Planning and Environmental Consultants

Environmental Impact Assessment Report (EIAR)

Proposed Cahermurphy West Wind Farm

Chapter 18 – Schedule of Mitigation and Monitoring Measures

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Table of Contents

TABLE OF TABLES

18. SCHEDULE OF MITIGATION & MONITORING PROPOSALS

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

All mitigation which will be implemented during the various phases of the Proposed Project are presented in Table 18-1 below. The mitigation measures have been grouped together according to their EIAR Chapter and Proposed Project phase and are presented under the following headings:

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

The mitigation proposals in the below format provides an easy to audit list that can be reviewed and reported on during each phase of the Proposed Project. The proposals for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as Appendix 4-5 of this EIAR. The tabular format in which the below information is presented, can be further expanded upon during each Proposed Project phase 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 Proposed Project are outlined in Table 18-2. All monitoring measures were set out in the relevant chapters of this EIAR. The monitoring proposals are presented in terms of the monitoring requirement, frequency of monitoring and the mechanism for reporting results where applicable. By presenting the monitoring proposals in the below format, it is intended to provide a monitoring schedule that can be reviewed and tracked during all phases of the Proposed 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 mitigation and monitoring measures, planning 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 prior to the commencement of development.

18.1 EIAR Mitigation Measures

Table 18-1 Schedule of Mitigation

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Ch. 4: Description of the Proposed Project – Description of the Proposed Project					
Pre-Construction Phase					
MM1	Environmental Management	Ch. 4: Description of the Proposed Project	› All proposed activities on the site of the Proposed Project will be provided for in an environmental management plan.. › The CEMP includes details sets out details of the environmental controls to be implemented on site, site drainage measures, peat stability monitoring measures and a waste management plan. The CEMP also outlines the Emergency Response Procedure to be adopted in the event of an emergency in terms of site health and safety and environmental protection. In the event planning permission is granted for the Proposed Project, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for written approval		
MM2	Cement Based Deliveries	Ch. 4: Description of the Proposed Project Appendix 4-7: Surface Water Management Plan	› 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM3	Pre-Construction Drainage	Appendix 4-7: Surface Water Management Plan CEMP Section 3	› There are four main first order streams which emerge from the southern section of the Proposed Wind Farm and flow towards the Creegh River. Stream S1, which is an EPA mapped watercourse, flows through the main central catchment area of the Proposed Wind Farm. Two smaller streams (S2 and S3) rise from the southern section of the Site and merge at the southwestern boundary prior to flowing towards the Creegh River. Stream S4 flows in a southerly direction towards the Creegh River. Stream S5 emerges from a forested area between turbine locations T1 and T2. 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 before the main construction works commence. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off › The routes of any natural drainage features will not be altered as part of the Proposed Project. Turbine locations have been selected to avoid natural watercourses. 1 no. new watercourse crossing and 1 no. upgrade to an existing crossing are proposed within the Proposed Wind Farm site. Culvert upgrades at forestry drain crossings are also proposed. All watercourse crossings and culvert locations can be viewed in Drawings D101-D103. › 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. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Project and are indicated on the drainage design drawings. › Within the Proposed Wind Farm, there are numerous manmade drains that are in place predominately to drain the forestry plantations. The current internal forestry drainage		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			pattern is influenced by the topography, peat subsoils, layout of the forest plantation and by the existing road network. The forest plantations are generally drained by a network of mound drains or plough ribbons which typically run perpendicular to the topographic contours of the site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation. › Existing artificial drains in the vicinity of existing site roads will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain. › Along the Proposed Grid Connection cable route there are 24 no. watercourse crossings, which includes natural stream/rivers and drains. All 24 no. crossings are existing culverts and bridges where works are required to accommodate the underground Proposed Grid Connection cable. No in-stream works are proposed at any of the Proposed Grid Connection cable crossing locations.		
MM4	Watercourse Inspection	Ch. 4: Description of the Proposed Project CEMP Section 2	› Confirmatory inspections of the proposed new no. 1 watercourse crossing and 1 no. existing watercourse crossing upgrade locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.		
MM5	Drainage Maintenance	Ch. 9: Water Appendix 4-7: Surface Water Management Plan	› 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.		
MM6	Earthworks	Appendix 4-7: Surface Water Management Plan	› Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on		

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		CEMP Section 3	surface waters by suspended sediment released during construction and entrained in surface run-off.		
MM7	Forestry Felling Drainage Measures	Ch. 4: Description of the Proposed Project Ch. 9: Water CEMP Section 3	› Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) will be appointed to oversee the felling and extraction works. The ECoW will have the following functions: › 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 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. › 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 shall be collected upstream and downstream of the keyhole felling site at suitable sampling locations. › Sampling shall be taken from the stream / river bank, with no in-stream access permitted. › The following minimum analytical suite shall be used: pH, Electrical Conductivity, 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 contingency 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Prepare and maintain a Water Protection Measure Register. This document is to be updated weekly by the ECoW. › All relevant measures set out in the most recent versions of the Forestry & Freshwater Pearl Mussel Requirements, Forestry & Water Quality Guidelines, Forest Harvesting & the Environment Guidelines and the Forest Protection Guidelines will apply. In particular, to protect watercourses, the following measures will be adhered to during all /tree felling activities. › Works will be overseen by an ECoW as described above. › The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing. › All roads and culverts will be inspected prior to any machinery being brought on site to commence the felling operation. No tracking of vehicles through watercourses will occur. Vehicles will only use existing road infrastructure and established watercourse crossings. › Existing drains that drain an area to be felled towards surface watercourses will be blocked, and temporary silt traps will be constructed to ensure collection of all silt within felling areas. These temporary silt traps will be cleaned out and backfilled once felling works are complete. This ensures there is no residual collected silt remaining in blocked drains after felling works are completed. No direct discharge of such drains to watercourses will occur from within felling areas. › New collector drains and sediment traps will be installed during ground preparation to intercept water upgradient of felling areas and divert it away. Collector drains will be excavated at an acute angle to the contour (0.3%-3% gradient), to minimise flow velocities. › All silt traps will be sited outside of buffer zones and have no direct outflow into the aquatic zone. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of away from all aquatic zones. › Where felling is required inside the buffers, silt fences will be installed around existing watercourses. Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading. › All new collector drains will taper out before entering the aquatic buffer zone to ensure the discharging water gently fans out over the buffer zone before entering the aquatic zone.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Machine combinations, such as mechanical harvesters or chainsaw felling, will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance; › Mechanised operations will be suspended during and immediately after heavy rainfall. › Where brash is required to form brash mats, it will be laid out at harvesting stage to prevent soil disturbance by machine movement. › Brash which has not been pushed into the soil will be moved within the site to facilitate the creation of mats in more demanding locations. › Felling of trees will be pointed directionally away from watercourses. › Felling will be planned to minimise the number of machine passes in any one area. › Extraction routes, and hence brash mats, will be aligned parallel to the ground contours where possible. › Harvested timber will be stacked in dry areas, and outside any 50-metre watercourse buffer zone. Straw bales and check dams will be emplaced on the down gradient side of timber storage sites. › Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but removing of natural debris deflectors will be avoided.		
MM8	Felling License	Ch. 4: Description of the Proposed Project CEMP Section 2	› The tree felling activities required as part of the Proposed Project will be the subject of a Felling Licence application to the Forest Service, in accordance with the Forestry Act 2014, the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments. The policy requires that a copy of the planning permission for the wind farm be submitted with the felling licence applications; therefore, the felling licenses cannot be applied for until such time as planning permission is obtained for the Proposed Project.		
MM9	Traffic Management	Ch. 4: Description of the Proposed Project, 15	› In the event planning permission is granted for the Proposed Project, the Traffic Management Plan will address the requirements of any relevant planning conditions, including any additional mitigation measures, should they be conditioned.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 3	Traffic management measures included the following: › Identification of a delivery schedule, › Details of the alterations required to the infrastructure and any other minor alteration identified, › A dry run of the route using vehicles with similar dimensions. › The deliveries of turbine components to the site will be made in convoys of five vehicles at a time, and at night when roads are quietest. › Convoys will be accompanied by escorts at the front and rear operating a "stop and go" system. Although the turbine delivery vehicles are large, they will not prevent other road users or emergency vehicles passing, should the need arise. › The delivery escort vehicles will ensure the turbine transport is carried out in a safe and efficient manner with minimal delay or inconvenience for other road users. › It is not anticipated that any section of the public road network will be closed during transport of turbines, although there will be some delays to local traffic at pinch points. During these periods it may be necessary to operate local diversions for through traffic. All deliveries comprising abnormally large loads where required will be made outside the normal peak traffic periods, at night, to avoid disruption to work and school-related traffic. › 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 Limerick and Clare County Councils. › All turbine deliveries will be provided for in the Transport Management Plan which will be finalised in advance of the construction stage, when the exact transport arrangements are known, delivery dates confirmed and escort proposals in place. The finalised 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		

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			for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls.		
MM10	Peat & Spoil Management	Appendix 4-3: Peat and Spoil Management Plan	› An interceptor drain will also be installed upslope of the borrow pit. This drain will divert any surface water away from the borrow pit and hence prevent water from ponding and lodging during construction and also when reinstated. › Settlement ponds will be constructed at the lower side/outfall location of the borrow pits and are shown on the drainage drawings. › The acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the peat and spoil within the borrow pits. 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.		
MM11	Proposed Grid Connection underground cabling works	Ch. 4: Description of the Proposed Project CEMP Section 2	The Grid Connection route utilises public local road networks (24,068m), Wind Farm Site Roads (160m), and private lands (787m). The following methodology will be followed during the trenching works: › The acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the peat and spoil within the borrow pits. › The Contractor, and their appointed Site Manager, will prepare a targeted Method Statement concisely outlining the construction methodology and incorporating all mitigation and control measures included within the planning application and accompanying reports and as required by planning conditions where relevant; › All existing underground services shall be identified on site prior to the commencement of construction works; › At watercourse crossings, the contractor will be required to adhere to the environmental control measures detailed in the CEMP.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Where the cable route intersects with culverts, the culvert will remain in place (where possible) and the ducting will be installed either above or below the culvert to provide minimum separation distances in accordance with ESB and Uisce Éireann specifications ;		
MM12	Waste Management	Ch. 4: Description of the Proposed Project CEMP Section 3.2	› 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		
Construction Phase					
MM13	Refuelling	Ch. 4: Description of the Proposed Project Ch.9: Water CEMP Section 3 Appendix 4-7: Surface Water Management Plan	› Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. On-site refuelling of machinery will be carried out at designated refuelling areas at the temporary construction compounds. › Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the site as required on a scheduled and organised basis. › 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 used during refuelling operations as required. All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage. The following mitigation measures are proposed to avoid release of hydrocarbons at the site: › On site re-fuelling of machinery will be carried out using a fuel truck at a dedicated refuelling area located at the temporary construction compounds. The fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages; › Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› On-site refuelling will be carried out by trained personnel only; › A permit to fuel system will be put in place; › Fuels stored on site will be minimised. Fuel storage areas if required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor; › The plant used during construction will be regularly inspected for leaks and fitness for purpose; and, › An emergency plan for the construction phase to deal with accidental spillages will be included within the Construction and Environmental Management Plan. Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area. › Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Fuel truck, drip kits, qualified personnel will be used where refuelling is required; › A permit to refuel system will be adopted;		
MM14	Cement Based Products Deliveries and Management	Ch. 4: Description of the Proposed Project	› Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in sealed concrete delivery trucks. › The closest concrete batching plant to the Proposed Project is located in the townland of Ballybrody, Co. Clare located approximately 25.2km to the northeast of the Site. › The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. › When concrete is delivered to site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the site. › Chute cleaning water will be isolated in temporary lined wash-out pits located near the Proposed Wind Farm site entrance. These temporary lined wash-out pits will be removed from the Proposed Wind Farm site at the end of the construction phase. Concrete trucks will be washed out fully at the batching plant, where facilities are already in place. The risks of pollution arising from concrete deliveries will be further reduced by the following:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› When concrete is delivered to site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the site. › Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout. › Site roads will be constructed to a high standard to allow transport of the turbine components around the site, and hence, concrete delivery trucks will be able to access all areas where the concrete will be needed. No concrete will 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 to the location where it is needed. › The 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.		
MM15	Concrete Pouring	Ch. 4: Description of the Proposed Project Appendix 4-7: Surface Water Management Plan	› Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast. › Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete. › Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets. › Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain. › The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a		

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			Siltbuster-type concrete wash unit (https://www.siltbuster.co.uk/sb_prod/siltbuster-roadside-concrete-washout-rcw/) or equivalent › Disposing of surplus concrete after completion of a pour in suitable off-site locations away from any watercourse or sensitive habitats.		
MM16	Road Cleanliness	Ch. 4: Description of the Proposed Project CEMP Section 3	› It is not anticipated that vehicle or wheel washing will be required as part of the construction phase of the Proposed Project because site roads will be already formed using on-site materials before other road-going trucks begin to make regular or frequent deliveries to the site (e.g. with steel or concrete). A road sweeper will be available if any section of the public roads were to be dirtied by trucks associated with the Proposed Project.		
MM17	Existing Drainage Features	Ch. 4: Description of the Proposed Project Appendix 4-7: Surface Water Management Plan CEMP Section 3	› There will be no direct discharges to any natural watercourses, with all drainage waters being dispersed as overland flows. All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses. The distance will vary between 5-20m depending on local slope, the nature of local soil deposits and also the type of vegetation present. Buffer zones around the existing natural drainage features have been used to inform the layout of the Proposed Project. › Minimum buffer zones of 50m around the existing natural drainage features have informed the layout of the Proposed Wind Farm. › Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. › Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. › Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place. Existing artificial drains in the vicinity of existing site roads will be maintained in their present location where possible.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. › If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.		
MM18	Surface Water Drainage Measures	Appendix 4-7: Surface Water Management Plan	**Interceptor Drains** › 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. **Drainage Swales** › Drainage swales (or collector drains) are shallow drains that will be used to intercept and collect run off from construction areas of the site during the construction phase. › Drainage swales will remain in place to collect runoff from roads and hardstanding areas of the Proposed Project during the operational phase and channel it to infiltration area for sediment settling. › 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. › The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel, will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive. Check dams		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			will also be installed in some existing artificial drainage channels that will receive waters from works areas of the Site. **Level Spreaders** › 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 will not contribute further to water ingress to construction areas of the site. › The water carried in interceptor drains will not have come in contact with works areas of the site and therefore should be free of silt and sediment. The level spreaders will distribute clean drainage water onto vegetated areas where the water will not be reconcentrated into a flow channel immediately below the point of discharge. The discharge point will be on level or only very gently sloping ground rather than on a steep slope so as to prevent erosion. › Clean four-inch stone can be placed on the outside of the spreader lip and pressed into the ground mechanically to further dissipate the flow leaving the level spreader over a larger area. **Vegetation Filters** › 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Stilling and Settlement Ponds › Stilling or settlement ponds will be used to attenuate runoff from works areas of the site of the Proposed Project during the construction phase and will remain in place to handle runoff from roads and hardstanding areas of the Proposed Project during the operational phase › The embankment that forms the sloped sides of the stilling ponds will be stabilised with vegetated turves, which will have been removed during the excavation of the stilling ponds area. › Stilling ponds will be located towards the end of swales, close to where the water will be reconverted to diffuse sheet flow. Upon exiting the stilling pond system, water will be immediately reconverted to diffuse flow via a fan-shaped rock apron if there is adequate space and ground conditions allow. **Siltbusters** › 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. **Dewatering Silt bags** › 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 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Culverts › All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse. › Some culverts will be installed to manage drainage waters from works areas of the Proposed Project, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. 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. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling doesn't occur above or below the culvert and water can continue to flow as necessary. **Silt Fences** › 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 Wind Farm. These areas include around existing culverts, around the headwaters of watercourses. › Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading. The silt fence designs follow the technical guidance document 'Control of Water Pollution from Linear Construction		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Projects' published by CIRIA (Ciria, No. C648, 1996). Up to three silt fences may be deployed in series. **Sediment Entrapment Mats** › 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 **Check Dams** › The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel, will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive. Check dams will also be installed in some existing artificial drainage channels that will receive waters from works areas of the Site. › Check dams will restrict flow velocity, minimise channel erosion and promote sedimentation behind the dam. The check dams will be installed as the interceptor drains are being excavated. › Check dams will be used along sections of access road drains to attenuate flows and intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock. › Check dams will be used along sections of access road drains to intercept silts at source › Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be left in place at the end of the construction phase to limit erosive linear flow in the drainage swales during extreme rainfall events.		
MM19	Wastewater Management	Ch. 4: Description of the Proposed Project	› Temporary port-a-loo toilets located within a staff portacabin 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 permitted waste collector to wastewater		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			treatment plants. The nearest licenced primary wastewater treatment plant is located in Kilmihil, approximately 5.6km South of the Proposed Project. › There will also be a water supply onsite for hygiene purposes, by way of a temporary storage tank. The construction compound will also include a bunded refuelling and containment area for the storage of oil, lubricants and site generators etc, and full retention oil interceptor.		
MM20	Clear-Span Watercourse Crossing	Ch. 4: Description of the Proposed Project, Ch. 9: Water CEMP Section 2	It is proposed to construct a new clear-span watercourse crossing at one location within the Site and upgrade one existing crossing. The clear-span watercourse crossing methodology presented below will ensure that no instream works are necessary. The standard construction methodology for the installation of a clear-span watercourse crossing is as follows: › The access road on the approach either side of the watercourse will be completed to a formation level which is suitable for the passing of plant and equipment required for the installation of each watercourse crossing. › All drainage measures along the proposed road will be installed in advance of the works. › A foundation base will be excavated to rock or competent ground with a mechanical excavator with the foundation formed in-situ using a semi-dry concrete lean mix. The base will be excavated along the stream bank with no instream works required. › Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge across the watercourse to provide temporary access for the excavator. Plant and equipment will not be permitted to track across the watercourse. › Once the foundation base has been completed, the pre-cast concrete box culvert will be installed using a crane which will be set up on the bank of the watercourse and will be lifted into place from the bank with no contact with the watercourse. › Where the box culvert is installed in sections, the joints will be sealed to prevent granular material entering the watercourse, › Once the crossing is in position stone backfill will be placed and compacted against the structure up to the required level above the foundations.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Underground cabling ducting will be contained within the road make-up of the proposed 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 an acceptable backfill material. Confirmatory inspections of the proposed new watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.		
MM21	Proposed Grid Connection – existing underground services, marker posts, joint bays and major watercourse crossings	Ch. 4: Description of the Proposed Project	**Existing Underground Services** › Any underground services encountered along the grid cable routes will be surveyed for level and the ducting will pass over the service provided adequate cover is available. › A minimum clearance of 300 mm will be required between the bottom of the ducts and the service in question. If the clearance cannot be achieved the ducting will pass under the service and again 300 mm clearance between the top of the communications duct and bottom of the service will be achieved. › In deeper excavations an additional layer of marker tape will be installed between the communications duct and top level yellow marker tape. If the required separation distances cannot be achieved then a number of alternative options are available such as using steel plates laid across the width of the trench and using 35N concrete surrounding the ESB ducts where adjacent services are within 600mm, with marker tape on the side of the trench. Back fill around any utility services will be with dead sand/pea shingle. **Marker Posts**		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› In deeper excavations an additional layer of marker tape will be installed between the communications duct and top level yellow marker tape. If the required separation › Surface cable markers will be placed along the route where cable depth is unavoidably shallow, due to constraints such as existing services, to indicate the precise location of the UGC. These markers will be metallic plates in accordance with ESBN and EirGrid standards. › Marker posts will be used on non-roadway routes to delineate the cable route and joint bay positions. Corrosion proof aluminium triangular danger sign, with 700mm base, and with centred lightning symbol, on engineering grade fluorescent yellow background shall be installed in adequately sized concrete foundations. Marker post shall also be placed in the event that burial depth is not to standard. Siting of marker posts to be dictated by ESBN as part of the detailed design process. **Joint Bays** › Joints Bays are to be installed approximately every 650m - 850m along the UGC route to facilitate the jointing of 2 No. lengths of 110kV UGC. Joint Bays are 6m x 2.5m x 2.05m pre-cast concrete structures installed below finished ground level. Joint Bays will be located in the non-wheel bearing strip of roadways, however given the narrow profile of local roads this may not always be possible. Please refer to Appendices 4-2 and 4-4 for further details on joint bay construction and cable installation. › Where possible, joint bays will be located in areas where there is a natural widening/wide grass margin on the road in order to accommodate easier construction, cable installation and create less traffic congestion. During construction the joint bay locations will be completely fenced off, and once they have been constructed, they will be backfilled until cables are being installed. › In association with joint bays, Communication Chambers will be installed at every joint slab location to facilitate communication links. Earth Sheath Link Chambers are also be installed at every joint bay along the cable route. Earth Sheath Links are used for earthing and bonding cable sheaths of underground power cables, so that the circulating currents		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			and induced voltages are eliminated or reduced. Earth Sheath Link Chambers and Communication Chambers are located in close proximity to joint bays. Earth Sheath Link Chambers and Communication Chambers will be pre-cast concrete structures with an access cover at finished surface level. **Major Watercourse Crossings** The cable route will involve 6 No. bridge crossings, of which 5 no. will be horizontal directional drilling (HDD) crossings and will not interact with the existing bridge structure. As there is insufficient cover and depth in the bridge to cross with the bridge deck at these 5 locations, HDD will be required. Drawings of the bridge crossings and further details on culvert crossing methodology are included in Appendices 4-2 and 4-4 of this EIAR. The underground cable will encounter 18 no. water culverts along the route, of which 2 no. Culverts are proposed to be replaced with an adequately sized HDPE Twin Wall pipe. Existing culverts will be crossed using open trenching with either an undercrossing or overcrossing. A confirmatory site survey of all culverts has been completed as part of **this** phase of the project prior to planning to confirm the crossing methods. › Inland Fisheries Ireland have published guidelines relating to construction works along water bodies entitled "Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites (Eastern Regional Fisheries Board, 2004)", and these guidelines will be adhered to during the construction of the Proposed Project.		
MM22	Turbine Bases, Hardstanding and Infrastructure Foundations	Ch. 4: Description of the Proposed Project Appendix 4-3: Peat and Spoil Management Plan	› All excavations within peat will be adequately supported or peat slopes are to be battered to a safe slope inclination typically of 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then side slopes will be supported with granular fill.. › Excavations will be kept reasonably free from water at all times. Water will be prevented from being impounded within excavations by either using drainage channels cut into the excavation face or by pumping. Where water is channelled or pumped from an		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 2	excavation then this water is to be fed into an established watercourse or drainage ditch following suitable treatment.		
MM23	Peat and Spoil Management	Ch. 4: Description of the Proposed Project Appendix 4-3: Peat and Spoil Management Plan	All excavated peat and spoil will be permanently stored in the two no. borrow pits or in one of the designated peat and spoil management areas around six turbine locations: › Peat and overburden will be removed and temporarily stored in localised areas adjacent to the borrow pit locations before being placed into the permanent peat storage areas within the borrow pits. The rock within the proposed borrow pit footprints will be removed by excavation and breaking based on the rock excavatability, which was determined from the ground investigation carried out at the proposed borrow pits. › It is proposed to construct the borrow pits so that the base of the borrow pits are below the level of the adjacent section of access road. › Slopes within the excavated rock formed around the perimeter of the borrow pits will be formed at stable inclinations to suit local in-situ rock conditions. Exposed sections of the rock slopes will be left with irregular faces and declivities to promote re-vegetation and provide a naturalistic appearance. › The stability of the rock faces within the borrow pits will be inspected by the Project Geotechnical Engineer upon excavation to ensure stability during construction works and in the long term. This inspection will allow unfavourable rock conditions to be identified and suitable mitigation measures to be applied such as removal of loose rock. › It will be necessary to construct rock buttresses founded on in-situ rock within the borrow pits to create individual cells (up to 4 no. depending on the borrow pit). The cells will be opened in sequence and filled as needed. The rock buttresses will be constructed of rock fill from the borrow pit excavated, placed and compacted in layers. The founding stratum for each rock buttress will be inspected and approved by the Project Geotechnical Engineer. › The rock buttresses will be constructed in stages to allow infilling of peat and spoil within cells. The buttress will be constructed of selected rock fill and placed and compacted in suitable layers to form a buttress of sufficient stability to retain the placed peat and spoil.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/rock buttress, allowing the borrow pit to be developed and infilled in cells. › Peat will be placed in two cells on the upslope side of the borrow pit with overburden spoil in the other two cells. The contractor excavating the rock will be required to develop the borrow pits in a way which will allow the excavated peat and spoil to be reinstated safely. › A number of rock buttresses to form cells within the borrow pits will be required to ensure access for trucks and excavators can be achieved. See Drawings P23-230-0600-0008 to 0009 for the location of the rock buttresses. The locations of the rock buttresses shown on Drawings P23-230-0600-0008 to 0009 for the borrow pits are indicative only and may change subject to local conditions encountered on site during construction. › The rock buttresses will be wide enough (up to 4m) to allow construction traffic access for tipping and grading during the placement of the excavated peat and spoil. The permanent side slopes of the rock buttresses will be constructed at between 40 to 60 degrees. › The internal rock buttresses will be founded on bedrock i.e., competent strata. The founding stratum for the rock buttress will be inspected and approved by the Project Geotechnical Engineer. › In order to prevent water retention occurring behind the buttresses, the buttress will be constructed of coarse boulder fill with a high permeability. The buttress will be constructed of well graded granular rock fill of 100mm up to 500mm in size. In addition, drains will be placed through the buttresses close to the ground surface to allow surface water to drain from the surface of the placed peat. › The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required. › The surface of the placed peat and spoil will be shaped following backfill using excavators to allow efficient run-off of surface water from the placed arisings towards the perimeter of the borrow pit. › The surface of the placed spoil will have a maximum grade of 5o › The surface of the spoil will also be higher than the surface of the peat in the adjacent upslope cell.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› As the internal berms are slightly higher than the retained peat, drains will be provided at regular intervals through the berms, at the same level as the top of the peat surface, to prevent ponding of › water within the repositories. These drains will be 150mm diameter flexible plastic drainage pipe or equivalent. › A layer of geogrid to strengthen the surface of the placed peat within the borrow pits will be required. › An interceptor drain will also be installed upslope of the borrow pit. This drain will divert any surface water away from the borrow pit and hence prevent water from ponding and lodging during construction and also when reinstated. › Temporary control of groundwater within the borrow pits will be required. A temporary pump and suitable outfall locations will be required during construction. › Settlement ponds will be constructed at the lower side/outfall location of the borrow pits and are shown on the drainage drawings. › The acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the peat and spoil within the borrow pits. › Supervision by the Project Geotechnical Engineer will be carried out for the development of the borrow pits. › All the above-mentioned general guidelines and requirements will be implemented by the Contractor during construction.		
MM24	Temporary Construction Compound	Ch. 4: Description of the Proposed Project CEMP Section 2	The construction compounds will consist of temporary site offices, staff facilities and car-parking areas for staff and visitors. Construction materials and turbine components will be brought directly to the proposed turbine locations following their delivery to the site. The 2 no. temporary construction compounds will be constructed as follows: › The area to be used for each compound will be marked out at the corners using ranging rods or timber posts. Drainage runs and associated settlement ponds will be installed around the perimeter;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The compound platform will be established using a similar technique as the construction of the substation platform; › A layer of geo-grid will be installed where deemed necessary by the designer and compacted layers of well graded granular material will be spread and lightly compacted to provide a hard area for Site offices and storage containers; › A limited amount of fuel will have to be stored on the Proposed Project site and for the Grid Connection in appropriately bunded containers and a bunded area for oil storage will be constructed within the compound. › Areas within the compound will be constructed as site roads and used as vehicle hardstanding during deliveries and for parking; › A bunded containment area will be provided within the compound for the storage of lubricants, oils and site generators etc; › A waste storage area will be provided within the compounds; › The compounds will be fenced and secured with locked gates if necessary; and, › Upon completion of the Proposed Project the temporary construction compounds will be decommissioned, granular material will be removed and the area will be allowed to vegetate naturally.		
Operational Phase					
MM25	Wastewater Management	Ch. 4: Description of the Proposed Project	› The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. › The wastewater storage tank alarm will be part of a continuous stream of data from the site's turbines, wind measurement devices and electrical substation that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007(as amended), will be employed to transport wastewater away from the site.		
MM26	Electrical Substation	Ch. 4: Description of the Proposed Project	› The area of the onsite substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and will be either temporarily stockpiled locally at the substation location, or transported immediately on excavation to one of the 2 no. borrow pits		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 2	› Perimeter fencing will be erected › The construction and components of the substation have been designed to EirGrid specifications. › The electrical 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;		
Decommissioning Phase					
MM27	Decommissioning	Ch. 4: Description of the Proposed Project Appendix 4-6: Decommissioning Plan	› Prior to the end of the operational period the Decommissioning Plan will be updated in line with decommissioning methodologies that exist at the time and will agree with the competent authority at that time.		
MM28	Decommissioning	Ch. 4: Description of the Proposed Project Appendix 4-6: Decommissioning Plan	› The wind turbines proposed as part of the Proposed Project are expected to have a lifespan of 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Proposed Project will be decommissioned fully. The onsite 110kV electrical substation and 110kV electrical cabling will remain in place as it will be under the ownership of the ESB and will form a permanent part of the national electricity grid. › Upon decommissioning of the Proposed Project, the wind turbines will be disassembled in reverse order to how they were erected. All above ground turbine components will be separated and removed off-site for recycling. › Turbine hardstands and foundations will remain in place underground and will be left to revegetate naturally. Leaving the turbine hardstands and foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			from the ground could result in significant environment nuisances such as noise, dust and/or vibration. › Site roadways will be left in situ, as appropriate to facilitate on-going forestry operations. Underground cables, including grid connection, will be removed and the ducting left in place. › A decommissioning plan will be agreed with the local authorities three months prior to decommissioning the Proposed Project.		
MM29	Surface Water Drainage Measures	Appendix 4-7: Surface Water Management Plan	**Interceptor Drains** › On completion of the construction phase works, it is envisaged that the majority of the interceptor drains could be removed. At that stage, there will be no open excavations or large areas of exposed ground that are likely to give rise to large volumes of potentially silt-laden run off. › Any areas in which works were carried out to construct roads, turbine bases or hardstands, will have been built up with large grade hardcore, which even when compacted in place, will retain sufficient void space to allow water to infiltrate the subsurface of these constructed areas. › It is not anticipated that roadways or other installed site infrastructure will intercept ground-conveyed surface water runoff to any significant extent that would result in scouring or over-topping or spill over. › Where the drains are to be removed, they will be backfilled with the material from the diversion dike. Interceptor drains will be retained in certain locations, for example where roadways are to be installed on slopes, to prevent the roadways acting of conduits for water that might infiltrate the roadway sub-base. In these cases, interceptor drains will be maintained in localised areas along the roadway with culverts under the roadway, which will allow the intercepted water to be discharged to vegetation filters downgradient of the roadway. › Similarly, in localised hollows where water is likely to be funnelled at greater concentrations than on broader slopes, interceptor drains, and culverts may be left in situ following construction.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Ch. 5: Population and Human Health: Population and Human Health					
Pre-construction Phase					
MM30	Human Health	Ch. 5: Population and Human Health	At the outset of the Proposed Project, during the constraints mapping process detailed in Ch. 3: Site Selection & Reasonable Alternatives of this EIAR, all sensitive receptors within c. 1.63km of the area suitable for siting wind turbines within the EIAR Site Boundary were identified and mapped. › This included all occupied and unoccupied dwellings, businesses, stud farms and schools. In addition, a planning history search to identify properties that may have been granted planning permission, but not yet been constructed, was carried out. Any property with a valid planning permission for a dwelling house was also added to the sensitive receptors' dataset. All inhabitable dwellings (existing, proposed and permitted) and other sensitive receptors (inclusive of schools, businesses and stud farms) within 1.63km of the proposed turbines have been considered as part of the following shadow flicker assessment. There are 108 no. sensitive receptors located within 1.63km of proposed turbine locations.		
MM31	Property Values	Ch. 5: Population and Human Health	The Proposed Wind Farm has been designed in accordance with the parameters set out in the Guidelines and with cognisance of the draft Guidelines, adhering to the required setback distances from sensitive receptors set out in those documents.		
MM32	Traffic and Transport	Ch. 5: Population and Human Health Ch. 15 Material Assets	› A pre-condition survey of roads associated with the Proposed Project will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority. › A competent Traffic Management Coordinator will be appointed for the duration of the construction of the Proposed Project and this person will be the main point of contact for all matters relating to traffic management.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the Contract Project Coordinator, 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. › Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse, and An Garda Siochana, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required.		
Construction Phase					
MM33	Human Health	Ch. 5: Population and Human Health CEMP Section 5	The Proposed Project will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including: › 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. 291/2013 - Safety, Health and Welfare at Work (Construction) Regulations 2013 and › Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). The following measures will be taken: › A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage. › 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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 is required to 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. › The suitability of machinery and equipment for use near power lines will be risk assessed. › All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with underground cables. All contractors that may visit the Site are made aware of the location of lines before they come on to Site. › When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, 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 prior to any works. › Information on safe clearances will be provided to all staff and visitors. › Signage indicating locations and health and safety measures regarding electrical cables 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) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan. › The suitability of machinery and equipment for use near power lines will be risk assessed. › All staff will be trained on operating voltages of electricity cables running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site are made aware of the location of lines before they come on to Site. › When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, a site-specific risk assessment will be undertaken prior to any		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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 prior to any works. › Information on safe clearances will be provided to all staff and visitors. › Signage indicating locations and health and safety measures regarding electrical cables 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) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan. › The suitability of machinery and equipment for use near power lines will be risk assessed. › All staff will be trained on operating voltages of electricity cables running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site are made aware of the location of lines before they come on to Site. › When activities must be carried out beneath overhead lines, e.g., component delivery, 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 prior to any works. › Overhead line proximity detection equipment will be fitted to machinery when such works are required. 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 2013*'. The PSDP appointed for the construction stage shall 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):		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› When activities must be carried out beneath overhead lines, e.g., component delivery, 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 prior to any works. › Overhead line proximity detection equipment will be fitted to machinery when such works are required. › 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.		
Operational Phase					
MM34	Human Health	Ch. 5: Population and Human Health	› Prepare a safety file for the completed structure and give it to the client; and › Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. The doors will only be unlocked as required for entry by authorised personnel and will be locked again following their exit. › Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed, faded, 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 wind farm. These signs include: › Buried cable route markers at 50m (maximum) intervals and change of cable route direction;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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. › The proposed substation, which will be operated by Eirgrid/ESBN will be locked and fenced off from public access. The substation will be operational remotely and manually 24 hours per day, 7 days a week. Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link. › Periodic service and maintenance work which include some vehicle movement. › For operational and inspection purposes, substation access is required. › Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following: ○ Six-month service – three-week visit ○ Annual service – six-week visit ○ Weekly and daily visits as required. › An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the Site. Access for emergency services will be available at all times.		
MM35	Shadow Flicker	Ch. 5: Population and Human Health	<u>Wind Turbine Control Measures</u> The draft Guidelines limit of zero shadow flicker occurrences at any sensitive receptors will be adhered to and shadow flicker control units 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			turbines. All predicted incidents of shadow flicker will be pre-programmed into the wind farm's control software. The wind farm's SCADA control system can be programmed to shut down any particular turbine at any particular time on any given day to avoid any shadow flicker occurrences at properties which are not naturally screened nor can be screened in any other manner. In order to ensure that the model and SCADA system is accurate and working well a site visit will be carried out to verify the system. 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. 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 Project 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.*		
Ch. 6: Biodiversity					
Pre-construction					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM36	Invasive Species Management	Ch. 6: Biodiversity Appendix 6-4 CEMP Section 3	During field surveys, a search for Invasive Alien Species (IAS) listed under the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was conducted. **Rhododendron** One species - Rhododendron (*Rhododendron ponticum)* - was recorded as small immature stands within the Proposed Wind Farm site, with one infestation recorded within the footprint of T5. Within the HHELs, Rhododendron (*Rhododendron ponticum)* was recorded on multiple occasions as small immature stands as well as large bushes. This species is listed on the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and 'Third Schedule' of Regulations 49 & 50 of the Birds and Natural Habitats Regulations 2011. Prior to the commencement of any works, the following site setup procedures will be carried out: › A pre-commencement survey for Rhododendron will be undertaken by a suitably qualified ecologist to determine the locations and extent of the species within the Site and record any changes in the extent of the infestation since the 2025 surveys. › The locations and extent of Rhododendron within the Site will be clearly marked out using hazard tape to ensure they are not disturbed. A 10m buffer zone (Higgins, 2008) surrounding each stand will also be applied using temporary fencing, to avoid disturbance of potentially contaminated soils. Due to the relatively small extent of Rhododendron within the Site, it is proposed to treat the plant *in-situ*. The recommended option for *in-situ* treatment is to manually remove the upper parts of the plant and apply the Ecoplug method (www.landscapedepot.ie) as to avoid spray drift and to minimise the potential for spraying of non-target species. The Ecoplug method is outlined below:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Cut the tree/plant as close to the ground as possible. This should be carried out from October to early March, outside the bird nesting season. › The cut material can be stacked and stored on site, used as firewood or mulched as this plant material is deemed inert and can be used for landscaping as natural weed barriers or for other horticultural purposes. › A 30 mm hole will be drilled into the remaining stump and the Ecoplug will be inserted into the hole until it is flush with the top of the stump. › Where immature plants occur, hand pulling can be undertaken at any time of the year and left to dry out on an impermeable surface. Where the Ecoplug method is unsatisfactory, manual extraction of the root/stump from the ground is recommended. The following methods for root extraction are outlined below: › Cut the tree/plant as close to the ground as possible. This should be carried out from October to early March, outside the bird nesting season. › The root/stump will be removed from the ground using hand tool or an excavator. › The cut material can be stacked and stored on the Site, used as firewood or mulched as this plant material is deemed inert and can be used for landscaping as natural weed barriers or for other horticultural purposes. › The root/stump will be placed on an impermeable surface such as palettes or a radon barrier membrane and left to dry out. In areas where it is proposed to restore peatlands from conifer plantations, the following guidelines should be followed: › There is a high potential for spread of rhododendron when the trees are cleared and the ground disturbed via tree felling, stump flipping / re-profiling etc. This risk is higher where there is mature flowering bushes where potential seed production / dispersal is high. Therefore high risk areas should be identified in advance.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Areas identified in advance to be at high risk of further spread should be controlled / treated in advance of the felling / restoration works where possible, or immediately after the forestry works. › Cutting and stump treatment / removal, with any herbicide treatment should be done immediately after cutting. › An ongoing plan should be in place to deal with any young shoots to ensure they are controlled before they mature and set seed. Following treatment or eradication of the plant, the soil at the Site of the infestation should still be considered to be contaminated, on a precautionary basis. In order to avoid the potential spread of the species, the top layer of soil/peat from the 10m buffer zone will be removed and stored outside of the construction footprint, and within the Site and will then be clearly fenced off. This fenced off area will then be monitored and if necessary, re-treated. Treatment should continue until no growth is recorded for a period of at least two consecutive years. Alternatively, the excavated buffer zone can be moved to an offsite waste facility, under licence from NPWS. **Japanese Knotweed** Along the Proposed Grid Connection route, two stands of Japanese knotweed (*Reynoutria japonica*) were recorded on existing public road verges. Prior to the commencement of any works, the following steps will be undertaken: › A pre-commencement survey for Japanese knotweed will be undertaken by a suitably qualified ecologist to determine the locations and extent of the species within the Proposed Project and record any changes in the extent of the infestation which may have occurred since the 2024 and 2025 surveys. › The locations and extent of Japanese knotweed along the Proposed Grid Connection route will be clearly marked out using hazard tape to ensure they are not disturbed. An exclusion zone surrounding each stand will also be identified and an appointed ecological clerk of works (ECoW) will inform the extent of the area to be treated as		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			potentially contaminated. The exclusion zone will extend to 7m around the identified stands. › The ECoW will be appointed to supervise all works carried out within the exclusion zones, when required. To accommodate the Proposed Grid Connection route, the requirement for the removal of vegetation adjacent to existing roads is likely to arise. As stands of Japanese Knotweed are located along the Proposed Grid Connection route, the following will be undertaken to ensure these works do not result in the further spread of this species into the wider environment: › All vegetation clearance in proximity to recorded stands of Japanese knotweed will be undertaken under the supervision of the appointed ECoW. No vegetation cleared from within the 7m exclusion zone will be removed from the infested area. › All personnel and machinary which enter the exlcusion zones must be thouroughly washed down, as per the following: • All plant, machinery, tools and personnel will be cleaned down prior to leaving the contaminated areas. • Clean down will be undertaken on an impermeable membrane such as a radon barrier and following completion of the clean down operation, this will be brushed clean with sweepings left within the contaminated area to ensure that there is no potential to spread any contaminated material. • Power washing will be avoided to prevent potentially contaminated run-off spreading outside the Proposed Project site. • No plant, machinery, tools, or personnel will leave the exclusion zone, until authorised by the ECoW. All washed down material will remain within the 7m exclusion zone.		
MM37	Fauna	Ch. 6: Biodiversity	**Otter:**		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Taking a precautionary approach, and due to the time that can elapse between the original surveys, any future planning consent and construction, a pre-construction otter survey will be carried out by a qualified ecologist to identify the presence of any breeding sites along the Proposed Grid Connection route, that may have been established in the intervening period. Watercourses within the Proposed Wind Farm site and HHELs are small first order streams, and are unlikely to support breeding sites for otter. › The requirement for a pre-construction survey is fully in line with industry best practice. › Any holts identified within 50m of proposed infrastructure will subsequently be monitored for a minimum period of 2 weeks using remote cameras in order to ascertain use by otter and levels of activity. If an active otter holt is identified and works can be undertaken safely then an exclusion zone will be set up around the holt as follows: › Exclusion zone fencing and appropriate signage will be put in place between working areas and otter holt exclusion zones to ensure that there will be no encroachment of the breeding site exclusion zones by construction activities. › If a newly established and active holt was identified within an area where works could not avoid direct impacts on the holt, the holt would likely need to be excluded, with the provision of a derogation licence from NPWS, prior to works commencing. This would involve the erection of one-way fencing, only allowing egress from the holt and will be undertaken in line with current guidelines by an appropriately qualified ecologist in advance of construction works commencing. › Currently based on the finding of the surveys and current information regarding the Site, no derogation licence is required for this application, as no breeding sites have been recorded in close proximity to the Site. However, should the pre-commencement surveys identify a new breeding site and exclusion is required, a derogation licence will be in place from the NPWS.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Badger: › Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction badger survey will be carried out to identify the presence of any setts that may have been established in the intervening period. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. Any setts identified within 50m of the Proposed Wind Farm infrastructure will subsequently be monitored for a minimum period of 2 weeks using remote cameras in order to ascertain use by badgers and levels of activity. If an active badger sett is identified and works can be undertaken safely (as to avoid sett collapse) then an exclusion zone will be set up around the sett as follows: › Exclusion zone fencing and appropriate signage will be put in place between working areas and badger sett exclusion zones to ensure that there will be no encroachment of the badger sett exclusion zones by construction activities. › If a newly established and active sett was identified within an area where works could not avoid direct impacts on the sett, then the sett would likely need to be excluded prior to works commencing. This would need to be undertaken in line with current guidelines by an appropriately qualified ecologist in advance of construction works commencing and in consultation with NPWS. **Red Squirrel and Pine Marten:** › Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction survey for pine marten/red squirrel will be carried out to identify the presence of any new breeding sites. These surveys will focus on areas of Conifer plantation (WD4) to be felled and all suitable habitat within 50m of the felling blocks. Any potential breeding sites should be monitored to ascertain if they are active breeding sites. Surveys will be undertaken in line with Nature Scot and TII guidelines.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Should active dreys/dens be identified within the blocks to be felled, the following mitigations and best practice procedures will be followed to ensure that no breeding site for either red squirrel or pine marten are impacted: › Felling works to be undertaken in October–January inclusive, this will avoid the main breeding season (February-September) when vulnerable young are most likely to be found within breeding sites for both species. › Any breeding sites identified within the 50m buffer that wouldn't be directly affected by felling works, but are vulnerable to disturbance related impacts, will be clearly marked out with an exclusion zone, and works/access through these areas will be avoided. › Plant machinery will be turned off when not in use. › Operating machinery will be restricted to the Proposed Project works site area (and outside any exclusion zone) **Bats**: › Robust pre-construction bat surveys are undertaken to establish baseline activity and assess the potential risks associated with turbine operation. Survey design and impact assessment were guided by current legislation, scientific literature, and best-practice guidance, with full consideration given to spatial, temporal, and behavioural patterns relevant to bat ecology.		
Construction Phase					
MM38	Surface Watercourses and Sensitive Aquatic Faunal Species	Ch. 4: Description of the Proposed Project Ch. 6: Biodiversity Ch.9 Water	Mitigation measures addressing surface watercourses and sensitive aquatic faunal species are dealt with in Section MM19.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM39	Bats	Ch. 6: Biodiversity Appendix 6-2	The below describes the best practice and site-specific mitigation measures that are in place to avoid and reduce the potential for significant effects on local bat populations. **Noise Restriction** During the construction phase, 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 (S.I. No. 632 of 2001, as amended). In relation to the Proposed Grid Connection, Horizontal Directional Drilling (HDD) and associated works will be temporary and set-back from bridge/culvert features. The short-term nature of these works, combined with their spatial separation from potential bat habitats, will ensure that potential noise and vibration disturbance is minimised. **Lighting Restriction** Where lighting is required, directional lighting will be used to prevent overspill on to woodland/forestry edges and linear features. Exterior lighting, during construction and post construction, shall be designed to minimize light spillage, reducing the effect on surrounding habitat features and bat activity. Lighting will be directed away from mature trees and treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories will be used to direct light appropriately, such as light shields (Stone, 2013). All luminaires will be of a type that prevents upward and lateral spillage. The proposed lighting will comply with ILP Guidance Note 08/23 – Bats and Artificial Lighting at Night (ILP, 2023). The applicant also commits to the Dark Sky Ireland Lighting Recommendations, ensuring that: › Every light is justified;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Light is used only when necessary; › It is directed where needed; › Light intensity is minimised; › Spectra are adapted to the environment; › White light sources will have a "warm" colour temperature (less than 3000K). With regard to the potential for lighting to increase collision risk, it is noted that there will be limited illumination of the turbines in the form of aviation lighting. Post-construction monitoring will assess any potential for lighting-related impacts on bats. Significant effects as a result of lighting are not anticipated; however, if in the course of this monitoring, any potential for significant effects on bats is identified, the site-specific mitigation measures will be reviewed and any changes necessary will be implemented to avoid any such impacts. **Bat felling Buffers** In accordance with NatureScot (2021) and NIEA (2021) guidance, a minimum 50m buffer is applied between turbines and habitat features used by bats (e.g. hedgerows, treelines). Though increased buffers (100–200m) are recommended by Eurobats No. 6 and NIEA around woodland areas, these are not currently supported by empirical evidence in the UK and Ireland. A 50m buffer between turbine blade tip and the nearest habitat feature will be implemented, based on a worst-case-scenario turbine dimension of the largest blade with the lowest hub height (blade length 81.5m; hub height 110.5 m; total height 185 m). These buffers were calculated using the Natural England formula and have been applied in the turbine layout. There will be a requirement to remove areas of conifer plantation to facilitate the required bat buffers at the Proposed Wind Farm. These vegetation-free areas (i.e. less than 2m in height) will be maintained during the operational life of the Proposed Project and form part of the overall bat collision risk mitigation strategy.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM40	Habitats	Ch. 6: Biodiversity Ch. 7: Birds Appendix 7-8: Hen Harrier Enhancement Plan/Lands	**Hen Harrier Enhancement Plan/Lands** In order to mitigate the loss of Hen Harrier foraging lands a Hen Harrier Enhancement Plan has been prepared, and mitigation measures are discussed in detail in MM48. **Mitigation of Habitat loss during vegetation loss to facilitate Turbine Delivery Route (TDR)** To mitigate the losses of the above habitats to facilitate the proposed TDR, the following will be implemented during vegetation removal: › A risk assessment and method statement will be provided by the Contractor prior to commencing works. › A suitably qualified ecological clerk of works (EcOW) will be appointed and will supervise all vegetation removal. › All vegetation removal will be undertaken in line with the Wildlife Act (1976). › Entire trees will only be removed where absolutely necessary, with pruning to be considered first (i.e. for oversails) › In the event where trees or shrubs are removed, they will be replanted using native species once construction works have been complete.		
MM41	Invasive Species – Site Hygiene and Biosecurity Measures	Ch. 6: Biodiversity Appendix 6-4	The following site hygiene and biosecurity measures will be adhered to for the management of invasive species within the Proposed Project site: › All works in relation to invasive species will be supervised by an ECoW. › All staff will be given a Toolbox Talk, by a suitably qualified person or ecologist, on invasive species removal in relation to Japanese Knotweed and Rhododendron and their management on site. › The contractor will assign a member of their team as Environmental Officer to ensure the management plan is adhered to throughout the proposed works.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› A designated bio-secure area/exclusion zone will be set up at recorded invasive species locations to prevent disturbance in these areas. Invasive species will be marked with hazard tape in order to identify the species prior to vegetation clearance works and to keep it separate from other brash material. › All machinery should be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere. › Machinery that is used for excavation and onsite removal of invasive material will not be used for any other works until they are fully cleaned down and then visually inspected by a specialist to ensure no fragments of invasive plant material are present. › Prior to leaving the invasive species exclusion zones, all boots and clothing will be thoroughly brushed down to remove any contaminated material prior to leaving the area. › As a precautionary measure, machinery will be thoroughly cleaned down before exiting the site to prevent potential spread of invasive species elsewhere. › Clean down will be carried out using brushes and shovels and power washing will be avoided insofar as possible. This is to prevent potentially contaminated run-off spreading outside the site. › Material used for tracking machinery out of the contaminated areas on site e.g. plywood will be thoroughly cleaned down under supervision of the ECoW prior to removal off site. › Any soil, topsoil or material 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.		
Operational Phase					
MM42	Bats	Ch. 6: Biodiversity Appendix 6-2	**Blade Feathering** NIEA Guidelines also recommend that, in addition to buffers applied to habitat features, 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			idling. This measure has been shown to significantly reduce bat fatalities (by up to 50%) in some studies (NIEA, 2021). In accordance with NIEA Guidelines, blade feathering will be implemented as a standard across all proposed turbines when wind speeds are below the cut-in speed of the turbine.		
			Decommissioning Phase		
MM43	Decommissioning Phase	Ch. 6: Biodiversity	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. It can be concluded that following the implementation of preventative mitigation, there is no potential for the decommissioning of the Proposed Project to result in significant effects on biodiversity.		
			Ch. 7: Birds		
			Pre-Construction Phase		
MM44	Birds (Pre-Construction Surveys)	Ch. 7: Birds	› It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the Proposed Wind Farm and its environs. › Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Wind Farm to identify sensitive sites (e.g. nests or roosts) that may have been established in the intervening period between the surveys undertaken and the initiation of works at the Site. › Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement confirmatory bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July) and once during the		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts, depending on the season in question.		
MM45	Design of the Proposed Project	Ch. 7: Birds	The project design has followed the basic principles outlined below to avoid the potential for significant effects on avian receptors: › The Proposed Project avoids any designated SPAs, NHAs and pNHAs › The Proposed Project avoids wildlife refuge sites (e.g., waterbodies) › The turbine delivery route has been selected to utilise built infrastructure i.e., public roads, insofar as possible. › The Proposed Grid Connection has been selected to utilise built infrastructure for the majority of its length (i.e. cables to be laid within public roads). Cables will be laid underground as a result and will avoid effects on roadside hedgerows.		
MM46	Hen Harrier Enhancement Plans (Pre-Construction Phase)	Ch. 7: Birds Appendix 7-8: Hen Harrier Enhancement Phase	This Hen Harrier Enhancement Plan will be implemented prior to the commissioning of the Proposed Wind Farm.		
Chapter 7: Birds					
Construction Phase					
MM47	Birds (Construction Phase)	Ch. 7: Birds	› During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Please see Chapter 12: Noise and Vibration for more detail associated with noise during the construction phase. › Water protection measures will be implemented around existing watercourses as outlined in Chapter 9, to protect the use of watercourses by birds. › An Environmental Clerk of Works and Project Ecologist will be appointed. Duties will include: ○ Organise the undertaking of pre-construction and construction phase confirmatory bird surveys to avoid impacts on birds. ○ Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Proposed Wind Farm. ○ Oversee management of ornithological issues during the construction period and advise on ornithological issues as they arise. ○ Provide guidance to contractors to ensure legal compliance with respect to protected species onsite. ○ Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress as necessary. › If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.		
MM48	Hen Harrier Enhancement Plans (Construction Phase)	Ch. 6: Biodiversity Ch. 7: Birds Appendix 7-8: Hen Harrier Enhancement Plans	The Proposed Project has been specifically designed to achieve a net gain for Hen Harrier in order to mitigate the loss of Hen Harrier foraging lands. The net gain will be achieved in two key ways. › Firstly, through targeting the key threat/pressures acting on hen harrier that are classed as of high importance (as per Article 12). › Secondly, through the rigorous implementation and audits of industry best practice prescriptive measures for the benefit of hen harrier.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			The enhancement plan aims to provide an increase in the availability of passerine prey within the enhancement lands to offset the loss of the foraging habitat due to the proposed Wind Farm through deforestation and the enhancement of farmland. To achieve this increase in passerine prey, it is planned to promote plant diversity and structure within the enhancement lands, which will increase the diversity and abundance of passerines. Three parcels of currently forested land and six farmland folios, totalling c.124ha, are proposed to offset the predicted (indirect) habitat loss (62ha). In quantitative terms, it is proposed to permanently deforest 56.3ha, which alone nearly matches the total habitat loss figures calculated for hen harrier within the Proposed Wind Farm (62ha). In addition, it is proposed to enhance a further 67.4ha of farmland.		
Operational Phase					
MM49	Birds (Operational Phase Surveys)	Ch. 7: Birds	Significant displacement impacts on foraging hen harrier were predicted, as such an enhancement plan will be implemented. No further significant operational phase impacts requiring mitigation were identified.		
Decommissioning Phase					
MM50	Decommissioning	Ch. 7: Birds	During the decommissioning phase, the same disturbance limitation measures as implemented during the construction phase (MM47) will be put in place.		
Ch. 8: Land, Soils and Geology Land, Soils & Geology					
Construction Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM51	Peat and Spoil Excavation	Ch. 4: Description of the Proposed Project Ch. 8: Land, Soils and Geology Land, Soils & Geology Appendix 4-3	**Proposed Wind Farm** › Placement of turbines and associated infrastructure in areas with suitable ground conditions where appropriate (based on detailed site investigation data – the areas of deeper peat have been avoided by the Proposed Wind Farm infrastructure); › The peat/soils and subsoils which will be removed during the construction of turbine hardstands will be localised to the turbine locations. The peat/soil/subsoil will be placed/spread locally alongside the excavations or stored within the 6 no. designated peat and spoil storage areas; › Excavated peat/soils/subsoils will be excavated and stored separately to topsoil; this will prevent mixing of materials and facilitate reuse afterwards; › At the identified peat and spoil management areas, the vegetative topsoil layer will be removed to allow for spoil to be placed and upon reaching the recommended height, the vegetative topsoil layer will be reinstated; › The peat placed within the peat and spoil management areas will be restricted to a maximum height of 1m. Weak/liquified peat will be stored in the borrow pits and not at the 6 no. peat and spoil management 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 peat and spoil management areas will require the use of long reach excavators, low ground pressure machinery and possibly bog mats in particular for drainage works; › 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 and spoil management 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 will be not greater than 1 (v): 4 (h). This slope inclination will be reviewed during construction, as appropriate;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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; › Supervision by the Project Geotechnical Engineer will be carried out for the works; › An interceptor drain will be installed upslope of the designated peat and spoil management 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. (interceptor drains will not be required at all areas as the existing drainage network can function as interceptor drains – silt fences will be installed upgradient of the peat and spoil management areas in these locations); **Proposed Grid Connection:** › Any overburden excavated from the cable trench will be transported to the peat and spoil management areas at the Proposed Wind Farm; and, › Some excess spoil material or pavements materials containing tar generated during the cable route construction will be transported by permitted waste contractors to a suitable permitted/licensed site for disposal/recovery. **Borrow Pits** › Slopes within the excavated rock formed around the perimeter of the borrow pits will be formed at stable inclinations to suit local in-situ rock conditions. Exposed sections of the rock slopes will be left with irregular faces and declivities to promote re-vegetation and provide a naturalistic appearance. › In order to prevent water retention occurring behind the buttresses, the buttress will be constructed of coarse boulder fill with a high permeability. The buttress will be constructed of well graded granular rock fill of 100mm up to 500mm in size. In addition, drains will be placed through the buttresses close to the ground surface to allow surface water to drain from the surface of the placed peat. › Temporary control of groundwater within the borrow pits will be required. A temporary pump and suitable outfall locations will be required during construction.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Designated Peat and Spoil Management Areas within Turbine Clearfell Areas › 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. › 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 will be not greater than 1 (v): 4 (h). This slope inclination will be reviewed during construction, as appropriate.		
MM52	Erosion of Exposed Subsoils and Peat During Tree Felling and Construction Works	Ch. 8: Land, Soils and Geology	All proposed felling works will be completed in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte and DAFM guidance documents to ensure that felling results in minimal potential negative effects on the local soil and subsoil environment. All excavated material will be completed in accordance with the Peat and Spoil Management Plan. Material will be moved over the least possible distance. Any excess peat will be moved to peat storage areas or will be temporarily surrounded by earthen berms to prevent erosion. This will prevent erosion of soil. Silt fences will be installed around temporary stockpiles to limit movement of entrained sediment in surface water runoff. The use of earthen berms and silt fencing around earthworks and spoil mounds will prevent egress of water from the works. In order to minimize erosion of mineral subsoils stripping of peat will not take place during extremely wet periods (to prevent increased silt rich runoff). Temporary drainage systems will be implemented to limit runoff impacts during the construction phase.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			All proposed felling works will be completed in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte and DAFM guidance documents to ensure that felling results in minimal potential negative effects on the local soil and subsoil environment. In addition, the following mitigation measures will be implemented during felling operations: › Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff; › Proposed off-road routes will be walked in advance of any machinery; › All machinery operators will be experienced; › Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff; › The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; › All machinery will be operated by suitably qualified personnel; › These machines will traverse the Proposed Wind Farm along specified off-road routes (referred to as racks); › Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur; › As felling progresses, the harvester will collect brash produced by the felling and place it in front of the machine before it advances forward along the rack; › The condition of the racks will be continually monitored and fresh brash will be applied when the brash mat becomes heavily used and worn, ensuring that the mat remains effective throughout the operational phase; and, › The location of racks will be chosen to avoid wet and potentially sensitive areas.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM53	Peat Instability and Failure	Ch. 8: Land, Soils and Geology Appendix 8-1	The following measures incorporated into the construction phase of the project will be implemented in full and assist in the management of the risks for this site. › The condition of the racks will be continually monitored and fresh brash will be applied when the brash mat becomes heavily used and worn, ensuring that the mat remains effective throughout the operational phase; and, › Appointment of experienced and competent contractors; › The site will be supervised by experienced and qualified personnel; › Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a peat movement); › Prevent undercutting of slopes and unsupported excavations; › Maintain a managed robust drainage system; › Prevent placement of loads/overburden on marginal ground; › Set up, maintain and report findings from monitoring systems; › Ensure construction method statements are followed or where agreed modified/ developed; and, › Revise and amend the Geotechnical Risk Register as construction progresses		
MM54	Hen Harrier Enhancement Lands	Ch. 8: Land, Soils and Geology	All proposed habitat management and enhancement works will be in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte, DAFM and NatureScot guidance documents to ensure minimal potential negative effects on the local peat, soil and subsoil environment. Given the nature of the restoration measures the following mitigation measures are proposed: › Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff; › Proposed off-road routes will be walked in advance of any machinery; › All machinery operators will be experienced and suitably trained;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The proposed enhancement lands will be walked before a machine goes off-road in order to prevent any damage to sensitive habitats; › Bog mats will be used where the excavator is required to travel over wet ground; and, › A low ground pressure excavator with wide tracks (1.9m or greater) will be used to reduce compaction of the peat and subsoils.		
Operational Phase					
MM55	Use of Oil In Transformers	Ch. 8: Lands, Soil, and Geology	› All transformers and substation areas will be bunded to 110% of the volume of oil used in each transformer/substation; and, › An emergency plan for the operational phase to deal with accidental spillages will be contained in the Environmental Management Plan for the wind farm operational phase.		
Decommissioning Phase					
MM56	Decommissioning Phase	Ch. 8: Land, Soils and Geology	The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but at a reduced magnitude due to the reduced scale of the works. Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant. Some of the impacts will be avoided by leaving elements of the Proposed Project in place, including the bases which will be rehabilitated by covering with local topsoil/peat in order to regenerate vegetation which will reduce runoff and sedimentation effects. 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.		
Ch. 9: Water					
Pre-Construction Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM57	Temporary Drainage Works	Ch. 4: Description of the Proposed Project Ch. 9: Water Appendix 4-3 CEMP Section 3	Prior to the commencement of construction works (new road/hardstand, turbine foundation installs or upgrade of existing roads) the following key temporary drainage measures will be installed: › All existing land and forestry drain that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps; › Clean water interceptor drains will be installed upgradient of the works areas; › Check dams/silt fence arrangements (silt traps) will be placed in all existing that have surface water flows; and, › A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone.		
Construction Phase					
MM58	Tree Felling	ECh. 9: Water	› Mitigation measures addressing the impact of tree felling during the Construction Phase are dealt with in Section MM3-9 and MM19 above.		
MM59	Earthworks Resulting in Suspended Solids Entrainment in Surface Waters	Ch. 4: Description of the Proposed Project Ch. 9: Water Appendix 4-3 CEMP Section 3	› Mitigation measures addressing the impact of earthworks resulting in suspended solids entrainment in surface waters during the Construction Phase are dealt with in Section MM3-9 and MM19 above.		
MM60	Effects on Groundwate	Ch. 9: Water	› If required, pumping of excavation inflows will prevent build-up of water in the excavation;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	r Levels during Excavation Works				
MM61	Surface Water Quality from Excavation Dewatering	Ch. 4: Description of the Proposed Project Ch. 9: Water Appendix 4-3 CEMP Section 3	› Mitigation measures addressing surface water quality from excavation dewatering during the Construction Phase are dealt with in Section MM19 above.		
MM62	Hydrocarbons	Ch. 4: Description of the Proposed Project Ch.9: Water CEMP Section 3 Appendix 4-7: Surface Water Management Plan	› Mitigation measures addressing hydrocarbons have been dealt with in Section MM14 above.		
MM63	Wastewater	Ch. 9: Water	› It is proposed to manage wastewater from the staff welfare facilities in the control buildings 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM64	Use of Cement Based Products	Ch. 4: Description of the Proposed Project Appendix 4-7: Surface Water Management Plan CEMP Section 3 Ch. 9: Water	› Mitigation measures addressing the use of Cement based products have been dealt with in Section MM15-16.		
MM65	Effects due to new Watercourses along the Proposed Grid Connection	Ch. 9: Water	› All proposed 2 no. stream crossings will be bottomless or clear span structures and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location; › Where the proposed cable route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road; › All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings; › As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this		
MM66	New Watercourse	Ch. 9: Water	› Prior to the commencement of cable trenching or crossing works the following key temporary drainage measures will be installed:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Crossing Works		› All proposed 2 no. stream crossings will be bottomless or clear span structures and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location; › Where the proposed cable route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road; › All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings; › As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI); › During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas; › All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent; and, › All crossings will be designed to accommodate a 100-year design flood with allowance for 300mm freeboard (refer to Table 9 7 for design flood flows).		
MM67	Effects on Designated Sites	Ch. 9: Water	› Mitigation measures addressing effects on designated sites during the Construction Phase are dealt with in Section MM3-9 and MM19 above.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Operational Phase		
MM68	Replacement of Natural Surfaces with Lower Permeability Surfaces	Ch. 4: Description of the Proposed Project Ch. 9: Water Appendix 4-3 CEMP Section 3	› Mitigation measures addressing replacement of natural surfaces with lower permeability surfaces during the Construction Phase are dealt with in MM19 above.		
MM69	Runoff Resulting in Contamination of Surface Waters	Ch. 4: Description of the Proposed Project Ch. 9: Water CEMP Section 3	› Mitigation measures addressing runoff resulting in contamination of surface waters surfaces during the Construction Phase are dealt with in MM3-9 and MM19 above.		
			Decommissioning Phase		
MM70	Decommissioning Phase	Ch. 9: Water	The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works. 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.		
			Ch. 10: Air Quality		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Construction Phase		
MM71	Exhaust Emissions	Ch. 10: Air Quality Ch. 15: Material Assets	**Proposed Wind Farm** › All plant and materials vehicles will be stored in dedicated areas (onsite). Machinery will be switched off when not in use. › Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. › Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. › Aggregate materials for the construction of the Proposed Wind Farm infrastructure will be predominantly sourced onsite. › A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase and will be a key contract document that will be implemented in full by the contractor. › Waste volumes generated on site are unlikely to be large enough to warrant source segregation at the Site. Therefore, all waste generated onsite, such as peat and spoils will be managed on site. Any hazardous materials encountered on site will be removed to a suitably licensed facility. Any facility used will be as local to the site as possible to reduce the emissions associated with additional vehicle movements. **Proposed Grid Connection** › All plant and materials vehicles will be stored in dedicated areas (onsite). Machinery will be switched off when not in use. › Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. › Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Aggregate materials for the construction of the Proposed Wind Farm infrastructure will be predominantly sourced onsite. › A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase and will be a key contract document that will be implemented in full by the contractor. › Waste volumes generated on site are unlikely to be large enough to warrant source segregation at the Site. Therefore, all waste generated onsite, such as peat and spoils will be managed on site. Any hazardous materials encountered on site will be removed to a suitably licensed facility. Any facility used will be as local to the site as possible to reduce the emissions associated with additional vehicle movements **Transportation to and from the Site** › Aggregate materials for the construction of site access tracks and all associated infrastructure will all be locally sourced, where possible, which will further reduce potential emissions. › Turbines and construction materials will be transported to the Site on specified haul routes only. › A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase. › Any waste or hazardous material that requires transferring from the site will be transported to the most local suitably licensed facility.		
MM72	Dust Emissions	Ch. 10: Air Quality CEMP Section 3	› Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. › All plant and materials vehicles will be stored in dedicated areas within the Site. › Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Turbines and construction traffic will be transported to the Site on specified haul routes only. › The agreed haul route road adjacent to the Site will be regularly inspected for cleanliness and cleaned as necessary. › The roads adjacent to the Site entrances will be checked weekly for damage/potholes and repaired as necessary. › The transportation of materials from the borrow pit around the Site will be covered by tarpaulin or similar covered vehicles where necessary. › The transportation of construction materials from locally sourced quarries for the Proposed Grid Connection infrastructure and a small volume for the Proposed Wind Farm to the Site will be covered by tarpaulin where necessary. › If necessary, excavated material will be dampened prior to transport to the spoil management areas. › A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase . The CEMP includes dust suppression measures. The CEMP will be a key construction contract document and will be implemented in full by the contractor.		
Operational Phase					
MM73	Exhaust Emissions	Ch. 10: Air Quality	› Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any emissions that arise. › When stationary, delivery and onsite vehicles will be required to turn off engines. › Waste material will be transferred to a suitably licensed/permitted facility by a fully licensed waste contactor where the waste will be sorted into individual was streams for recycling, recovery or disposal. The MRF facility will be as local to the Site as possible to reduce the emissions associated with vehicle movements		
Decommissioning Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM74	Decommissioning Phase	Ch. 10: Air Quality	A decommissioning plan has been prepared as part of the EIAR, which includes mitigation measures for the decommissioning phase of Proposed Project. These include: › Prior to the end of the operational period the Decommissioning Plan will be updated in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time. › Upon decommissioning of the wind farm, turbine foundations will remain in place underground and will be covered with earth and reseeded with an appropriate seed mix to accelerate the resumption of natural drainage management. › The underground cable ducting within the wind farm site will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. › Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods; › The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary; › All site related traffic will have speed restrictions on un-surfaced roads to 15 kph; › Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.		
Ch. 11: Climate					
Construction Phase					
MM75	Greenhouse Gas Emissions	Ch. 10: Air Quality Ch.11: Climate	› Mitigation measures addressing Greenhouse Gas emissions are dealt with in MM71. › All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		Ch. 15: Material Assets			
			Operational Phase		
MM76	Greenhouse Gas Emissions	Ch. 11: Climate	› 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. › The identified 21ha of forestry that will be permanently felled for the Proposed Wind Farm will be replaced or replanted on a hectare for hectare basis as a condition of any felling licence that will be issued in respect of the Proposed Wind Farm.		
			Decommissioning Phase		
MM77	Decommissioning Phase	Ch. 11: Climate	Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less impact. The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential impacts.		
			Ch. 12: Noise and Vibration Noise & Vibration		
			Construction Phase		
MM78	Construction Phase (Noise)	Ch. 12: Noise and Vibration CEMP Section 3	The following list of measures will be implemented, where necessary, to ensure compliance with the relevant construction noise criteria: › 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted; › Establishing channels of communication between the contractor/developer, Local Authority and residents; › Monitoring typical levels of noise and vibration during critical periods and at sensitive locations; › Selection of plant with low inherent potential for generation of noise and/ or vibration where practical; › Placing of noise generating / vibratory plant as far away from sensitive properties as practical within the site constraints, and; › The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 07:00hrs and 19:00hrs Monday to Saturday. However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e. concrete pours, turbine component deliveries) it could occasionally be necessary to work out of these hours. Any out of hours works will be communicated with local residents in advance of any works. Where rock breaking is employed in relation to the proposed borrow pit location or other locations across the Site, the following are examples of measures that will be employed, where necessary, to mitigate noise emissions from these activities: › Fit suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency. › Ensure all leaks in air lines are sealed. › Use a dampened bit to eliminate ringing. Air overpressure from a blast is difficult to control, however, because of its variability much can be done to reduce the effect. A reduction in the amount of primer cord used, together with the adequate burial of any that is above the ground, can give dramatic reduction to air overpressure intensities especially in the audible frequency range. Most complaints are likely to be received from an area downwind of the blast site, and therefore, if air blast complaints are a		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			continual problem, blasting will be avoided during unfavourable weather conditions. As air blast intensity is a function of total charge weight, then a reduction in the total amount of explosives used can also reduce the air overpressure value. The methods used to minimise impacts will consist of the following: › Restriction of hours within which blasting can be conducted (e.g. 09:00 – 19:00hrs). › The firing of blasts at similar times to reduce the 'startle' effect. › On-going circulars informing people of the progress of the works. › The implementation of an onsite documented complaints procedure. › The use of independent monitoring for verification of results. › Trial blasts in less sensitive areas to assist in blast designs and identify potential zones of influence		
Operational Phase					
MM79	Operational Phase (Noise)	Ch. 12: Noise and Vibration	**Amplitude modulation** In the event that a complaint which indicates potential excessive amplitude modulation (AM) or tonality associated with the Proposed Project, the operator will fully investigate the complaint in collaboration with the turbine manufacturer, through review of the meteorological periods and conditions during which the reported AM or tonality occurs. A noise monitoring protocol would be established, in consultation with the local authority, which would set out the location and analysis methodology to be employed for the noise monitoring. This can be secured via a planning condition. If an ongoing issue with excessive AM is identified, a mitigation strategy to reduce the level of AM will be agreed with Clare County Council and implemented through engineering methods and/or curtailment of specific turbines. The operator will appoint a qualified acoustic consultant to objectively assess the level of AM in accordance with the methods outlined in the Institute of Acoustics IOA Noise Working Group (Wind Turbine Noise) Amplitude Modulation Working		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Group Final Report: A Method for Rating Amplitude Modulation in Wind Turbine Noise (9 August 2016) or subsequent revisions. The measurement method outlined in the IOA AMWG document, known as the 'Reference Method', will provide a robust and reliable indicator of AM and yield important objective information on the frequency and duration of occurrence, which can be used to evaluate different operational conditions including methods to mitigate any excessive AM. Examples of mitigation measures which could be considered include turbine blade modifications, the implementation of specific operational controls for the relevant turbine type or operating turbines in different operational modes or turbine curtailment under specific operational conditions. The aim of the mitigation would be to minimise adverse impacts from excessive AM associated with the proposed project as much as is reasonably practicable. The commitments outlined to control amplitude modulation (AM) and tonality from wind turbines are considered best practice. The proposed approach provides a clear commitment that additional adverse impacts from excessive amplitude modulation (AM) or tonality associated with the operation of the proposed project will be effectively managed and minimised by the operator. **Tonality** In the unlikely event that a clearly audible tone or tones are identified at a noise-sensitive location, the operator would liaise with the turbine manufacturer to investigate and implement measures to mitigate or minimise the occurrence of tonality as much as is reasonably practicable. The appropriate mitigation measures will depend on the cause or source of the tonal noise and will typically be applied at source. This may involve engineering modifications to mechanical or electrical components, or the implementation of software-based operational controls via the turbine control system, such as adjustments to the turbine operating mode, rotor speed and/or blade pitch. These capabilities are embedded within the control systems of modern wind turbines.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Decommissioning Phase		
MM80	Decommissioning Phase (Noise)	Ch. 4: Description of the Proposed Project, 12 CEMP Section 3	No specific mitigation measures are required for decommissioning. To ameliorate any potential noise impacts that may present during the decommissioning phase, a schedule of general best-practice noise control measures has been formulated in accordance with best practice guidance.		
			Ch. 13: Cultural Heritage Cultural Heritage		
			Pre-Commencement, Construction, Operation and Decommissioning		
MM81	Indirect and Direct Construction Phase	Ch. 13: Cultural Heritage	All elements of the Proposed Project located within existing greenfield will be subject to archaeological monitoring of topsoil stripping. This work will be carried out under licence to the National Monuments Service of the DHLGH. If archaeological remains are identified during the course of these works further mitigation will be implemented as required and will include preservation by record or in-situ. Any further mitigation will require agreement from the DHLGH. All interventions that are required along townland boundaries, as part of the construction of the Proposed Wind Farm, will be subject to archaeological monitoring, and will include a full record of the sections of townland boundaries that are removed. This work will be carried out under licence to the National Monuments Service of the DHLGH. The excavation of the Proposed Grid Connection, where it runs through bridges CH59 and CH60 will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH and include a full record of the fabric of the bridge and any earlier road surfaces contained within same.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			All topsoil stripping, where it is required for the construction of the temporary access road at CH39, will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH and should any remains of the earlier road be identified during the course of works, these will be preserved by record.		
Operational Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM82	Indirect Operational Phase	Ch. 14: Landscape and Visual	It is not possible to mitigate indirect effects on the archaeological, architectural and cultural heritage resource, due to the nature and scale of the proposed turbines within the landscape. It is noted that effects are not significant or permanent and would be removed following the decommissioning and removal of the turbines. Sites of National Significance within 10km of the Proposed Wind Farm With regards to sites of national significance, no significant negative operational impacts have been identified. One indirect, negative impact has been identified of moderate significance of effect, which relates to the site of a ringfort - cashel (AH70; CL048-005; Preservation Order 4/1957), which is situated c. 840m south of Turbine 8. Archaeological Heritage (AH) sites within 5km of the Proposed Wind Farm With regards to recorded archaeological heritage sites, no significant negative operational impacts have been identified. One indirect, negative impact has been identified of moderate significance of effect, which relates the site of a ringfort and children's burial ground (AH45), which is situated c. 1.12km north of Turbine 1. The remaining effects vary from imperceptible to slight in significance. Built Heritage (BH) sites within 5km of the Proposed Wind Farm › No significant negative operational effects have been identified upon the recorded built heritage resource. No significant effects are predicted on all four BH sites in the study area of the Proposed Wind Farm		
Ch. 14: Landscape and Visual Landscape & Visual					
Pre-Construction/ Construction Phase					
MM83	Landscape Effects	Ch. 14: Landscape and Visual	**Mitigation by Design:** The Proposed Wind Farm site was strategically selected as a landscape highly suitable for the development of wind energy. The Proposed Wind Farm layout that is the subject of this LVIA		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			incorporates the following landscape and visual design considerations for best practice wind farm design: › 7 no. proposed turbines of the Proposed Project are sited in a "Strategic Area" for wind energy development in the Clare Wind Energy Strategy, and 1 no. proposed turbine 'T8' is sited within an area designated as 'Acceptable in Principle'. › The Proposed Wind Farm is primarily sited within the Slieve Callan Uplands Landscape Character Area (LCA), an LCA of the lowest landscape sensitivity rating for wind energy development in County Clare, as set out in local planning policy. The landscape characteristics of this LCA make it highly suitable and capable of absorbing multiple large scale wind energy developments. › The Proposed Wind Farm is not located within any high sensitivity landscape designations of County Clare ('Heritage' Landscapes'), nor is it the subject of protected scenic amenity designations within the local planning policy. › The Site is primarily comprised of a marginal upland landscape with commercial forestry, where wind energy is well established. As such, it is a modified working landscape with low sensitivity, deemed capable of effectively absorbing the Proposed Wind Farm. › The proposed turbines are sited in an upland landscape of large scale, capable of effectively accommodating multiple wind energy developments. › The proposed turbines are sited in a sparsely populated area with appropriate setback distances from local population centres. › The topographical characteristics of the marginal upland landscape and its surrounding area naturally limit the visual exposure of the proposed turbines. Distinctive ridgelines and landforms of the upland landscape to the east and north effectively obscure visibility of the turbines from much of the broader landscape, thereby limiting the extent of landscape and visual impact upon large numbers of receptors. › The turbine layout has been designed to create a coherent arrangement of turbines, contiguous and connected to each other visually and with consistent spacing in line with the guidance for design and siting of wind farms in 'Transitional Marginal' Landscape Types in the WEDGs (2006), and regard to the 'Draft WEDGs (2019).		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Siting of proposed turbines adheres to the minimum 500m set back distance in the current WEDGs (2006) and also the recommended larger 4 times tip height set back distance to third party properties, explicitly set out for residential visual amenity, prescribed by the Draft WEDGs (2019). › The proposed Grid Connection is underground and follows the local road network and existing forestry tracks, thereby eliminating potential landscape and visual effects during the operational phase; › The internal site road layout makes use of the existing forestry tracks wherever possible (to be upgraded for construction and delivery of wind turbine components), to minimise the requirement for new tracks within the Site; › Felling of existing coniferous plantation is predominantly limited to keyhole felling in localised parts of the Site, in keeping with existing practices in the commercial forestry plantation on-site.		
Ch. 15: Material Assets Material Assets					
Material Assets - Traffic					
Pre-Construction, Construction and Operation					
MM84	Traffic	Ch. 15: Material Assets	**Mitigation by Design** › Selection of the most appropriate delivery route to transport the wind turbine components, requiring the minimum remedial works to accommodate the vehicles. › Selection of the shortest Proposed Grid Connection diversion routes, minimising the impacts on the existing road network and traffic.		
MM85	Delivery of abnormal loads	Ch. 15: Material Assets	The following are the main mitigation measures for these deliveries. These will take place after peak evening traffic:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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 64 abnormal sized loads will be delivered to the site, comprising 22 convoys of 3 (1 convoy will have one vehicle only), undertaken over 22 separate nights. › These nights will be spread out over an approximate period of 5 weeks and will be agreed in advance with the relevant authorities.4 › For each convoy there will be two police escort vehicles that will stop traffic at the front and rear of the convoy of 3 vehicles in addition to two escort vehicles provided by the haulage company.		
MM86	General Traffic Management	Ch. 15: Material Assets Appendix 15-2	Prior to the commencement of the construction phase of the Proposed Project a detailed Traffic Management Plan will be prepared by the Contractor for agreement with the relevant local authorities and An Garda Síochána. In the event that An Coimisiúin Pleanála decides to grant consent for the Proposed Project the final TMP will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned by the ACP. The TMP prescribes the following: › **Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management. › **Delivery Programme** – a programme of deliveries will be submitted to the relevant County Councils (Clare and Limerick) in advance of deliveries of turbine components to site. Liaison with the 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Temporary traffic management measures during construction of Wind Farm Site at access junctions during construction – Temporary measures including signage at access junctions on the L6254. › Temporary traffic management measures during construction of Grid Connection – Including signage and implementation of temporary traffic diversions. › **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 Authorities, a pre-condition survey of roads associated with the Proposed Project 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. 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 relevant Roads Sections will be informed of the 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**. › **Identification of delivery routes** – These routes will be agreed with the County Councils and adhered to by all contractors.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› **Delivery times of large turbine components** - The management plan will include the option 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 Contractor 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. › **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.		
			Decommissioning Phase		
MM87	Decommissioning Phase	Ch. 15: Material Assets	In the event that the Proposed Project is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority. This plan will include a material recycling / disposal and traffic management plan will be prepared for agreement with the local authority prior to decommissioning, in accordance with Scottish Natural Heritage report (SNH) *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013).		
			Material Assets - Other		
			Pre-Constructions Phase		
MM88	Existing Underground Services	Ch. 4: Description of the Proposed Project	To facilitate the installation of the proposed UGC, it may be necessary to relocate existing underground services such as water mains, telecoms, or existing cables. In advance of any construction activity, the contractor will undertake additional surveys of the proposed route to confirm the presence or otherwise of any services. If found to be present, the relevant service		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		Ch. 15: Material Assets	provider will be consulted to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works. If existing underground cables are found to be present, a trench will be excavated, and new ducting and cabling will be installed along the new alignment and connected to the network on either end. The trench will be backfilled with suitable material to the required specification. Warning strip and marking tape will be laid at various depths over the cables as required. Marker posts and plates will be installed at surface level to identify the new alignment of the underground cable, and the underground cables will then be re-energised. Uisce Eireann will be consulted and advised on details of the project proposals in the form of a completed Building-over or Near an Irish Water Asset Application Form and associated technical information largely comprising drawings and schedules with details of proposed crossings etc with as much available information as possible. Uisce Eireann will be involved in the early engagement on projects that may involve any infrastructure which may be located near their assets with the intention of identifying as early as possible, if bespoke design measures or diversions are necessary. The water supply will be turned off by the utility so work can commence on diverting or crossing the service. The section of the 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 utility standards. Any underground services encountered along the grid cable routes will be surveyed for level and the ducting will pass over the service provided adequate cover is available. A minimum clearance of 300 mm will be required between the bottom of the ducts and the service in question. If the clearance cannot be achieved the ducting will pass under the service and again 300 mm clearance between the top of the communications duct and bottom of the service will be achieved. In deeper excavations an additional layer of marker tape will be installed between the communications duct and top level yellow marker tape. If the required separation distances cannot be achieved then a number of alternative options are available such as using steel plates		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			laid across the width of the trench and using 35N concrete surrounding the ESB ducts where adjacent services are within 600mm, with marker tape on the side of the trench. Back fill around any utility services will be with dead sand/pea shingle.		
Construction Phase					
MM89	Waste Management	Ch. 15: Material Assets CEMP Section 3	› All waste generated on site will be contained in waste skips at a waste storage area on site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. › The expected waste volumes generated on site are unlikely to be large enough to warrant source segregation at the wind farm site. Therefore, all wastes streams generated on site will be deposited into a single waste skip. This waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. › The waste generated from the turbine erection will be limited to the associated protective covers which are generally reusable. Considering the specialist nature of this packaging material the majority will be taken back by suppliers for their own reuse. Any other packaging waste generated from the turbine supply will be deposited into the on-site skips and subsequently transferred to the MRF. › It is not envisaged that there will be any waste material arising from the materials used to construct the site roads as only the quantity of stone necessary will be sourced from local quarries and brought on site on an 'as needed' basis. › Site personnel will be instructed at induction that under no circumstances can waste be brought to site for disposal in the on-site waste skip. It will also be made clear that the burning of waste material on site is forbidden.		
Operational Phase					
MM90	Waste Management Services	Ch. 15: Material Assets	› All waste generated on-site will be contained in waste skip at a waste storage area on Site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. The expected waste volumes generated on		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Site are unlikely to be large enough to warrant source segregation at the Site. Therefore, all waste streams generated on site will be deposited into a single waste skip. The waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licenced waste contractor where the waste will be sorted into individual waste stream for recycling, recovery or disposal. › Site personnel will be instructed at induction that under no circumstances can waste be brought on to Site for disposal in the on-site waste skip. It will also be made clear that the burning of waste material on Site is forbidden.		
MM91	Telecommunications	Ch. 15: Material Assets	The *'Wind Energy Development Guidelines for Planning Authorities'* (Department of the Environment, Heritage and Local Government, 2006) state that interference with broadcast communications can be overcome by the installation of deflectors or repeaters where required. Developers are advised to contact individual local and national broadcasters and mobile phone operators to inform them of proposals to develop wind farms. This consultation has been carried out by MKO as part of the assessment of the Proposed. Both the adopted 2006 and the 2019 draft *'Wind Energy Development Guidelines for Planning Authorities'* produced by the Department of the Environment, Heritage and Local Government (DOEHLG) state that interference with broadcast communications can be overcome by the installation of deflectors or repeaters where required 2rn (formerly RTÉ Transmission Network Ltd.), replied on the 7th of February 2024 to a scoping request from MKO stating that there is no fixed linking within the area. 2rn has recommended that a protocol agreement be put in place for the Proposed Wind Farm if the Site goes ahead. The Protocol Document ensures that in the event of any interference occurring to 2rn television or radio reception due to operation of a wind farm, the required measures as set out in the document, will be carried out by the developer to rectify this. The Protocol Document ensures that the appropriate mitigation is carried out in the event of any unanticipated broadcast interference arising to RTÉ television or radio reception as a result of the proposed Wind Farm.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM92	Aviation	Ch. 15: Material Assets	As no impacts were identified by the IAA or DoD, no mitigation measures are required. However, the following IAA and DoD requests will be complied with should the Proposed Project be consented: **Irish Aviation Authority** › Agree an aeronautical obstacle warning light scheme for the wind farm development › Provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location and › Notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection. **Department of Defence** › All turbines should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit light at the near InfraRed (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.		
Decommissioning Phase					
MM93	Decommissioning Phase	Ch. 15: Material Assets	Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent.		

18.2 EIAR Monitoring Measures

Table 18-2 Schedule of Monitoring

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Pre-Construction Phase			
MX1	Drainage Maintenance	Ch. 4: Description of the Proposed Project, 9 CEMP Section 3,4 Appendix 4-7: Surface Water Management Plan	› An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. 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. Inspections will also be undertaken after tree felling. › 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 carried out on a daily basis. › Prior to commencement of works in sub-catchments across the site, drain inspections will be competed 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.	On going	Monthly	Project Hydrologist
MX2	Surface Water Management Plan	Appendix 4-7: Surface Water Management Plan	› 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 Clare County Council but will be based on the planning stage programme already outlined in the EIAR and CEMP and presented in this document.	As required	As required	Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
		Ch. 9: Water	› 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. › 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. › Prior to commencement of works in sub-catchments across the site, drain inspections will be competed 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.			
MX3	Environmental Management	CEMP Section 4	› The Project Developer will be required to engage a qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of Environmental Clerk of Works (ECoW) to oversee the construction works and audit the implementation of the CEMP. The ECoW will report to the Project Developer and Project Contractor but will liaise closely with the Construction Manager in relation to the Project Contractor's day-to-day implementation of the CEMP on site. › The Environmental Clerk of Works (ECoW) will be nominated by the Project Developer to oversee the Project Contractor's effective implementation of the Proposed Project's environmental requirements and obligations, as captured in the CEMP. The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on			ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			behalf of the Project Developer. For the sake of expediency, the ECoW will report their ongoing audit findings, monitoring results and site observations to both the Project Developer and the Proposed Contractor, having been nominated by the developer to fulfil the role. › The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, Developer's Project Manager, and any Authorities or other Agencies, will be agreed by all parties prior to commencement of construction, and may be further adjusted as required during the course of the Proposed Project.			
MX4	Invasive Species	Ch. 6: Biodiversity Appendix 6-4	› A pre-commencement survey for Rhododendron will be undertaken by a suitably qualified ecologist to determine the locations and extent of the species within the Site and record any changes in the extent of the infestation since the 2025 surveys. › The locations and extent of Rhododendron within the Site will be clearly marked out using hazard tape to ensure they are not disturbed. A 10m buffer zone (Higgins, 2008) surrounding each stand will also be applied using temporary fencing, to avoid disturbance of potentially contaminated soils. › A pre-commencement survey for Japanese knotweed will be undertaken by a suitably qualified ecologist to determine the locations and extent of the species within the Proposed Project and record any changes in the extent of the infestation which may have occurred since the 2024 and 2025 surveys. › The locations and extent of Japanese knotweed along the Proposed Grid Connection route will be clearly marked out using hazard tape to ensure they are not disturbed. An exclusion zone surrounding each stand will also be identified and an	Once	As required	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			appointed ecological clerk of works (ECoW) will inform the extent of the area to be treated as potentially contaminated. The exclusion zone will extend to 7m around the identified stands. › The ECoW will be appointed to supervise all works carried out within the exclusion zones, when required.			
MX5	Fauna	Ch. 6: Biodiversity	**Otter:** › As outlined above in Section MM56 taking a precautionary approach, and due to the time that can elapse between the original surveys, any future planning consent and construction, a pre-construction otter survey will be carried out by a qualified ecologist to identify the presence of any breeding sites along the Proposed Grid Connection route, that may have been established in the intervening period **Badger** › Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction badger survey will be carried out to identify the presence of any setts that may have been established in the intervening period. **Red Squirrel and Pine Marten:** › Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction survey for pine marten/red squirrel will be carried out to identify the presence of any new breeding sites. These surveys will focus on areas of Conifer plantation			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			(WD4) to be felled and all suitable habitat within 50m of the felling blocks. Any potential breeding sites should be monitored to ascertain if they are active breeding sites. Surveys will be undertaken in line with Nature Scot and TII guidelines. **Bats:** › Robust pre-construction bat surveys are undertaken to establish baseline activity and assess the potential risks associated with turbine operation. Survey design and impact assessment were guided by current legislation, scientific literature, and best-practice guidance, with full consideration given to spatial, temporal, and behavioural patterns relevant to bat ecology.			
MX6	Birds	Ch. 7: Birds Appendix 7-8: Hen Harrier Enhancement Plan Appendix 7-7: Bird Monitoring Programme	› It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Project to identify sensitive sites (e.g. roosts). › Any requirement for construction works to run into the subsequent breeding or winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding or roosting birds of conservation concern. These surveys will be conducted once per month during the breeding season (April to July) and once at the start of the winter season (October). The	Once	As required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			survey will aim to identify sensitive sites (e.g., nests or roosts depending on the season in question). › This monitoring will involve surveying onsite and to a 500m radius of the development footprint/works areas. Monitoring will be undertaken by a suitably qualified ornithologist. The survey period will include one month prior to the initiation of works, four visits between April and July and one visit during the winter period (October). If a sensitive area is identified, the nest/roost sites will be located, and no works shall be undertaken within a species-specific buffer in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works within the buffer zone shall be permitted until it can be demonstrated that the species is no longer reliant on the area for breeding or roosting. › All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked off using hazard-tape fencing to alert all personnel on site to the suspension of works within that area.			
MX7	Hen Harrier Enhancement Plan	Ch. 7: Birds Appendix 7-8: Hen Harrier Enhancement Plan	In summary, the monitoring measures at the Proposed Lands will include: › The areas proposed for enhancement will be the subject of ongoing monitoring during the operational phase of the wind farm to ensure it is offering supporting habitat for breeding hen harrier. The ongoing monitoring will take place during the breeding bird season. The monitoring will seek to identify whether hen harrier are utilising the areas under active management for foraging and will be conducted by way of	On going	As required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			vantage point surveys (six hours in duration). These surveys will be undertaken once a month March to August inclusive, at each enhancement area, each year. › Passerine point counts will be undertaken monthly from April to September inclusive in each monitoring year at each of the enhancement areas. The monitoring aims to investigate to what extent enhancement measures e.g. seed crops, increase the availability of prey species for hen harrier. › Areas of favourable hen harrier foraging habitat (i.e. scrub, blanket bog, wet heath and heather banks) within the enhancement areas should be accurately mapped and should be monitored annually to check that the areas so covered have not altered in size and that the grazing regime that is in place is maintaining the current state of these habitats (i.e. neither poaching nor overgrowth of open areas is occurring). As well as mapping, this monitoring will be recorded by means of fixed-point photography.			
MX8	Tree Felling	Ch. 9: Water	Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. The 'before' sampling will be conducted within 4 weeks of the felling activity commencing, preferably in medium to high water flow conditions. The "during" sampling will be undertaken once a week or after rainfall events. The 'after' sampling will comprise as many samplings as necessary to demonstrate that water quality has returned to pre-activity status (i.e., where an impact has been shown). Criteria for the selection of water sampling points include the following:	As Required	Monthly	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› Avoid man-made ditches and drains, or watercourses that do not have year-round flows, i.e. avoid ephemeral ditches, drains or watercourses; › Select sampling points upstream and downstream of the forestry activities; › It is advantageous if the upstream location is outside/above the forest in order to evaluate the impact of land-uses other than forestry; › Where possible, downstream locations will be selected: one immediately below the forestry activity, the second at exit from the forest, and the third some distance from the second (this allows demonstration of no impact through dilution effect or contamination by other land-uses where impact increases at third downstream location relative to second downstream location); and, › The above sampling strategy will be undertaken for all on-site sub-catchments streams where tree felling is proposed.			
Construction Phase						
MX9	Health and Safety	Ch. 4: Description of the Proposed Project CEMP Section 5	The PSCS appointed for the construction stage shall 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): › Avoid man-made ditches and drains, or watercourses that do not have year-round flows, i.e. avoid ephemeral ditches, drains or watercourses; › Development of the Safety and Health Plan for the construction stage with updating where required as work progresses; › Compile and develop safety file information.	Daily	Daily	PSCS

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› 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; › 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.			
MX10	Peat & Spoil Management	Appendix 4-3	› Routine inspection of the wind farm site by the Contractor and Project Geotechnical Engineer will be undertaken and will include an assessment of ground stability conditions (e.g., cracking, excessive floating road settlement, disrupted surface, closed-up drains) and drainage conditions (e.g., blocked drains, absence of water in previously flowing drains, springs, etc). › Site reporting procedures will be implemented to ensure that working practices are suitable for the encountered ground conditions. Ground conditions will be assessed by a suitably experienced geotechnical engineer.	On going	As Necessary	Project Geotechnical Engineer

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› Regular briefing of all site staff (e.g., toolbox talks) to provide feedback on construction and ground › performance and to promote reporting of any observed change in ground conditions **Movement Monitoring Posts** To monitor possible peat movements, it is proposed to install sighting posts upslope and downslope of the access road at staggered intervals at locations where the peat depth is greater than 2m. Additional monitoring locations will be provided at infrastructure locations with deeper peat deposits. Details of sighting posts are given below: › A line of sighting posts will comprise: 1. A line of wooden stakes (proposed to be 1 to 1.5m long) placed vertically into the peat to form a straight line. 2. The sighting line will comprise 6 no. posts at 5m centres that is a line some 25m long. 3. A string line will be attached to the first and last posts and all intervening posts will be adjusted so they are just touching the string line. › Lines of sighting posts will be placed across the existing slope about 5m away from the area to be worked. It is recommended that the posts are located along the road at 10m intervals in areas of deep peat (greater than 2.0m). Where there are relatively steeper slopes or softer ground a sighting line will be placed down the slope, or at any location where monitoring is deemed useful by the Project Geotechnical Engineer. › Each line of sighting posts will be uniquely referenced with each post in the line given a reference. The post reference will be marked on each post (e.g., reference 1-1, 1-2, 1-3, 1-4, 1-5, 1-6 for posting line 1).			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› The sighting lines will be monitored at the beginning of each working day, and during the day where considered appropriate (e.g., when working activity is concentrated at a specific location). › Monitoring of the posts will comprise sighting along the line and recording any relative movement of posts from the string line. › Where increased movements are recorded the frequency of monitoring will be increased. › A monitoring record will be kept of the date, time and relative movement of each post, if any. This record will be updated and stored as a spreadsheet. **Borrow Pits** › It will be necessary to construct rock buttresses founded on in-situ rock within the borrow pits to create individual cells (up to 4 no. depending on the borrow pit). The cells will be opened in sequence and filled as needed. The rock buttresses will be constructed of rock fill from the borrow pit excavated, placed and compacted in layers. The founding stratum for each rock buttress will be inspected and approved by the Project Geotechnical Engineer. The stability of the rock faces within the borrow pits will be inspected by the Project Geotechnical Engineer upon excavation to ensure stability during construction works and in the long term. This inspection will allow unfavourable rock conditions to be identified and suitable mitigation measures to be applied such as removal of loose rock. › Supervision by the Project Geotechnical Engineer will be carried out for the development of the borrow pits.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX11	Water Quality and Monitoring – Forestry Felling Drainage Measures	Ch. 4: Description of the Proposed Project Ch. 9: Water CEMP Section 4	Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) will be appointed to oversee the felling and extraction works. The ECoW will have the following functions: › 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 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. › 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 shall be collected upstream and downstream of the keyhole felling site at suitable sampling locations. ○ Sampling shall be taken from the stream / river bank, with no in-stream access permitted. ○ The following minimum analytical suite shall be used: pH, Electrical Conductivity, Total Suspended Solids,	As required	As Necessary	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			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 contingency 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.			
MX12	Water Quality and Monitoring	Ch. 4: Description of the Proposed Project Ch. 9: Water CEMP Section 4	› Regular inspections (weekly and monthly) of all installed drainage features will be undertaken. Additional event based inspections will also be completed, i.e. after heavy rainfall in order to check for blockages and to ensure there is no build-up of standing water at parts of the drainage systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the supervising hydrologist. › If necessary, any excess sediment build up behind check dams will be removed. For this reason, check dams will be inspected and maintained weekly during the construction phase of the project to ensure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam. › Check dams will also be inspected following rainfall events to ensure the structure of the dam is still effective in controlling flow. Any scouring around the edges of the check dams or overtopping of the dam in normal flow conditions will be rectified by reinforcement of the check dam. › Drainage swales will be regularly inspected for evidence of erosion along the length of the swale. If any evidence of erosion is detected, additional check dams will be installed to limit the	Daily	As Necessary	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			velocity of flow in the channel and reduce the likelihood of erosion occurring in the future. › A water level indicator such as a staff gauge will be installed in each stilling pond with marks to identify when sediment is at 50% of the trap's capacity. Sediment will be cleaned out of the silt trap when it exceeds 50% of trap capacity. Silt traps will be inspected weekly during the construction phase of the Proposed Project and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows. › The frequency of drainage system inspections will be reduced following completion of the construction phase of the Proposed Project. Weekly inspections during the construction phase will be reduced to monthly, bi-monthly and eventually quarterly inspections during the operational phase up until the site has revegetated and the natural silt controls regenerate. The frequency will be increased or decreased depending on the effectiveness of the measures in place and the amount of remedial action required in any given period.			
MX13	Reactive Site Drainage Management	Ch. 4: Description of the Proposed Project Appendix 4-3	› The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW or supervising hydrologist on-site. › The ECoW or supervising hydrologist will respond to changing weather, ground or drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site.	As required	As Necessary	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to the situation on the ground at a particular time. › Daily visual inspections of 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. › In the event that works are giving rise to siltation of watercourses, the ECoW or supervising hydrologist will stop all works in the immediate area around where the siltation is evident. The source of the siltation will be identified and additional drainage measures such as those outlined above will be installed in advance of works recommencing.			
MX14	Surface Water Drainage Measures Monitoring	Appendix 4-7: Surface Water Management Plan	**Stilling Ponds** › A water level indicator such as a staff gauge will be installed in each stilling pond with marks to identify when sediment is at 10% of the stilling pond capacity. Sediment will be cleaned out of the still pond when it exceeds 10% of pond capacity. Stilling ponds will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows **Culverts**	As required	Monthly	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance. **Silt Fences** › 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. **Check Dams** › 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.			
MX15	Surface Water Quality and Monitoring	Ch. 9: Water CEMP Section 4	› Daily surface water monitoring forms (for visual inspections and field chemistry measurements) will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection. › 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 Clare County Council but will be based on the planning stage programme already outlined in the EIAR and CEMP and presented in this document. › 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.	Daily	As Necessary	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› 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.			
MX16	Tree Felling	Ch. 9: Water	› Daily surface water monitoring forms (for visual inspections and field chemistry measurements) will be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection. › Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Existing drains will not be disturbed during felling works;	As Required	Monthly	ECoW
MX17	Plant and Equipment Inspections	Ch. 9: Water	› The plant used will be regularly inspected for leaks and fitness for purpose.	As Required	Monthly	ECoW
MX18	Traffic and Transport	CEMP Section 3	› The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary. › The roads adjacent to the site entrances will be checked weekly or damage/potholes and repaired as necessary.	As required	Weekly	ECoW
MX19	Biodiversity	CEMP Section 4	The Project Ecologist will be available to support the ECoW on matters relating to the protection of sensitive habitats and species encountered prior to or during the construction phase of the Proposed Project. The Project Ecologist will not be full time on site but will undertake pre-commencement surveys and visit the site as	As required	As required	Project Ecologist/Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			required. The responsibilities and duties of the Project Ecologist/Ornithologist will include the following: › Undertake a pre-construction transect/walkover bird survey to ensure that significant effects on breeding birds will be avoided. › Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Site. › Oversee management of ornithological and ecological issues during the construction period and advise on ornithological issues as they arise. › Provide guidance to contractors to ensure legal compliance with respect to protected species onsite. › Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress.			
MX20	Peat and Spoil Management, Borrow Pits	Ch. 4: Description of the Proposed Project CEMP Section 4	› Inspections of the peat and spoil management areas will be made by the Project Geotechnical Engineer through regular monitoring of the works › 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 temporary peat placement areas will be upslope of founded roads/hardstands and will be inspected by the Project Geotechnical Engineer before material is temporarily stored in the area. › 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/Ecological Clerk of Works/Project Geotechnical Engineer) during the works, particularly before/following tracking by heavy vehicular loads. It should be noted that the new access tracks have been designed to avoid	As required	As required	Geotechnical Engineer

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			areas of deep peat where possible, with an average peat depth of 0.55m recorded along these tracks			
	Exhaust Emissions	Ch. 10: Air Quality	› Proposed Project construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager will produce and follow a site inspection and machinery checklist which will be followed and updated as required.	As required	As required	Site Supervisor/Construction Manager
MX21	Archaeological Monitoring	Ch. 13: Cultural Heritage CEMP Section 4	› All elements of the Proposed Project located within existing greenfield will be subject to archaeological monitoring of topsoil stripping. This work will be carried out under licence to the National Monuments Service of the DHLGH. If archaeological remains are identified during the course of these works further mitigation will be implemented as required and will include preservation by record or in-situ. Any further mitigation will require agreement from the DHLGH. › All interventions that are required along townland boundaries, as part of the construction of the Proposed Wind Farm, will be subject to archaeological monitoring, and will include a full record of the sections of townland boundaries that are removed. This work will be carried out under licence to the National Monuments Service of the DHLGH. › The excavation of the Proposed Grid Connection, where it runs through bridges CH59 and CH60 will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH and include a full record of the fabric of the bridge and any earlier road surfaces contained within same.	As Required	As Required	Project Archaeologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› All topsoil stripping, where it is required for the construction of the temporary access road at CH39, will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH and should any remains of the earlier road be identified during the course of works, these will be preserved by record.			
Operational Phase						
MX22	Drainage Inspections	CEMP Section 3 Ch. 9: Water	› An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. 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. Inspections will also be undertaken after tree felling. › 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 carried out on a daily basis. During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken for each primary watercourse, and specifically following heavy rainfall events.	Monthly	Monthly	ECoW
MX23	Bats	Ch. 6: Biodiversity Appendix 6-2	To assess the effects of the Proposed Project 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.	Years 1, 2, 3	Annually	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			At the end of each year, the efficacy of any mitigation/curtailment programme shall be reviewed, and any identified efficiencies incorporated into the programme. To assess the effects of the Proposed Project 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. The results of post-construction monitoring shall be utilised to assess any potential changes in bat activity patterns and to monitor the implementation of the mitigation strategy. If the monitoring identifies a curtailment requirement (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. At the end of each year, the efficacy of the mitigation and monitoring plan will be reviewed, and any identified efficiencies incorporated into the programme. This approach allows for an evidence-based review of the potential for bat fatalities at the Proposed Wind Farm, 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 or curtailment needs to be monitored in order to determine (a) whether it is working effectively (i.e. the level of bat mortality is incidental), and (b) whether the curtailment regime can be refined such that turbine down-time can be minimised whilst ensuring that it remains effective at preventing casualties.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			The below subsections provide additional detail on the proposed survey effort, timing, and mitigation. **Monitoring Year 1** Bat activity surveys The post-construction surveys will be carried out as per the pre-construction survey effort. Static monitoring will take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). Full spectrum recording detectors will be utilised for the same duration as during pre-application surveys and at the same density (NatureScot, 2021). Walked survey transects will also be conducted. Key weather parameters and other factors that are known to influence collision risk will be monitored and shall include: › Windspeed in m/s (measured at nacelle height) › Temperature (ºC) › Precipitation (mm/hr) Carcass searches Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with most recent guidance. This shall include searcher efficiency trials and an assessment of scavenger removal rates to determine the appropriate correction			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			factor to be applied in relation to determining an accurate estimate of collision mortality. Surveys should cover all activity seasons and the use of a trained dog detection team will be carried out to ensure maximum efficiency. **Monitoring Years 2&3** 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). The performance of the curtailment programme in terms of its ability to respond to the changes in bat abundance based on temperature and wind speed shall be analysed to confirm it is neither significantly over- nor under-curtailing during different periods of bat activity. At the end of each year, the efficacy of the mitigation/curtailment programme shall be reviewed, and any identified efficiencies incorporated into the programme. The requirement for continued post-construction monitoring will also be considered. Should no bat fatalities be recorded in Year 1, curtailment (where applicable) in Year 2 and Year 3 could be reduced/re-evaluated or removed with monitoring continuing to inform this strategy.			
MX24	Birds	Ch. 7: Birds Appendix 7-7: Bird Monitoring	The programme of works will monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project. Surveys will be scheduled to coincide with years 1, 2, 3, 5, 10 & 15 of the lifetime of the wind farm. Monitoring measures are based on guidelines issued by NatureScot (SNH, 2009 and NatureScot, 2025). The following individual components will be implemented:	Years 1,2,3,5, 10 and 15	Monthly	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
		Programme	› Monthly flight activity surveys: vantage point surveys. › Targeted bird collision surveys (corpse searches) will be undertaken with trained dogs. The surveys will include detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust. The proposed Bird Monitoring Programme was not put forward in response to any identified significant effect but rather as a best practice measure (as per guidance outlined in NatureScot, 2009). The monitoring programme is comprehensive and considered entirely adequate in this regard. The results of this monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required.			
MX25	Hen Harrier Enhancement Plans	Ch. 7: Birds Appendix 7-7: Bird Monitoring Programme Appendix 7-8: Hen Harrier Enhancement Plan	Following commencement of the Hen Harrier Enhancement Plan, the efficacy of the enhancement measures will be reviewed yearly. Analysis of the data collected will be the basis for a review of the measures and techniques employed. This analysis will be contained in an annual report. Should any adjustments to the plan be deemed necessary or advisable, these should be undertaken in consultation with the NPWS prior to any alterations to the plan. Additional monitoring measures will include: **Habitat scoring** The enhancement lands will be scored based on the Hen Harrier Project scorecards for Bog and Heath (Areas A, B, C and 6) and Wet Grassland (Areas 1, 2, 3, 4 and 5). Scoring will be carried out based on the methods outlined in the Hen Harrier Project			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			guidance documents for each habitat type. Scoring will be carried out between May 15th and August 31st as per these methods. **Vegetation sampling** A number of fixed relevé sites (i.e. permanent quadrats) will be set up in the proposed enhancement lands. Data will be recorded prior to the commencement of the enhancement plan activities. The character of each relevé will be recorded (e.g. species proportions present using Domin scale, vegetation structure) and photographs will be taken of each relevé from a fixed point. These relieves will then be re-examined annually following the commencement of the enhancement plan in place to establish the extent of habitat improvement resulting from management practices. 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 and submitted to the planning authority yearly following commencement of the plan. The farm plan agreements and enhancement area plan agreements will provide for such amendments			
MX26	Noise and Vibration	Ch. 12: Noise and Vibration	Prior to the commissioning of the wind farm, the developer will submit a Noise Complaint Monitoring Programme (NCMP) to the planning authority for written agreement. The NCMP will include a detailed methodology for noise measurements and procedures for recording results and a protocol for managing complaints. Compliance noise surveys will be undertaken to verify compliance with any noise conditions applied to the development. It is common practice to commence surveys within six months of a wind farm	Once within six months	As Required	Noise Consultant

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			being commissioned. The guidance outlined in the IOA GPG and Supplementary Guidance Note 5: Post Completion Measurements (July 2014) will be taken into account. In the unlikely event that an exceedance of the noise criteria is identified as part of the commissioning assessment, implementation of noise reduced operational modes resulting in curtailment of turbine operation will be implemented for specific turbines in specific wind conditions to ensure turbine noise levels are within the relevant noise criterion curves/planning conditions limits. Such curtailment can be applied using the wind farm SCADA system without undue effect on the wind turbine performance. Following implementation of these measures, noise surveys will be repeated to confirm compliance with the noise criteria.			
Decommissioning Phase						
MX27	Decommissioning	Appendix 4-6: Decommissioning Plan Section 1	As noted in the Scottish Natural Heritage report (SNH) *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the wind farm, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore: *"best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm".* In this regard, this Decommissioning Plan will be reviewed and updated prior to commencement of decommissioning works to take	End of Operational Life	As Required	Developer Appointed/ Contractor

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			account of the relevant conditions of the planning permission and current health and safety standards.			
MX28	Decommissioning	Appendix 4-6: Decommissioning Plan Section 3	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 GCC and other statutory bodies as required.	End of Operational Life	As Required	Site Manager/ ECoW
MX29	Decommissioning	Appendix 4-6: Decommissioning Plan Section 3	The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.	End of Operational Life	As Required	Site Manager/ ECoW
MX30	Decommissioning	Appendix 4-6: Decommissioning Plan Section 3	Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the Site to identify invasive species where any minor excavation will be required. If present in these areas, the ecologist will propose suitable management measures.	End of Operational Life	As Required	Project Ecologist
MX31	Health and Safety	Appendix 4-6: Decommissioning Plan Section 4	› 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.	End of Operational Life	As Required	PSCS

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX32	Birds	Appendix 7-7: Bird Monitoring Programme	› It is proposed that decommissioning works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Project to identify sensitive sites (e.g. roosts). › Any requirement for decommissioning works to run into the subsequent breeding or winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding or roosting birds of conservation concern. These surveys will be conducted once per month during the breeding season (April to July) and once at the start of the winter season (October). The survey will aim to identify sensitive sites (e.g., nests or roosts depending on the season in question). › This monitoring will involve surveying onsite and to a 500m radius of the development footprint/works areas. Monitoring will be undertaken by a suitably qualified ornithologist. The survey period will include one month prior to the initiation of works, four visits between April and July and one visit during the winter period (October). If breeding or roosting activity is identified, the nest/roost sites will be located, and no works shall be undertaken within a species-specific buffer in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works within the buffer zone shall be permitted until it can be demonstrated that the species is no longer reliant on the nesting or roosting areas.	End of Operational Life	As Required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked off using hazard-tape fencing to alert all personnel on site to the suspension of works within that area.			