habitats. 		
MM83	Wastewater Management	EIAR Section 9	Wastewater will not be treated or disposed of onsite.		
Operational Phase					
MM84	Maintenance Works	EIAR Section 9 CEMP Section 3	Mitigation by Design: Maintenance works will be subject to control measures contained in Section 3.2.3 of the SWMP (Appendix 4-4).		
MM85	Hydraulic Effects of Drainage	EIAR Section 9	Mitigation Measures by Design: Development footprints have been reduced to a minimum and current drainage conditions are maintained to the maximum extent possible. Maintaining shallow drains as proposed also reduces the scope for and likelihood of drainage effects.		
MM86	Wastewater Management	EIAR Section 9	<p>Mitigation Measures by Avoidance: Wastewater will not be treated or disposed of onsite.</p> <p>Mitigation Measures by Design: 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 will be submitted to the Planning Authority in advance of any works commencing on-site. 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.</p>		
Decommissioning Phase					
MM87	Decommissioning	EIAR Section 9	During decommissioning, it will be possible to reverse or reduce any of the potential effects caused during construction, and to a lesser extent operations, by rehabilitating constructed areas such as turbine bases and hardstanding. 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 Quality					
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 borrow pits on site. This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. ➤ The Materials Recovery Facility (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 44km to the southeast of the site of the Proposed Development. ➤ Waste associated with the construction of the underground grid connection 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 38km to the south. 		
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 borrow pit area 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, borrow pit and site compounds to prevent the generation of dust where required. Water bowser movements will be carefully monitored 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 placement areas and restoration of borrow pits. ➤ 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 from the on-site borrow pits, 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 from the borrow pits. ➤ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-3). The CEMP includes dust suppression measures. 		
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					
Construction Phase					
MM92	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 majority of aggregate materials for the construction of the Proposed Development will be obtained from the borrow pits on site. This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. ➤ The Construction and Environmental Management Plan (CEMP) (Appendix 4-3) includes a Waste Management Plan (WMP) which outlines the best practice procedures that will occur during the construction phase relating to waste material. <ul style="list-style-type: none"> ○ Section 4.3.10.7 of Chapter 4 for this EIAR refers to the methodology that will be utilised to manage onsite waste. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor, ○ The MRF facility will be local to the Proposed Development site to reduce the amount of emissions associated with vehicle movements. ➤ Waste associated with the construction of the underground electrical cabling route will be either brought directly to a licensed MRF or brought back to the Primary Construction Compound on-site, whichever is closest to the waste generation location in order to reduce vehicle movements. 		
Operational Phase					
	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 Management and Enhancement Plan for the Proposed Development has identified enhancement activities such as removal of forestry, drain blocking, and removal of rhododendron, rewetting of existing cutover peat habitat and restoration of wetland habitats. 		
Decommissioning Phase					
MM93	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					
MM94	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					
MM95	Construction Noise	EIAR Section 12	<p>Good practice during all construction phases will be implemented to minimise noise effects. Section 8 of BS 5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will be employed onsite:</p> <ul style="list-style-type: none"> ➤ 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; ➤ Any extraordinary site work occurring outside of the core working hours (for example, crane operations lifting components onto the tower) will be programmed, if required, so that haulage vehicles will 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 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; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > Machines will be shut down or throttled down to a minimum between work periods (or when not in use). Machinery will be not be left idling unnecessarily; > 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; > All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and temporary acoustic screens or enclosures will be provided where practicable; and > Use of a temporary acoustic barrier during construction activities in proximity to CNAL5. 		
Operational Phase					
MM96	Operational Phase Noise	EIAR Section 12	No mitigation is required when considering the 162 m rotor diameter candidate wind turbine modelled as part of the noise assessment and based on the margins between the predictions from the Proposed Development and the Site Specific Noise Limits it is unlikely that mitigation would be required even if an alternative candidate model is selected for the Proposed Development.		
EIAR Chapter 13 Cultural Heritage					
Construction Phase					
MM97	Recorded Monuments along the Grid Connection Route	EIAR Section 13	<p>Archaeological monitoring will be carried out under licence from the National Monuments Service along the grid connection cable route where it extends through the ZoN of the following monuments.</p> <ul style="list-style-type: none"> > MA007-046 Megalithic tomb, MA007-046/001 and 002 Hut Sites at Ballyglass <ul style="list-style-type: none"> o Ringfort MA007-048 at Ballycastle o Ringfort MA014-026 at Ballinglen > A report on the monitoring will 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. 		
MM98	Sub Surface Archaeological Potential	EIAR Section 13	<ul style="list-style-type: none"> > Pre-development archaeological testing of the Proposed Development (e.g. turbine bases, hardstands, proposed roads, compounds, substation site, met mast, etc) will be carried out by a suitably qualified archaeologist under licence from the National Monuments Service. As many of these areas are covered in dense forestry it is proposed that the testing will be carried out once the keyhole clear-felling required for the Proposed Development has taken place, but prior to the commencement of construction works. > Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) or buffer zones may be required depending on the results of the testing. Consultation with the NMS and the Planning Authority may be required to discuss the results of testing and any required mitigation. > A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority for consideration. > Archaeological monitoring of all groundworks associated with the Proposed Development will be carried out by a suitably qualified archaeologist during the construction stage of the project. > A report on the monitoring will be compiled on completion of the work and submitted to the relevant authorities. 		
MM99	Features of Local Cultural Heritage Merit	EIAR Section 13	<ul style="list-style-type: none"> > A buffer zone (c. 180m in diameter) as depicted on Figure 13-30 around the series of buildings will be established and incorporated into the Construction, Environmental and Management Plan (CEMP). > Ground works as part of the construction phase of the Proposed Development will be monitored by a suitably qualified archaeologist as detailed in Section 13.4.2.7. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM100	Derelict House	EIAR Section 13	<ul style="list-style-type: none"> ➤ A buffer zone (c. 170m in diameter) around the buildings as depicted on Figure 13-31 will be established and has been incorporated into the Construction, Environmental and Management Plan (CEMP). ➤ Ground works as part of the construction phase of the Proposed Development will be monitored by an suitable qualified archaeologist as detailed in Section 13.4.2.7. 		
Chapter 15 Material Assets					
Pre-Commencement					
MM101	Water Supply	EIAR Section 15	In advance of any construction activity for the grid route, the contractor will undertake pre-commencement surveys of the proposed route to confirm the presence or otherwise of any services such as water supply. If found to be present, the relevant service provider will be consulted with in order to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works. In the event that water mains are encountered the water supply will be turned off by the utility so work can commence on diverting the service. The section of existing pipe will be removed and will be replaced with a new pipe along the new alignment of the service. The works will be carried out in accordance with the specifications of the relevant utility provider.		
Construction Phase					
MM102	Electricity	EIAR Chapter 15	<ul style="list-style-type: none"> ➤ Goal posts will be established under the two overhead lines for the entirety of the construction phase. They will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks ➤ The suitability of machinery and equipment for use near power lines will be risk assessed. ➤ All staff will be trained on the routes and operating voltages of overhead electricity lines running across the local road in the townland of Lisglennon All staff will be trained to be aware of the risks associated with overhead lines. ➤ Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire. ➤ Prior to the delivery of turbines to the Proposed Development site, a dry run of the route using vehicles with similar dimensions. Please see Section 15.1 above for details. ➤ When activities must be carried out beneath overhead lines, e.g. component delivery or grid cable laying, a site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used is undertaken prior to any works. Overhead line proximity detection equipment is fitted to machinery when such works are required. ➤ Information on safe clearances will be provided to all staff and visitors. ➤ Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site. ➤ All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan. ➤ All health and safety measures as detailed in Chapter 5: Population and Human Health will be adhered to during the construction, operation and decommissioning phases. 		
Operational Phase					
MM103	Telecommunications	EIAR Chapter 15	<p>In the event of further scoping responses being received from the EIA consultees, the comments of the consultees and any proposed mitigation measures will be implemented in the construction and operation of the Proposed Development, subject to a grant of planning permission.</p> <p>In the event of interference occurring to telecommunications, the Department of the Environment, Heritage and Local Government Wind Farm Planning Guidelines (2006) state that these effects can be reduced, avoided or mitigated by the use of divertor relay links out of line with the proposed wind turbines.</p>		
MM104	Aviation	EIAR Chapter 15	<p>IAA noted that given the distance from the site to the airports (Ireland West Airport and Sligo Airport), general observations pertaining to lighting and turbine coordinate provision should be followed. The Department of Defence provided general observations pertaining to lighting specifications.</p> <p>In relation to aviation safety lighting, there are a number of lighting scheme options available that will ensure compliance with the requirements of IAA and DoD while also avoiding any significant impact on potentially sensitive receptors (i.e. ecological receptors or visual receptors).</p>		
Decommissioning Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM105	Decommissioning	EIAR Section 15	The measures outlined for the construction phase are considered the same for the decommissioning phase.		
Chapter 15 – Traffic					
Pre-Commencement					
MM106	Traffic	EIAR Section 15	<p>Prior to the commencement of the construction phase of the Proposed Development a detailed Traffic Management Plan will be prepared by the Contractor in accordance with the measures proposed in the TMP, for agreement with the relevant local authorities and An Garda Síochána . The TMP includes measures which will include the measures below as a minimum requirement, for the following:</p> <ul style="list-style-type: none"> ➤ Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management. ➤ Delivery Programme – a programme of deliveries will be submitted to the County Council in advance of deliveries of turbine components to site. Liaison with the relevant local authorities and Transport Infrastructure Ireland (TII) will be carried out where required regarding requirements such as delivery timetabling. The programme will ensure that deliveries are scheduled in order to minimise the demand on the local network and minimise the pressure on the access to the site. ➤ Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. temporary lane/road closures (where required) or delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the 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. ➤ A Pre and Post Construction Condition Survey – Where required by the local authority, a pre-condition survey of roads associated with the Proposed Development will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. ➤ Liaison with the relevant local authority - Liaison with the County Councils and An Garda Síochána, will be carried out during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. Once the surveys have been carried out and “prior to commencement” status of the relevant roads established, (in compliance with the provisions of the CEMP), the Roads section will be informed of the relevant names and contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager. ➤ Implementation of temporary alterations to road network at critical locations – at locations highlighted in section 15.1.8. In addition, in order to minimise the impact on the existing environment during turbine component deliveries the option of blade adaptor trailers will also be used where deemed practicable. ➤ Identification of delivery routes – These routes will be agreed with the County Councils and adhered to by all contractors. ➤ Delivery times of large turbine components - The management plan includes the commitment to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage. ➤ Travel plan for construction workers – While the assessment above has assumed the worst case in that construction workers will drive to the site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the site. ➤ 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. These are set out in the CEMP which is contained in Appendix 4.3. ➤ Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. 		
Construction Phase					
MM107	Traffic	EIAR Section 15	<p>The construction of this development will require significant coordination and the following comprehensive set of mitigation measures will be put in place before and during the construction stage of the project in order to minimise the effects of the additional traffic generated by the proposed wind farm.</p> <p>Delivery of abnormal sized loads</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The following are the main measures that will be implemented for these deliveries. These will take place during nighttime hours and will comply with the following process : ➤ The delivery of turbine components is a specialist transport operation with the transportation of components carried out at night when traffic is at its lightest and the impact minimised. ➤ The deliveries will be made in consultation with the Local Authority and An Garda Síochána. ➤ It is estimated that 198 abnormal sized loads will be delivered to the site, comprising 40 convoys of 5, undertaken over 40 separate nights. ➤ These nights will be spread out over an approximate period of 20 weeks and will be agreed in advance with the relevant authorities ➤ In order to manage each of the travelling convoys, for each convoy there will be two police escort vehicles that will stop traffic at the front and rear of the convoy of 5 vehicles. ➤ There will also be two escort vehicles provided by the haulage company for each convoy. 		
Decommissioning Phase					
MM108	Decommissioning	EIAR Section 15	When the Proposed Development is decommissioned, a decommissioning plan will be prepared for agreement with the local authority, as described in Section 4.11 of Chapter 4. This plan will include a traffic management plan and other similar mitigation measures to those implemented during the construction phase. In terms of traffic effects, the decommissioning stage will generally mirror the constructions stage although the effects will be significantly reduced as the volumes of materials removed from the site will be less and there will be no abnormally sized loads.		

18.3

EIAR Monitoring Measures

Table 17-2 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	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. It is proposed to complete these inspections on a catchment by catchment basis prior to the commencement of construction works across the site, as works in all areas will not commence simultaneously.	On going	Monthly	Project Hydrologist
MX2	Forestry Felling Drainage Management	EIAR Section 9 SWMP Section 3	<p>Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) will be appointed to oversee the keyhole and extraction works. The ECoW will be experienced and competent, and will carry out the following measures and operate their record using a Schedule of Works Operation Record (SOWOR), as proposed in the planning application:</p> <ul style="list-style-type: none"> ➤ Attend the site for the setup period when drainage protection works are being installed, and be present on site during the remainder of the forestry keyhole felling works. ➤ Prior to the commencement of works, review and agree the positioning by the Operator of the required Aquatic Buffer Zones (ABZs), silt traps, silt fencing (see below), water crossings and onsite storage facilities for fuel, oil and chemicals (see further below). ➤ Be responsible for preparing and delivering the Environmental Tool Box Talk (TBT) to all relevant parties involved in site operations, prior to the commencement of the works. ➤ Conduct daily and weekly inspections of all water protection measures and visually assess their integrity and effectiveness in accordance with Section 3.4 (Monitoring and Recording) and Appendix C (Site Monitoring Form (Visual Inspections)) of the Forestry & Freshwater Pearl Mussel Requirements. ➤ Take representative photographs showing the progress of operation onsite, and the integrity and effectiveness of the water protection measures. ➤ Collect water samples for analysis by a 3rd party accredited laboratory, adhering to the following requirements: ➤ Surface water samples will be collected upstream and downstream of the keyhole felling site at suitable sampling locations. ➤ Sampling will be taken from the stream / river bank, with no in-stream access permitted. 	As Required	Weekly	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> ➤ The following minimum analytical suite will be used: <ul style="list-style-type: none"> ○ pH, ○ Electrical Conductivity, ○ Temperature ○ Total Suspended Solids, Biochemical Oxygen Demand, Total Phosphorus, Ortho-Phosphate, Total Nitrogen, and Ammonia. ➤ Review of operator’s records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions. ➤ Prepare and maintain a Emergency Response Plan (refer to Section 5 of the Construction and Environmental Management Plan). ➤ Suspend work where potential risk to water from siltation and pollution is identified, or where operational methods and mitigation measures are not specified or agreed. ➤ Prepare and maintain a register of all proposed drainage control/protection measures (Water Protection Measure Register). This document is to be updated weekly by the ECoW. 			
MX3	Drainage Inspection	EIAR Section 9 SWMP Section 4	<p>Drainage performance will form part of the civil works contract requirements. During the construction phase the effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treatment of potentially silt-laden water from the works areas will be monitored periodically (daily, weekly, and event based monitoring, i.e. after heavy rainfall events) by the ECoW and/or the Project Hydrologist. The ECoW will respond to changing weather and drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained.</p> <p>Prior to the commencement of construction an inspection and maintenance plan for the on-site drainage system will be prepared by the ECoW in consultation with the Project Hydrologist. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended.</p> <p>Any excess build-up of silt levels at check dams, the settlement ponds, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed.</p> <p>The following periodic inspection regime will be implemented:</p> <ul style="list-style-type: none"> ➤ Daily general visual inspections at pre-determined locations, as chosen by the Project Hydrologist and by ECoW; ➤ Weekly (existing & new drains) inspections of all drainage measures by the ECoW and/or the site Construction Manager; ➤ Inspection to include all elements of drainage systems and all water quality monitoring. Inspections required to ensure that drainage systems are operating correctly and to identify any maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter shall be noted and corrective action shall be implemented. High risk locations such as settlement ponds will be inspected daily by the ECoW. Daily inspections checks will be completed on plant and equipment, and whether materials such as silt fencing or oil absorbent materials need replacement; ➤ Event based inspections by the ECoW as follows: <ul style="list-style-type: none"> ➤ >10 mm/hr (i.e. high intensity localised rainfall event); ➤ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ➤ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). ➤ Monthly site inspections of the drainage measures by the Project Hydrologist during construction phase; and, ➤ Quarterly site inspections of the drainage measures by the Project Hydrologist after construction for a period of one year following the construction phase. ➤ A written record will be maintained or available on-site of all construction phase monitoring undertaken. <p>The abandonment triggers as set out in the SOWOR will be adopted as part of drainage inspections to ensure that any of the conditions prescribed under any abandonment trigger does not exist at the locations under inspection.</p>	Daily/Weekly/Quarterly	As Required	ECoW/Project Hydrologist
MX4	Surface Water Monitoring	SWMP Section 4	<p>Water quality field testing and laboratory analysis will be undertaken prior to commencement of felling and construction at the site. The monitoring programme will be subject to agreement with Mayo County Council but will be based on the planning stage programme already</p>	Twice	As Required	Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<p>outlined in the EIAR and CEMP and presented in this document. It is proposed to begin baseline monitoring three months prior to the commencement of the construction phase.</p> <p>Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standard's (EQSs) and sampling will be undertaken for each stream that drains from the construction site.</p> <p>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.</p> <p>There is an existing drainage network across the site and runoff drains relatively freely to local watercourses and streams. This existing drainage system will continue to function as it is during the pre-construction phase.</p> <p>However, 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. These inspections will be done on a catchment by catchment basis as the construction works develop across the site, as works in all areas will not commence simultaneously.</p>			
MX5	Invasive Species	EIAR Section 6 CEMP Section 3	<p>From a precautionary perspective, a pre-construction invasive species survey will be undertaken as 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.</p> <p>Previously identified infested areas will be resurveyed prior to the commencement of the treatment procedures. The purpose of this is to identify if the Rhododendron has spread outside of previously mapped areas.</p>	Once	As required	Project Ecologist
MX6	Flora and Fauna - Otter	EIAR Section 6	A pre-commencement confirmatory otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works.	Once	As required	Project Ecologist
MX7	Flora and Fauna - Badger	EIAR Section 6	<p>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.</p> <p>The sett will be monitored for 2 weeks prior to construction using a camera trap to determine if it is in use.</p>	Once	As Required	Project Ecologist
MX8	Birds	Appendix 7-1	<p>During the breeding season (March-August) bird monitoring surveys within the proposed wind farm development site will take place to a distance of up to 1 km from the proposed wind farm development site.</p> <p>The purpose of the surveys is to confirm the locations of breeding territories prior to construction to ensure that mitigation is successfully implemented (see Section 5.2) to avoid disturbance effects on breeding activities as a result of the works.</p> <p>The survey for breeding birds on the adjoining bog to the west and southeast will follow methodology of Brown and Shepherd (1993) and will take place in the April to July period (4 visits) in the season before works, including tree felling, commence. This schedule will provide guidance to the contractor on where restrictive zones are likely to be required.</p> <p>As noted in Section 2.9.4 (Breeding Season Distribution and Abundance Surveys), targeted surveys for breeding raptors were not undertaken within the Proposed Development site or within a 2 km radius of the site. Owing to the high conservation status of merlin, and noting the difficulties associated with survey for breeding merlin (as highlighted by Lusby et al. 2011), particular focus will be placed on locating possible territories within a distance of at least 1 km of the works area. The survey, which will take place in the period April to July, prior to any works on site commencing including tree felling, will comprise a combination of traditional search methods (after Hardey et al. 2009) and vantage point watches focused on suitable habitat within 1 km maximum of the vantage point location (see Lusby et al. 2011). The merlin survey will be undertaken by field workers with experience of surveying birds of prey.</p>	Once	As required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			Survey limitations were also identified with establishing the status of breeding woodcock on site (see Section 2.9.4.3). A full survey for breeding woodcock, following Gilbert et al. (1998), will be undertaken in the breeding season prior to any works, including tree felling, commencing on site.			
Construction Phase						
MX9	Birds	Appendix 7-1	Any ground clearance of habitat during the period March to August that could support breeding birds will be walked to establish the presence of breeding birds (mainly passerines). This will be done by an ornithologist up to 10 days before the clearance works take place. If 10 days elapse without the clearing commencing, a further survey will take place. The focus will be on the area to be cleared but zones up to 100 m (approximately) around the area will also be included. Should a breeding territory be identified, the surveyor will attempt to establish the phase of building, e.g., nest building, incubating, feeding young, and will advise the contractor accordingly on measures to be followed (see Section 5.2).	As required	As required	Project Ornithologist
MX10	Archaeological Monitoring	EIAR Section 13	<p>Archaeological monitoring will be carried out under licence from the National Monuments Service along the grid connection cable route where it extends through the ZoN of the following monuments.</p> <ul style="list-style-type: none"> ➤ MA007-046 Megalithic tomb, MA007-046/001 and 002 Hut Sites at Ballyglass ➤ Ringfort MA007-048 at Ballycastle ➤ Ringfort MA014-026 at Ballinglen <p>A report on the monitoring will be compiled on completion of the work and submitted to the relevant authorities.</p> <p>Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) may be required depending on the results of the monitoring.</p>	As Required	As Required	Project Archaeologist
MX11	Archaeological Monitoring	EIAR Section 13	<p>Pre-development archaeological testing of the Proposed Development (e.g. turbine bases, hardstands, proposed roads, compounds, substation site, met mast, etc) will be carried out by a suitably qualified archaeologist under licence from the National Monuments Service. As many of these areas are covered in dense forestry it is proposed that the testing will be carried out once the keyhole clear-felling required for the Proposed Development has taken place, but prior to the commencement of construction works.</p> <p>Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) or buffer zones may be required depending on the results of the testing. Consultation with the NMS and the Planning Authority may be required to discuss the results of testing and any required mitigation.</p> <p>A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority for consideration.</p> <p>Archaeological monitoring of all groundworks associated with the Proposed Development will be carried out by a suitably qualified archaeologist during the construction stage of the project.</p> <p>A report on the monitoring will be compiled on completion of the work and submitted to the relevant authorities.</p>	As Required	As Required	Project Archaeologist
MX12	Water Quality and Monitoring	SWMP Section 4	<p>Daily visual inspections of the installed drains and outfalls will be performed during the construction period to ensure suspended solids are not entering streams and rivers on site, to identify any obstructions to channels and to allow appropriate maintenance of the drainage regime. Should the suspended solids levels measured during construction, at the daily visual inspection locations, be higher than the baseline levels, the source will be identified, and additional mitigation measures implemented.</p> <p>Inspection sheets and photographic records will be kept on site. Inspection points will include the in-situ field monitoring point locations, the laboratory analysis sampling points and continuous monitoring locations. Inspection points will depend on works being completed within the catchment upstream of the identified monitoring locations. Visual inspections will also be completed after major rainfall events, i.e. after events</p>	Daily	Daily	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<p>of >25mm rainfall in any 24-hour period and data including photographs will be collected by visual inspections and independently assessed by the supervising hydrologist who will monitor and advise on the records being received.</p> <p>Daily Visual Inspection locations will be chosen by the Project Hydrologist and ECoW, prior to the commencement of the construction phase, and a Daily Visual Check Sheet Template is included in Appendix C. Daily Visual Inspections are subject to change upon commencement of construction activity and works in progress within the catchment areas.</p> <p>The following periodic inspection regime will be implemented:</p> <ul style="list-style-type: none"> ➤ Daily general visual inspections of site operations and inspections of all watercourses within the site and in the surrounding area by the ECoW or a suitably qualified and competent person as delegated by the ECoW; ➤ Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify any maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter shall be noted and corrective action shall be implemented. High risk locations such as settlement ponds will be inspected daily by the ECoW. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement; ➤ Event based inspections by the Environmental Clerk of Works as follows: <ul style="list-style-type: none"> ○ 10 mm/hr (i.e. high intensity localised rainfall event); ○ 25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ○ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). ➤ Monthly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures during construction phase; ➤ Quarterly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures after construction for a period of one year following the construction phase; and, ➤ A written record will be maintained or available on-site within this Construction Environmental Management Plan (CEMP) which will be maintained on-site during the construction phase. 			
MX13	Water Quality and Monitoring	CEMP Section 3 SWMP Section 4	<p>During, the construction phase, continuous, in-situ, monitoring equipment will be installed where required at locations surrounding the wind farm site. The monitoring equipment will provide continuous readings for turbidity levels, flow rate and water depth in the watercourse. This equipment will be supplemented by daily visual monitoring at their locations as outlined in the Section 4.1.2.1.</p> <p>The proposed locations for continuous, in-situ monitoring will be determined by the Project Hydrologist.</p>	Continuous	As Necessary	ECoW/Project Hydrologist
MX14	Water Quality and Monitoring	SWMP Section 4	<p>Baseline laboratory analysis, at locations chosen by the Project Hydrologist, 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.</p>	Monthly	Monthly	ECoW Project Hydrologist
MX15	Water Quality and Monitoring	EIAR Section 9 SWMP Section 4	<p>Field chemistry measurements of unstable parameters, (pH, specific electrical conductivity, temperature and turbidity) 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.</p>	At least weekly	As Necessary	ECoW/Project Hydrologist
MX16	Surface Water Quality	CEMP Section 4 SWMP Section 4	<p>Visual inspection and monthly laboratory analysis results of water quality monitoring shall assist in determining requirements for any necessary improvements in drainage controls and pollution prevention measures implemented on site.</p> <p>It will be the responsibility of the Environmental Clerk of Works to present the ongoing results of water quality and weather monitoring at or in advance of regular site meetings.</p> <p>Reports on water quality will consider all field monitoring and visual inspections, and results of laboratory analysis completed for that period. Reports will describe how the results compare with baseline data as well as previous reports on water quality. The reports will also describe</p>	As Required	Monthly	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			whether any deterioration or improvement in water quality has been observed, whether any effects are attributable to construction activities and what remedial measures or corrective actions have been implemented. Any proposed alteration to sampling frequency will be agreed with Mayo County Council in advance.			
MX17	Clear felling of Coniferous Plantation	EIAR Section 9	<ul style="list-style-type: none"> ➤ Checking and maintenance of roads and culverts will be on-going throughout felling activity. ➤ 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 conducted 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 conducted during rainfall events. ➤ Following tree felling, all main drains will be inspected to ensure that they are functioning. 	As Required	As Required	ECoW
MX18	Construction Drainage System	EIAR Section 9	Regular inspections of installed drainage systems will be undertaken, especially after heavy rainfall, to check for damage and blockages, and ensure there is no escape or build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.	As Required	As Required	ECoW
MX19	Plant and Equipment Inspections	EIAR Section 9 CEMP Section 4	The plant used during construction will be regularly inspected for leaks and fitness for purpose	As Required	Monthly	ECoW
MX20	Flora and Fauna	CEMP Section 4	<p>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. ➤ Carry out ecological monitoring and survey work as may be required by the planning authority. 	As required	As required	Project Ecologist
MX21	Birds	EIAR Section 7	Any ground clearance of habitat during the period March to August that could support breeding birds will be walked to establish the presence of breeding birds (mainly passerines). This will be done by an ornithologist up to 10 days before the clearance works take place. If 10 days elapse without the clearing commencing, a further survey will take place. The focus will be on the area to be cleared but zones up to 100 m (approximately) around the area will also be included. Should a breeding territory be identified, the surveyor will attempt to establish the phase of building, e.g., nest building, incubating, feeding young, and will advise the contractor accordingly on measures to be followed (see Section 5.2).	As required	As required	Project Ornithologist
MX22	Piped Slope Drains	EIAR Section 4	Piped slope drains will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and blockages. Stake anchors or fill over the pipe will be checked for settlement, cracking and stability. Any seepage holes where pipe emerges from drain at the top of the pipe will be repaired promptly.	Weekly		ECoW
MX23	Check Dams	EIAR Section 4	Check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.	As required		ECoW
MX24	Stilling Ponds	CEMP Section 3	Inspection and maintenance of all settlement ponds, along with the entire drainage network, will be ongoing through the construction period.			
MX25	Peat Management	CEMP Section 2	The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis (by the Site manager/ECoW/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads.	As required/weekly		ECoW/Project Geotechnical Engineer

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			<p>Due to the nature of floating road construction, it will be necessary to monitor the settlement/movement of the road. Survey points will be located along the road at 10m intervals in areas of deep peat (greater than 2m). These surveys points will be surveyed on a weekly basis, and more frequently when construction activities are ongoing in the area.</p> <p>The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis during the works, particularly before/following trafficking by heavy vehicular loads.</p>			
MX26	Peat and Placement Areas	CEMP Section 2	<p>Movement monitoring instrumentation will be placed around the areas where peat has been placed. The locations where monitoring is required will be identified by the Project Geotechnical Engineer on site.</p> <p>Supervision by the Project Geotechnical Engineer will be carried out for the works.</p>	As required		Project Geotechnical Engineer
Operational Phase						
MX27	Surface Water Quality	SWMP Section 4	<p>Surface water sampling for laboratory analysis for the range of parameters adopted during pre-commencement and construction phases will continue quarterly after construction is complete. The project hydrologist will monitor and advise on the readings received from the testing laboratory and monitoring will only cease once the hydrologist is satisfied that the chemical and biological monitoring results show that there is no adverse impact on the quality of surface water within the natural watercourses draining the site.</p>	Quarterly	Quarterly	Project Hydrologist
MX28	Surface Water Monitoring	EIAR Section 9	<p>Surface water samples will also be collected to monitor for effects and any shifts in baseline conditions. The following sampling locations are proposed:</p> <ul style="list-style-type: none"> ➤ On the Altderg River (by the existing single-span bridge) just downstream from Glenora Forest. ➤ On the Keerglen River at a location immediately downstream from the forest, at the first accessible sampling point near an existing farm to the east of the forest. <p>The samples will be collected on a monthly schedule during construction and decommissioning, and on a quarterly schedule during the first three years of the operational phase. Periodic review will determine the need for, or recommended amendments to, the monitoring programme in line with principles of adaptive monitoring (guided by the data review and findings).</p> <p>The monthly samples will be analysed for general physico-chemical parameters, nutrients, dissolved organic carbon, true colour, and suspended solids. The quarterly samples will cover the same, but dissolved metals will be added to the list every six months. Adaptive monitoring will be practiced, whereby analytes and frequency of monitoring may change based on periodic review of results. All sampling events will be accompanied by field measurements of water temperature, pH, SEC, alkalinity and turbidity.</p>	Monthly/Quarterly	Monthly/Quarterly	ECoW/Project Hydrologist
MX29	Ornithology	EIAR Section 7	<p>Post-construction bird monitoring is required:</p> <ul style="list-style-type: none"> ➤ To record usage of the site and adjoining areas by birds and their interaction with the operating turbines; ➤ To monitor short-term and long-term effects on bird populations which had been identified in the baseline surveys as of conservation importance. <p>The monitoring programme will comprise the following:</p> <ul style="list-style-type: none"> ➤ Flight activity surveys ➤ Distribution and abundance surveys within site ➤ Distribution and abundance surveys on bog ➤ Collision searches <p>Searcher efficiency and predation tests will be carried out at the commencement of the programme in order to calibrate the results to account for the search dog's ability to find bird corpses and to also account for scavenging of corpses by animals.</p>	Years 1, 2, 3, 5	Monthly	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			The collision searches will be carried out on a monthly basis in Years 1, 2, 3, & 5 of the operational phase of the wind farm.			
MX30	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 will be utilised to assess any potential changes in bat activity patterns and to monitor the implementation of the mitigation strategy. At the end of Year 1, and if a curtailment requirement is identified (i.e. significant bat fatalities encountered), a curtailment programme, in line with relevant guidelines, will be devised around key activity 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 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 will 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 needs to be refined such that turbine down-time is minimised whilst ensuring that it remains effective at preventing casualties.</p>	Years 1, 2, 3	Annually	Project Ecologist
MX31	Flora and Fauna	EIAR Section 6 BMEP Section 3	<p>The Proposed Development has the potential to result in enhancement of the surrounding areas through habitat rehabilitation management (as described in the Biodiversity Management and Enhancement Plan (BMEP)) 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 Management and Enhancement Plan in Appendix 6-4 of the EIAR. Monitoring of the enhancement area includes:</p> <ul style="list-style-type: none"> > Vegetation Monitoring > Hydrological Monitoring <p>Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the plan will be prepared in years 1, 3, 5, 10, 15, 20, 25, 30 and 35 following commencement of the plan's implementation.</p>	As required	Years 1, 3, 5, 10, 15, 20, 25, 30 and 35 following commencement of the plan's implementation.	Project Ecologist
Decommissioning Phase						
MX32	Decommissioning	DP Section 3	<p>In general, the ECoW will maintain responsibility for monitoring the decommissioning works and Contractors/Sub-contractors from an environmental perspective. The ECoW will act as the regulatory interface on environmental matters. The Site Manager will be responsible for reporting to and liaising with the local authority and other statutory bodies as required.</p> <p>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 (e.g. geotechnical engineer, hydrologist etc.) as required throughout the decommissioning works.</p>	As required	As required	ECoW/Site Manager
MX33	Decommissioning	DP Section 3	Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the material proposed for turbine 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.	As required	As required	Project Ecologist



APPENDIX 1

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