Environmental Impact Assessment Report

Proposed Clonberne Wind Farm Development, Co. Galway

Chapter 18 – Schedule of Mitigation and Monitoring Proposals

DOCUMENT DETAILS

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Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

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18. SCHEDULE OF MITIGATION AND 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 proposal 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.

18.1 EIAR Mitigation Measures

Table 16-1 Schedule of Mitigation

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
EIAR Chapter 4 – Description of the Proposed Project					
Pre-Commencement Phase					
MM1	Environmental Management	EIAR Section 4	All proposed activities on the site of the Proposed Project will be provided for in an environmental management plan. A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Project and is included in Appendix 4-3 of the EIAR. The CEMP sets out the key environmental considerations to be taken into account by the contractor during construction of the Proposed Project. The CEMP also details the mitigation measures to be implemented in order to comply with the environmental commitments outlined in the EIAR.		
MM2	Environmental Management	EIAR Section 4	The on-site construction staff will be responsible for implementing the mitigation measures specified in the EIAR and compiled in the Audit Report. Their implementation will be overseen by the ECoW or supervising hydrogeologists, environmental scientists, ecologists or geotechnical engineers, depending on who is best placed to advise on the implementation. The system of auditing referred to above ensures that the mitigation measures are maintained for the duration of the construction phase, and into the operational phase where necessary.		
MM3	Drainage Inspection	CEMP Section 4	Prior to commencement of works in sub-catchments across the site, main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		SWMP Section 3	inspections on a catchment by catchment basis as the construction works develop across the site, as works in all areas will not commence simultaneously. Drainage and associated pollution control measures will be implemented onsite in conjunction with the main construction works. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off.		
MM4	Concrete Deliveries	EIAR Section 4 CEMP Section 3	The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures.		
MM5	Site Drainage Plan	EIAR Section 4 CEMP Section 4	A detailed drainage design for the Proposed Project, incorporating all principles and measures outlined in Section 4.7 of the EIAR, has been prepared, and is included in Appendix A of Appendix 4-5 of the EIAR.		
MM6	Preparative Site Drainage Management,	CEMP Section 4 SWMP Section 3	All materials and equipment necessary to implement the drainage measures outlined above will be brought on-site in advance of any works commencing. An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the drainage design measures as necessary. The drainage measures outlined in the above will be installed prior to, or at the same time as the works they are intended to drain.		
MM7	Drainage Maintenance	EIAR Section 4	Prior to the commencement of construction an inspection and maintenance plan for the on-site drainage system will be prepared by the ECoW in consultation with		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 4	the Project Hydrologist. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended.		
MM8	Waste Management	EIAR Section 4	Prior to the commencement of the development, a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan.		
MM9	Felling	EIAR Section 4, 7	In the interest of breeding birds, construction will not commence during the Breeding Bird season from April to July inclusive. Construction may commence at any stage from August onwards to the end of March, so that construction activities are ongoing by the time the next breeding bird season comes around and can continue throughout the next breeding season. Should any of the species identified as Important Ecological Features be recorded breeding within the given distances of the works area, a buffer zone (using above distances) will be established around the expected location of the nest (location identified as far as is possible without causing disturbance to the bird) and all works will be restricted within the zone until it can be demonstrated by an ornithologist that the species has completed the breeding cycle in the identified area. Any restricted area that is required to be set up will be marked clearly using hazard tape fencing and all site staff will be alerted through toolbox talks.		
MM10	Felling Licence	EIAR Section 4	The tree felling activities required as part of the Proposed Project will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the “Forestry Act” and the Forestry Regulations 2017 (SI		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 4	191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments.		
MM11	Peat Management	CEMP Section 2	Prior to commencing the construction of the excavated roads movement monitoring posts will be installed in areas where the peat depth is greater than 2.0m. Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area. Prior to commencing floating road construction movement monitoring posts will be installed in areas where the peat depth is greater than 2.0m.		
MM12	Invasive Species Management	CEMP Section 3	To establish good site hygiene to ensure the control of any potential spread of invasive species during construction works, a risk assessment and method statement must be provided by the Contractor prior to commencing works.		
MM13	Traffic Management	EIAR Section 4	Prior to the Traffic Management Plan being finalised, a full dry run of the transport operation along the proposed route will be completed using vehicles with attachments to simulate the dimensions of the wind turbine transportation vehicles. This dry run will inform the Traffic Management Plan submitted for agreement with the local authority. All turbine deliveries will be provided for in a transport management plan which will have to be prepared in advance of the construction stage, when the exact transport arrangements are known, delivery dates confirmed and escort proposals in place. Such a transport management plan will be submitted to the Planning Authority for agreement in advance of any abnormal loads using the local roads, and will provide for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM14	Health and Safety	EIAR Section 4	All relevant Site Health & Safety procedures, in accordance with the relevant Health and Safety Legislation and guidance (listed in Section 5.8.2.1 of the EIAR), including the preparation of the Health & Safety Plan, erection of the relevant and appropriate signage on site, inductions and toolbox talks will take place prior to and throughout the construction phase of the Proposed Project.		
Construction Phase					
MM15	Wastewater Management	EIAR Section 4	Temporary toilets, located within staff portacabins, will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by a permitted waste collector to wastewater treatment plants.		
MM16	Refuelling	EIAR Section 4 CEMP Section 3	› On-site refuelling of machinery will be carried out at dedicated refuelling locations using a mobile double skinned fuel bowser. The fuel bowser, a double-axle custom-built refuelling trailer will be re-filled off site and will be towed around the site by a 4x4 jeep to where machinery is located. It is not practical for all construction machinery to travel back to a single refuelling point, given the size of the cranes, excavators, etc. that will be used during the construction of the proposed wind farm. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use. › The fuel bowser will be parked on a level area in the construction compound (outside of Gurteen/Cloonmore GWS refined Zone of Contribution (ZoC)) when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Only designated trained and competent operatives will be authorised to refuel plant on site. › Fuels volumes 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 (outside of Gurteen/Cloonmore GWS refined ZoC); › Mobile measures such as drip trays, spill kits and fuel absorbent mats will be available if necessary, during all refuelling operations. › The plant used will be regularly inspected for leaks and fitness for purpose; and, › An emergency plan for the construction phase to deal with accidental spillages will be developed (refer to Section 5 of this CEMP). Spill kits will be available to deal with any accidental spillage in and outside the refuelling area.		
MM17	Concrete Deliveries and Management	EIAR Section 4 CEMP Section 3	The following mitigation measures will be implemented in full to avoid release of cement leachate from the site: • No batching of wet-cement products will occur on site; • The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures. • 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 use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;		

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 be washed out fully at the batching plant, where facilities are already in place. Use weather forecasting to plan dry days for pouring concrete; • Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event; • The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area. Where temporary lined impermeable containment areas are used, such containment areas are typically built using straw bales and lined with an impermeable membrane. • The areas are generally covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents will be tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste. The 50m wide river buffer zone will be in place for the duration of the construction phase. No construction activity will occur within the buffer zone with the exception of bridge and culvert construction. The buffer zone will: • Prevent any cement-based products accidentally entrained in the construction phase drainage system entering directly into watercourses, achieved in part by ending drain		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			discharge outside the 50m buffer zone and allowing percolation across the vegetation of the buffer zone; • Provide a buffer against accidental direct pollution of surface waters by any pollutants, or by pollutants entrained in surface water run-off. The risks of pollution arising from concrete deliveries will be further reduced by the following: • Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout. • Site roads will initially be constructed with a subgrade and compacted with the use of a roller to allow concrete delivery trucks access all areas where the concrete will be needed. The final wearing course for the site roads will not be provided until all bases have been poured. 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, agreeing 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Due to the scale of the main concrete pours that will be required to construct the Proposed Project, the main pours will be planned days or weeks in advance. Special procedures will be adopted in advance of and during all concrete pours to minimise the risk of pollution. These may include: • 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 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 agreed suitable locations away from any watercourse or sensitive habitats.		
MM18	Dust Suppression	EIAR Section 4	In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. If necessary, water will be taken from stilling ponds in the site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and site compounds to prevent the generation of dust. Silty or oily water will not be used for dust suppression,		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			because this would transfer the pollutants to the haul roads and generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.		
MM19	Vehicle Washing	EIAR Section 4	Wheels or vehicle underbodies are often washed before leaving sites to prevent the build-up of mud on public (and site) roads. Due to the presence of the Gurteen/Cloonmore GWS refined ZoC, wheel-wash locations have been proposed as part of the measures to protect the ZoC from polluted waters from construction activities. Two wheel-wash facilities will be provided during the construction phase of the Proposed Project – one such location is at the proposed site entrance.		
MM20	Road Cleanliness	EIAR Section 4	A road sweeper will be available if any section of the public roads were to be dirtied by trucks associated with the Proposed Project.		
MM21	Waste Management	EIAR Section 4 CEMP Section 3	In Section 3.9 of Appendix 4-4 CEMP, a waste management plan (WMP) is provided and which outlines the best practice procedures during the construction phase of the project. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery, and reuse at each stage of construction of the Proposed Project. Disposal of waste will be a last resort. 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.		
MM22	Turbine Component Delivery	EIAR Section 4	The deliveries of turbine components to the site may be made in convoys of three to five vehicles at a time, and mostly at night when roads are quietest. Convoys will be accompanied by escorts at the front and rear operating a “stop and go” system.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		EIAR Section 15	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. 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.		
MM23	Watercourse Buffers	EIAR Section 4 CEMP Section 3	All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses. Buffer zones of 50m around rivers and streams, respectively, have been used to inform the layout of the Proposed Project.		
MM24	Water Discharge	EIAR Section 4 CEMP Section 3	There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from natural watercourse and lakes.		
MM25	Drainage Swales	EIAR Section 4 CEMP Section 3	Drainage swales will be installed downgradient of any works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and picked up silt and sediment. Swales will intercept the potentially silt-laden water from the excavations and construction areas of the site and prevent it reaching natural watercourses. Drainage swales will be installed in advance of any main construction works commencing. The material excavated to make the swale will be compacted on the downslope edge of the drain to form a diversion dike.		
MM26	Interceptor Drains	EIAR Section 4	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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 3	where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area. The interceptor drains will be installed in advance of any main construction works commencing. The material excavated to make the drain will be compacted on the downslope edge of the drain to form a diversion dike.		
MM27	Check Dams	EIAR Section 4 CEMP Section 3	Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. Check dams are designed to reduce velocity and control erosion and are not specifically designed or intended to trap sediment, although sediment is likely to build up. If necessary, any excess sediment build up behind the dams will be removed. For this reason, check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.		
MM28	Level Spreaders	EIAR Section 4 CEMP Section 3	A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations where they are not likely to contribute further to water ingress to construction areas of the site.		
MM29	Piped Slope Drains	EIAR Section 4	Piped slope drains will be used to convey surface runoff from diversion drains safely down slopes to flat areas without causing erosion. Once the runoff reaches the flat areas it will be reconverted to diffuse sheet flow. Level spreaders will only be established on slopes of less than 6% in grade. Piped slope drains will be used to transfer water away from areas where slopes are too steep to use level spreaders.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM30	Vegetation Filters	EIAR Section 4	Vegetation filters are the existing vegetated areas of land that will be used to accept surface water runoff from upgradient areas. The selection of suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions. Vegetation filters will carry outflow from the level spreaders as overland sheet flow, removing any suspended solids and discharging to the groundwater system by diffuse infiltration. Vegetation filters will not be used in isolation for waters that are likely to have higher silt loadings. In such cases, silt-bearing water will already have passed through stilling ponds prior to diffuse discharge to the vegetation filters via a level spreader.		
MM31	Stilling Ponds	EIAR Section 4 CEMP Section 3	Stilling or settlement ponds will be used to attenuate runoff from works areas of the site of the Proposed 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.		
MM32	Dewatering Silt Bag	EIAR Section 4	Dewatering silt bags are an additional drainage measure that can be used downgradient of the stilling ponds at the end of the drainage swale channels and will be located, wherever it is deemed appropriate, throughout the site. The water will flow, via a pipe, from the stilling ponds into the silt bag. The silt bag will allow the 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
MM33	Siltbuster	EIAR Section 4	A "siltbuster" or similar equivalent piece of equipment will be available to filter any water pumped out of excavation areas if necessary, prior to its discharge to stilling ponds or swales. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit.		
MM34	Sediments entrapment mats	EIAR Section 4	Sediment entrapment mats, consisting of coir or jute matting, will be placed at the outlet of the silt bag to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure		
MM35	Culverts	EIAR Section 4	The following mitigation is proposed for completion of wind farm culvert upgrades: • All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse. • The size of culverts will be influenced by the depth of the track or road sub-base. In some cases, two or more smaller diameter culverts may be used where this depth is limited, though this will be avoided as they will have a higher associated risk of blockage than a single, larger pipe. • In all cases, culverts will be oversized to allow mammals to pass through the culvert. • Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. • All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance. • It is proposed to construct clear-span crossings watercourse crossings along the wind farm access roads using a bottomless box culvert. The locations of these crossings are shown on the layout drawings included in Appendix 4-1 of the EIAR. The clearspan watercourse crossing methodologies presented below will ensure that no instream works are necessary. • The watercourse crossings will be constructed to the specifications of the OPW bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. • The service crossings will be constructed in accordance with Gas Networks Ireland Code of Practice 2021. These crossing designs will be approved by GNI before works commence on site. • Confirmatory inspections of each proposed new watercourse crossing location will be carried out by the project civil/structural engineer and the project hydrologist prior to the construction of each crossing.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• The watercourse crossings will be constructed to the specifications of the OPW bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within suitable backfill material.		
MM36	Silt Fences	EIAR Section 4	› 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 stream or a 100-metre of a lake, which is inevitable where existing roads in proximity to watercourses are to be upgraded as part of the Proposed Project. These areas include around existing culverts, around the headwaters of watercourses, and the proposed locations are indicated on the detailed drainage design drawings included in Appendix A of Appendix 4-5 of the EIAR. › The silt fence designs follow the technical guidance document 'Control of Water Pollution from Linear Construction Projects' published by CIRIA (Ciria, No. C648, 1996). Up to three silt fences may be deployed in series. › Site fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it.		
MM37	Excavation seepages and treatment	EIAR Section 4	› There will be no direct discharges to any natural watercourses, with all drainage waters being dispersed as overland flows. › A five-metre-wide working area will be required around each turbine base, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur. Some of the material excavated		

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			to create the working area will be stored locally for later reuse in backfilling the working area around the turbine foundation. The excavated material will be sealed using the back of the excavator bucket to ensure no water is trapped within the material and it will be surrounded by silt fences to ensure sediment-laden run-off does not occur. › A two to three-metre-wide working area will be required around each hardstanding area, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur. Material excavated to create the working area will be stored locally for later reuse in backfilling the working area around the turbine foundation. The excavated material will be covered with polythene sheets and surrounded by silt fences to ensure sediment-laden run-off does not occur. Interceptor drains will be installed upgradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area.		
MM38	Peat Management	EIAR Section 4 CEMP Section 2, 3 Appendix 4-3	The General Construction methodologies, as outlined in the Peat and Spoil Management Plan Appendix 4-3, are aimed to minimise the impact to the stability of the peat. Proposed New Roads: • Excavation of the new access road to competent strata (see Section 3 for guidance on correctly handling and storing the		

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			different peat layers). Maximum excavation side slopes will be 1:1.5. ○ Drainage shall be installed to divert surface and groundwater from the construction areas. • A layer of geogrid/geotextile may be required at the base of the excavation. To be confirmed at detailed design. • Placement of granular fill-in layers following the designer's specification. The fill thickness is 200mm above the existing ground level, which is required to backfill the excavation to a suitable competent strata below the existing ground level. • Access roads are to be finished with a granular running surface across the full width of the road. New Floated Roads: • A geotextile-geogrid composite layer is placed directly onto the peat surface following the designer's specification. • Placement of granular fill up to 800mm and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement and deformation of peat anticipated at the access track. ○ Cross-drains shall be installed within the road to divert surface and groundwater from upslope to downslope. ○ Stone delivered to the floating road construction area shall be end-tipped onto the constructed floating road to avoid excessive impact loading on the peat due to concentrated end-tipping. Direct tipping of stone onto the peat shall not be carried out. ○ Stone will be spread and placed from the constructed floating road onto the peat surface using a bulldozer.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Access roads are to be finished with a granular running surface across the full width of the road. No excavations (e.g., drainage or peat cuttings) shall be carried out within 5m of a completed floated access road edge or at a distance determined following a site inspection by the Contractor's Geotechnical Engineer. Upgrade of Existing Founded Roads 1. Excavation on one or both sides of the existing access road to competent strata. 2. Placement of granular fill up to 200m above existing ground level and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement and deformation of peat anticipated at the access track. 3. Overlay of the existing access road with selected granular fill following the designer's specification. a. Where coarse granular fill has been used in the existing floated access road make-up, a layer of geogrid will be placed on top of the existing floated access road. 4. Access roads will be finished with a granular running surface across the full width of the road. a. A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification. Upgrade of Existing Floated Roads 1. A geotextile is placed on one or both sides of the existing access road directly onto the peat surface, following the designer's specification.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			2. Benching of existing road and placement of granular fill and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement of peat anticipated for the widened area. a. It may be necessary to stage the widening to maintain peat stability – i.e., to reduce the fill placement rate to allow the peat layers to consolidate and increase in strength. b. It may be necessary to anchor the geogrids into the existing roads, requiring significant benching of existing roads. 3. Overlay of the existing access road with selected granular fill following the designer's specification. a. Where coarse granular fill has been used in the existing floated access road make-up, a layer of geogrid will be placed on top of the existing floated access road. b. The surface of the existing access road will be graded/levelled before the placement of any geogrid/geotextile, where necessary (to prevent damaging the geogrid/geotextile). 4. Access roads are to be finished with a layer of capping across the full width of the road. a. A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification. Where there are cross slopes, any road widening works required will be carried out on the upslope side of the existing access road, where possible. Particular design details will be required at the detailed design stage at the transitions		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			between floating and founded roads to reduce differential settlements between the two construction types. 5. The following general construction guidelines will be implemented for the access roads on site. • Where an open ditch is present alongside an existing/proposed floating access track, the ditch will need to be filled prior to upgrading/constructing the access track. The ditch will be filled with suitable drainage stone. As applicable, a perforated pipe will be laid into a ditch prior to filling so as to maintain water flow within the ditch. • Where existing drainage crosses the road then it will be necessary to ensure that this drainage is not affected by settlement of the upgraded access road. Cross drains comprising flexible perforated pipes within a permeable stone fill surround will be used to maintain the existing drainage. • No excavations (e.g., drainage, peat cuttings) will be carried out within 5m distance of a completed floated access road edge, or at a distance determined following site inspection. The presence of excavations can destabilise the road. Temporary excavations will be excavated in short lengths and backfilled as soon as practicable. • Floating roads will not be constructed on areas of sidelong ground. • No stockpiling of materials will take place on or adjacent to floated access roads so as to avoid bearing failure of the underlying peat. • End-tipping of stone onto the road during the construction/upgrading of the access road will be carefully		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			monitored to ensure that excessive impact loading, which may adversely affect the underlying peat, is limited. • Due to the nature of floating road construction, it will be necessary to monitor the settlement/movement of the road. Survey points will be located along the road at 10m intervals in areas of deep peat (greater than 2m). These surveys points will be surveyed on a weekly basis, and more frequently when construction activities are ongoing in the area. • The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis during the works, particularly before/following trafficking by heavy vehicular loads. • In the event of excessive vertical displacement of the road during/following construction then mitigation measures will be required to ensure the stability of the road. This will include: ○ Introduction of pressure berms either side of the road (that are 2m to 5m wide by 0.5m deep stone layer). ○ Where peat is relatively willow then excavate peat and replace with suitable fill. ○ Slowing the rate of construction. • Settlement of a floated access road is expected and will likely be in order of several 100mm in the deeper peat area; as such it will be necessary to re-level the road at convenient intervals during the works. The magnitude and extent of the settlement is likely to be greater in areas of deeper peat with the rate of settlement reducing over time. Prior to completion of the works, the road will be re-levelled using crushed stone.		
MM39	Peat and Spoil Repository Areas	EIAR Section 4	› The following outlines guidelines for the careful handling and placement of peat at the Proposed Project site:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 2	› Care shall be taken during peat excavation to ensure it is segregated from other soil types. Therefore, particular care will be taken to review recorded peat depths. › Peat shall be separated and placed by type, namely the acrotelmic and catotelmic layers. • Acrotelm (interpreted as the upper 0.5m of peat) is generally required for landscaping and shall be stripped and temporarily placed for reuse as required. Acrotelm stripping shall be undertaken before the main excavations. • Where possible, the acrotelm shall be placed with the vegetation part of the sod facing the right way up to encourage the growth of plants and vegetation. • All catotelm peat (peat below about 0.5m depth) shall be transported immediately on excavation to the designated peat repository areas, • The careful handling and segregation of peat types will help to optimise the reuse of peat, aiding in the retention of structure and integrity of the excavated peat material. › Peat and spoil shall be separated and stored separately in designated peat and spoil repository areas. It is not proposed to place peat in the borrow pit. › Depending on what vegetation is found on site, more fibrous material may be placed at steeper angles. Unconsolidated peat, generally comprising of catotelmic material, is often not suitable for general dressing, and any unconsolidated peat excavated must only be used for reinstatement where such reuse poses no risk of polluting water courses and evidence can be provided that the required water table at the chosen location can be maintained. However, from a		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			review of the ground investigation logs, which identify predominantly fibrous and pseudo-fibrous material, it is considered that the material excavated will be generally suitable to facilitate: • Placement in designated Peat Repository Areas • Placement in restricted thicknesses on track shoulders and around infrastructure locations where topography permits. › Construction sequence planning shall minimise the time that peat is placed before reuse; however, some temporary peat placement will be required for spoil management and separation of spoil horizons before it can be placed in its reinstatement location. The principles on which the temporary placement of excavated peat will be based upon the general and particular placement and handling methodologies set out within this section. Temporary placement will be safe as it protects the structure and integrity of the excavated peat subject to prevailing local conditions. Temporary placement of peat must not be carried out in: • any area outlined as a peat stockpile restriction or safety buffer area in Section 2.5. • Areas possessing a slope angle of greater than 5°, • Areas within 50m of a watercourse › Reinstatement of peat and peat turves will be completed during the Construction Phase at the earliest practicable opportunity to avoid prolonged placement › Any temporary placement locations will be in suitably wet conditions or be irrigated to prevent the peat from desiccating and precautions will be taken to ensure that turves are not allowed to dry out before reinstatement. The condition of turves will be monitored		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			throughout the duration of placement. Irrigation of peat turves will be agreed in advance with the Ecological Clerk of Works (ECoW). Should wetting of turves be required to prevent desiccation, mitigation will be adopted to prevent run-off or discharge to any adjacent watercourses. › Sequencing of construction activities will be timed to allow peat placement in at least one peat repository area during all phases of construction. It may be necessary to utilise existing roads before the upgrade to allow the placement of peat in the initial phases of construction. › › Plant movements and haul distances related to earthworks activity and peat excavation will be kept to a minimum. › Peat and spoil repositories cannot substantially erode or become dry. › Any material stockpiles or repository locations will be located at least 50m away from watercourses, including site ditches/sheughs, to reduce the potential for sediment to be transferred into the wider hydrological system. › Where possible, excavation will be timed to avoid very wet weather, periods of extreme rainfall and/or extended periods of prolonged rainfall. › Peat and spoil repository locations have been selected to limit re-handling as far as reasonably possible. › Excavated peat will be placed as close as possible to the immediate area of excavation. › The Contractor will consult the ECoW to agree on locations for material stockpiles and to avoid potential impacts on sensitive ecological receptors. › The Contractor will consult the site Geotechnical Engineer and review and take into account the PSRA (EIAR Technical Appendix		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			8-1) to avoid the risk of peat instability in peat excavations, peat stockpiling and all material stockpiling in areas underlain by peat. › Runoff from repositories shall be directed through the site drainage system, including silt fences, settlement ponds and other drainage measures as appropriate. These details will be outlined in the Contractor's Construction and Environmental Management Plan. › Peat Repository Areas • Peat repository areas have been identified at locations where the topography (slope angle <5°), peat depth, resulting stability assessment (FoS of >1.3 for 1m peat surcharge) and other environmental constraints (including 50m buffer from all watercourses) have allowed. These areas are designated for the permanent placement of up to 1m of peat material. • A cell berm will be constructed similarly to the peat repository area detail outlined in Appendix B of Appendix 4-3 Peat and Spoil Management Plan. This cell berm will help to prevent the flow of saturated peat material. The stone berm will be constructed with a sufficiently coarse granular material or rock to enable the drainage of the placed peat material and prevent any instabilities within the repository area. • The stone cell berm will require a geotextile separator. The stone cell berm will be constructed using low-ground pressure machinery working from bog mats where necessary. The founding stratum for each stone buttress will be inspected and approved by a competent geotechnical engineer. • The height of the cell berm constructed will be greater than the height of the placed peat & spoil to prevent any surface peat runoff. Berms up to 1.25m in height will be required, subject to detailed design.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• The cell berm is subject to the detail designer's specification; however, some peat excavation or installation of a shear key may be required to prevent global instabilities within the stored material. The shear key will comprise an excavation below the existing ground level beneath the cell berm to provide resistance against lateral forces. • Where possible, the placed peat and spoil surface will be shaped to allow efficient runoff of surface water from the peat and spoil repository areas. • Silting ponds will be required at the repository area's lower side/outfall location. • Intermediate berms or buttresses of spoil material may be installed within the peat repository area to aid in the placement and stability of the peat material. These berms will be shaped to align with the contours of the repository area. • The Contractor shall make every reasonable effort to promote growth in the peat repository areas following the placement of peat and completion of construction stage activities. Upper acrotelm layers shall be placed on the surface the right way up to promote vegetation growth. This growth will aid in stabilising the placed peat material and help in preventing it from becoming saturated following heavy periods of rain. › Spoil Repository Area • Cohesive glacial tills considered unsuitable for reuse in the Proposed Project will require placement in a separate spoil repository area. • The spoil repository area has been identified in a location where the topography (slope angle <5°), peat depth, resulting stability assessment (Factor of Safety of >1.3 for 1m peat surcharge) and		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			other environmental constraints (including 50m buffer from all watercourses) have allowed. This area is designated for permanently placing up to 1m of non-peat spoil material. • Side slopes of placed spoil material are to be no greater than 1(V):2(H). • Where possible, the surface of the placed spoil will be shaped to allow efficient surface water runoff from the peat placement areas. • Silting ponds may be required at the repository area's lower side/outfall location. • Intermediate berms or buttresses of granular material may be installed within the spoil repository area to aid in the placement and stability of the spoil material. These berms will be shaped to align with the contours of the repository area.		
Operational Phase					
MM40	Wastewater Management	EIAR Section 4	› The removal and disposal of wastewater from the site will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under theWaste Management (Collection Permit) Regulations, 2007.		
MM41	Electrical Substation	EIAR Section 4	› The electrical substation will be bunded appropriately to the volume of oils likely to bestored, and to prevent leakage of any associated chemicals and to groundwater orsurface water. The bunded area will be fitted with a storm drainage system and anappropriate oil interceptor.		
Decommissioning Phase					
MM42	Decommissioning	EAIR Section 4	› Prior to the end of the operational period the Decommissioning Plan (Appendix 4-6 ofthe EIAR) will be updated in line with decommissioning methodologies that may exist atthe time and will be agreed with the competent authority at that time.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM43	Decommissioning	EIAR Section 4 DP Section 2	On removal of turbines, the covering of the foundation will be completed using locally sourced material imported to site as the required quantity of material does not currentlyexist at the site. The imported soil will be spread and graded over the foundation using atracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation.		
MM44	Decommissioning	EIAR Section 4 DP Section 3	The following mitigation measures are proposed to avoid the release of hydrocarbons at the site: • On site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site and will be towed around the site by a 4x4 jeep to where machinery is located. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound (outside of Gurteen/Cloonmore GWS refined ZoC) when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; • Onsite 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			interceptor (outside of Gurteen/Cloonmore GWS refined ZoC); • The plant used during construction will be regularly inspected for leaks and fitness for purpose; • An emergency plan for the decommissioning phase to deal with accidental spillages will be developed. Spill kits will be available to deal with and accidental spillage in and outside the refuelling area. • A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase.		
MM45	Decommissioning	EIAR Section 4 DP Section 3	Proposed mitigation measures to control dust include: • A wheel wash facility will be installed on the Proposed Wind Farm Site and will be used by vehicles before leaving the Site. • In periods of extended dry weather, dust suppression may be necessary along haul roads, site roads, grid route, road widening sections, substation, and construction compounds and around the borrow pit area to ensure dust does not cause a nuisance. If necessary, such as during periods of dry weather, de-silted water will be taken from stilling ponds in the Site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads, turbine bases, borrow pit and site compounds to prevent the generation of dust where required. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff as outlined in the CEMP.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Areas of excavation will be kept to a minimum and stockpiling of excavated material will be minimised by coordinating excavation, placement of material in peat placement areas and restoration of borrow pits. • Turbines components, construction materials and grid connection infrastructure will be transported to the Site on specified haul routes only, as agreed with the local authority. • The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as deemed necessary by the construction Site Supervisor/Site Manager. • The transport of construction materials may have the potential to generate dust in dry weather conditions. Roads will be watered down to suppress dust particles in the air as deemed necessary by the Site Supervisor/Manager. • The transport of dry excavated material from the on-site borrow pits, which may have potential to generate dust will be minimised. If necessary, such as in periods of dry weather, excavated material will be dampened prior to transport from the borrow pits.		
MM46	Decommissioning	EIAR Section 4 DP Section 3	The operation of plant and machinery, including site vehicles, is a source of potential impact that will require mitigation at all locations within the site. Proposed measures to control noise include: • Limiting the hours during which site activities likely to create noticeable levels of noise or vibration are permitted; • Establishing channels of communication between the Applicant or contractor, Local Authorities and residents; • Selection of plant with low inherent potential for generation of noise and/or vibration;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• No plant or machinery will be permitted to cause a public nuisance due to noise; • The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. • All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of works; • Compressors models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers; • Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use; and • The hours of decommissioning works (and associated traffic movements) will, insofar as possible, be limited to avoid unsociable hours. Activities shall generally be restricted to between 07:00hrs and 19:00hrs Monday to Friday and between 07:00hrs and 13:00hrs on Saturdays, with no activities on Sundays or public holidays unless in the event of an emergency.		
MM47	Decommissioning	EIAR Section 4 DP Section 3	The reinstatement of any areas disturbed during the decommissioning works will be undertaken. The contractor will record excavated volumes and storage areas, and volumes and type of material utilised for reinstatement of relevant areas. This information will be updated for the duration of the decommissioning works. Reinstatement will be completed using site-won materials wherever possible without compromising or damaging established/existing habitats. Natural vegetation will be preferred; however, native seed mixes may also be selected to		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			complement surrounding species. The seed mix and method of application will be agreed with a suitably qualified ecologist to ensure that the reinstated habitats are compatible with those existing and surrounding the reinstated areas at the time of decommissioning. All temporarily stockpiled materials will be stored in designated areas and isolated from any surface drains and a minimum of 50m away from surface water where possible. Aggregate or fine materials storage will be enclosed and screened/sheeted. No storage of materials within areas of blanket bog or wet heath shall be permitted.		
Chapter 5: Human Beings					
Pre-Commencement Phase					
MM48	Human Health	EIAR Section 5	Prior to commencement of any works, the occupants of dwellings in the vicinity of theproposed works will be contacted and the scheduling of works will be identified in linewith the engagement plan. Local access to properties will also be maintained throughoutany construction works and local residents will also be supplied with the number of theworks supervisor in order to ensure that disruption will be kept to a minimum.		
Construction Phase					
MM49	Human Health	EIAR 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);		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016); • S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and • Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). During construction of the Proposed Project, all staff will be made aware of and adhere to the Health & Safety Authority's '*Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006'.* This will encompass the use of all necessary Personal Protective Equipment, Risk Assessment and Method Statements and adherence to the site Health and Safety Plan.		
MM50	Human Health	EIAR Section 5	Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate health and safety signage will also be erected on this fencing and at locations around the site.		
MM51	Human Health	EIAR Section 5	Best practice measures for noise control will be adhered to onsite during the construction phase of the Proposed Project in order to mitigate the slight short-term negative effects associated with this phase of the development. These measures will include: • No plant used on site will be permitted to cause an on-going public nuisance due to noise. • The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract. • Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. • Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use. • Any plant, such as generators or pumps, which is required to operate outside of general construction hours will be surrounded by an acoustic enclosure or portable screen. • During the course of the construction programme, supervision of the works will include ensuring compliance with the limits detailed in Chapter 12 using methods outlined in British Standard BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise. • The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 7:00hrs 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, large turbine component delivery, rotor/blade lifting) it could occasionally be necessary to work out of these hours. Where rock breaking is employed in relation to the proposed borrow pit location, the following are examples of measures that will be employed, where necessary, to mitigate noise emissions from these activities:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• 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. • Erect acoustic screen between compressor or generator and noise sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured. • Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation.		
MM52	Human Health	EIAR Section 5	Aggregate material for the construction phase will be sourced from the proposed borrow pit and this will reduce the amount of aggregate material to be delivered to the site from off-site sources. Truck wheels will be washed to remove mud and dirt before leaving the site. All plant and materials vehicles shall be stored in the dedicated compound area. Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. Construction traffic will be restricted to defined routes and a speed limit will be implemented. In periods of extended dry weather, dust suppression may be necessary during tree felling, along haul roads and around the borrow pit areas to ensure dust does not cause a nuisance. If necessary, water will be taken from the site's drainage system, and will be pumped into a bowser or water spreader to dampen down haul roads and the temporary site compound to prevent the generation of dust. Silty or oily water will not be used for dust suppression, because this would transfer the pollutants to the haul roads and generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			The active construction area along the proposed underground cable route options will be small, ranging from 550-750m in length at any one time. Should separate crews be used during the construction phase they will generally be separated by 1-2 kilometres. All construction machinery will be maintained in good operational order while on-site, minimising any emissions that are likely to arise. Aggregate materials for the construction of the underground cable route will be sourced from the on-site borrow pits to reduce the amount of emissions associated with vehicle movements.		
MM53	Human Health	EIAR Section 5	All construction vehicles and plant machinery will be maintained in good operational order while onsite, thereby minimising any emissions that arise. Where applicable, low carbon intensive construction materials will be sourced and utilised onsite. The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the Proposed Project site. Therefore, all wastes streams generated onsite will be deposited into a single waste skip which will be covered. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery, or disposal. The MRF facility will be local to the Proposed Project site to reduce the amount of emissions associated with vehicle movements. The nearest licensed waste facility to the site is located approximately 12.7km to the southwest of the Proposed Project site. When stationary, delivery and on-site vehicles will be required to turn off engines. Turbines components will be transported to the site on specified routes only unless otherwise agreed with the Planning Authority.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM54	Human Health	EIAR Section 5	Aggregate materials for the construction of any additional site tracks will be obtained from the proposed borrow pit on the site of the Proposed Project. This will significantly reduce the number of delivery vehicles required to access the site.		
Operational Phase					
MM55	Human Health	EIAR Section 5	Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed or are becoming hidden by vegetation or foliage, with prompt action taken as necessary. Signs will also be erected at suitable locations across the site as required for the ease and safety of operation of the wind farm. These signs include: • Buried cable route markers at 50m (maximum) intervals and change of cable route direction; • Directions to relevant turbines at junctions; • "No access to Unauthorised Personnel" at appropriate locations; • Speed limits signs at site entrance and junctions; • "Warning these Premises are alarmed" at appropriate locations; • "Danger HV" at appropriate locations; • "Warning – Keep clear of structures during electrical storms, high winds or ice conditions" at site entrance; • "No unauthorised vehicles beyond this point" at specific site entrances; and		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Other operational signage required as per site-specific hazards. An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the site and providing for access for emergency services at all times.		
MM56	Air (Exhaust Emissions)	EIAR Section 5	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. Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery, or disposal. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements.		
MM57	Air (Dust)	EIAR Section 5	Maintenance vehicles brought onsite during the operational phase will be maintained in good operational order, thereby minimising any dust emissions that arise. Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery, or disposal. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements.		
MM58	Climate	EIAR Section 5	Ensure that all maintenance and monitoring vehicles will be maintained in good operational order while onsite, and, when stationary, be required to turn off engines thereby minimising any emissions that arise. As detailed in Appendix 6-6, a Biodiversity Enhancement Plan for the Proposed Project has identified enhancement activities such as planting of hedgerow and peatland enhancement.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM59	Major Accidents and Natural Disasters	EIAR Section 5	The Proposed Project will be designed and built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. In accordance with the provision of the European Commission 'Guidance on the preparation of Environmental Impact Assessment Reports' 2017, a Risk Management Plan will be prepared and implemented onsite to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures. The Proposed Project will also be subject to a fire safety risk assessment in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, which will assist in the identification of any major risks of fire onsite, and mitigation of the same during operation.		
MM60	Human Health	EIAR Section 5	Where daily or annual shadow flicker exceedances are predicted at any occupied receptor or 3rd party property, a site visit will be undertaken firstly to determine the existing screening and window orientation. This will determine if the receptor has an actual line of sight to any turbine. Once this is completed and all of the potential receptors identified, the following measures will be employed. **Wind Turbine Control Measures** Wind turbines can be fitted with shadow flicker control units to allow the turbines to be controlled to prevent the occurrence of shadow flicker at properties surrounding the wind farm. The shadow flicker control units will be added to any required turbines. A shadow flicker control unit allows a wind turbine to be programmed and controlled using the wind farm's Supervisory Control And Data Acquisition (SCADA) control system to change a particular turbine's operating mode during certain conditions or times, or even turn the turbine off if necessary.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			All predicted incidents of shadow flicker can 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 ensure that shadow flickers occurrences at properties which are not naturally screened or cannot be screened with measures outlined above. Where such wind turbine control measures are to be utilised, they need only be implemented when the specific combined circumstances occur that are necessary to give rise to the shadow flicker effect in the first instance. Therefore, if the sun is not shining on a particular day that shadow flicker was predicted to occur at a nearby property, there would be no need to shut down the relevant turbines that would have given rise to the shadow flicker at the property. Similarly, if the wind speed was below the cut-in speed that caused the turbine rotor to rotate and give rise to a shadow flicker effect at a nearby property, there would be no need to shut down the relevant turbines that otherwise would have caused shadow flicker. The atmospheric variables that determine whether shadow flicker will occur or not, are continuously monitored at the wind farm site and the data fed into the wind farm's SCADA control system. The strength of direct sunlight is measured by way of photocells, and if the sunlight is of sufficient strength to cast a shadow, the shadow flicker control mechanisms come into effect. Wind speed and direction are measured by anemometers and wind vanes on each turbine and on the wind farm's met mast, and similarly, and if wind speed and direction is such that a shadow will be cast, the shadow flicker control mechanisms come into effect. The moving blades of the turbine will require a short period of time to cease rotating and as such there may be a very short period (less than 3 to 5 minutes) during which the blades are slowed to a complete halt. The turbines giving rise to shadow flicker may be turned off on different days to prevent excessive wear and tear on any single turbine.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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. 6. 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.). 7. Recording the house number, time and duration of site visit and the observation point GPS coordinates. 8. Recording the nature of the sensitive receptor, its orientation, windows, landscaping in the vicinity, any elements of the built environment in the vicinity, vegetation. 9. In the event of shadow flicker being noted as occurring the details of the duration (times) of the occurrence will be recorded 10. The data will then be sent to the wind farm operational team to confirm that the model and SCADA system are working. 11. 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. This method of shadow flicker mitigation has been technically well-proven at wind farms in Ireland and also in areas outside Ireland that experience significantly longer periods of direct sunlight. This measure can be utilised at the site of the Proposed Project to prevent incidences of shadow flicker values at any house in line and with the Wind Energy Development Guidelines 2006. Where a shadow flicker mitigation strategy is to be implemented, the control mechanisms would		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			only have to be applied to the turbines, which are causing the shadow flicker to occur. Should a complaint be received within twelve months of commissioning of the Wind Farm, field investigation/monitoring will be undertaken by the Wind Farm operator at the affected property. Notwithstanding the approach outlined above, should shadow flicker associated with the permitted development be perceived to cause nuisance at any home, the affected homeowner is invited to engage with the Developer. The homeowner will be asked to log the date, time and duration of shadow flicker events occurring on at least five different days. The provided log will be compared with the predicted occurrence of shadow flicker at the residence, and if necessary, a field investigation will be carried out. **Screening Measures** In the event of an occurrence of shadow flicker at residential receptor locations, mitigation options will be discussed with the affected homeowner, including: › Installation of appropriate window blinds in the affected rooms of the residence; › Planting of screening vegetation; › Other site-specific measures which might be agreeable to the affected party and may lead to the desired mitigation. If agreement can be reached with the homeowner, then it would be arranged for the required mitigation to be implemented in cooperation with the affected party as soon as practically possible and for the full costs to be borne by the wind farm operator.		
MM61	Human Health	EIAR Section 5	As outlined in Appendix 15-5 of this EIAR, the Developer and Three have reached agreement in relation to a radio link which traverses the site. The		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Developer has agreed to bear the costs related to the re-routing of the impacted radio link. The Developer and Three have agreed that any re-routing solution will take place in advance of the construction and operation of the Proposed Project. In the event of interference occurring to telecommunications owned by Enet, the Guidelines acknowledge that 'electromagnetic interference can be overcome' by the use of divertor to relay links out of line with the wind farm. As outlined in their scoping replies, Enet are in agreement regarding the commitment by the Developer for the implementation of the necessary mitigation measures in order to protect the link should both the Proposed Project and the link co-exist.		
Chapter 6 Biodiversity					
Pre-Commencement Phase					
MM62	Invasive Species Management	EIAR Section 6 Appendix 6-4	A pre-construction invasive species survey will be undertaken a part of the proposedproject. This will provide updated data in advance of any construction given theintervention time period between the original survey work and any future grant ofpermission/ construction. Measures will be in place to prevent the spread of these speciesduring the proposed works. In addition, all necessary precautions will be taken to preventthe introduction of invasive species to the site from elsewhere.		
MM63	Fauna	EIAR Section 6	Prior to the commencement of construction works associated with the installation of watercourse crossings, the following measures will be undertaken for the avoidance of disturbance/displacement and direct mortality and to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (TII, 2007): • From a precautionary basis, a pre-commencement otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			site works to ensure that current activity levels are confirmed prior to commencement of works. In the unlikely event that an otter holt is identified within or immediately adjacent to the Proposed Project footprint, consultation will be undertaken with the National Parks and Wildlife Service and a derogation licence applied for. • All conditions of a derogation licence will be implemented in full. • No works will be undertaken within 150m of any holts at which breeding females or cubs are present. • No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance will not take place within 15m of such holts, except under licence (TII, 2006). • All of the above works will be undertaken or supervised by an appropriately qualified ecologist.		
MM64	Fauna	EIAR Section 6	• Pre-commencement surveys will be undertaken for marsh fritillary to determine if any marsh fritillary are using the site at that time. • If any areas larval webs are identified during these pre-construction surveys, these areas of habitat will be fenced off or clearly marked prior to the commencement of any site works under the guidance and supervision of a suitably qualified Ecological Clerk of Works (ECoW).		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Vegetation structure and suitability will be monitored following the NBDC survey methodology (NBDC, 2019). • Proposed tree-planting that is proposed as part of the Biodiversity Management Plan will avoid areas of suitable marsh fritillary habitat. • Pollinator enhancement measures through habitat creation. • Habitat condition monitoring will be undertaken to ensure that there are no negative effects on marsh fritillary habitat.		
MM65	Fauna	EIAR Section 6	Prior to the commencement of any construction works associated with the wind farm, grid route or any associated infrastructure, the following measures will be undertaken for the avoidance of disturbance and/or direct mortality to badger and to ensure no additional setts have been established since the original surveys undertaken. The following measures are in line with *Guidelines For The Treatment Of Badgers Prior To The Construction Of National Road Schemes* (TII 2009). › From a precautionary basis, a pre-commencement badger survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works to ensure that no additional setts in close proximity to proposed infrastructure have been built. In the event that a badger sett is identified within or immediately adjacent to the Proposed Project footprint, mitigations as per the above referenced TII document will be implemented for the new sett.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› An exclusion of the existing sett will be carried out to ensure no badgers are present within the sett during road upgrade works. The exclusion will be carried out in line with TII guidelines as follows: • Local NPWS staff will be informed in advance of the exclusion works. • The exclusion will not take place during badger breeding season (December to June inclusive) • One way exclusion gates will be installed on each sett entrance. • The one-way gates will be left in place for a period of 21 days and works will proceed immediately after once exclusion of badgers has been confirmed by an Ecologist. • An Ecologist will monitor the gates every 3 to 5 days during the 21-day period to ensure badgers do not succeed in re-entering the sett. • If badgers succeed in re-entering during the 21-day period, the exclusion process and 21-day period must start again. • All of the above works will be undertaken or supervised by an appropriately qualified ecologist.		
MM66	Bats	Appendix 6-2	A pre-commencement survey will be carried out by a suitably qualified ecologist on trees with PRFs proposed for felling. A bat derogation licence will be obtained from the NPWS for the loss of any confirmed roost resource, prior to felling, and the felling activity will be supervised by a qualified ecologist. Tree-felling of mature deciduous trees will be carried out according to the following standard mitigating procedures:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Trees with suitable potential roost features proposed for felling will be checked for bats by a suitably qualified arborist/ecologist at the time of felling. • Trees will be nudged two or three times prior to limb removal, with a pause of 30 seconds in between, to allow bats to wake and move. • Rigged felling shall be used to lower the limbs and trunk carefully to ground level and cavities searched by a qualified ecologist. • Felled trees will be left in-situ for a minimum of 24 hours prior to sawing or mulching, to allow any bats present to escape (National Roads Authority, 2006). • Any tree felling will be undertaken outside the bat maternity season (May- August) and the hibernation period (December-February) (Marnell, Kelleher and Mullen, 2022).		
MM67	Bats	Appendix 6-2	NatureScot recommends that a distance of 50m between turbine blade tip and nearest woodland (or other key habitat features) is adequate mitigation. This 50m buffer will be implemented from the outset and monitored as per the post-construction monitoring.		
Construction Phase					
MM68	Invasive Species Management	EIAR Section 6 Appendix 6-4	The following best practice measures should be adhered to during the treatment and management of the invasive species (IS) within the Proposed Project site. • No ground works should take place on site prior to the application of this site-specific Invasive Species Management Plan (ISMP). The ISMP will ensure all		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			measures are taken to avoid the spread of species listed on the Third Schedule. • All staff will be given a Toolbox Talk, by a qualified ecologist, on invasive species removal, and their management on site. • Ensure all visitors to the site are made aware of the location of the ISs recorded and are familiar with its characteristics and method of reproduction. • A designated bio-secure area/exclusion zone will be set up at recorded invasive species locations to prevent disturbance in these areas. Third schedule 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. Any collected loose material will be collected and disposed of in the cell/bund. • 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
			• All works in relation to the Third Schedule invasive species will be supervised by a suitably qualified ecologist. • 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 and bund location e.g. plywood will be thoroughly cleaned down under supervision of the suitably qualified ecologist prior to removal off site. • Once the machinery has been cleaned down as much as possible the machines will be power-washed, or air blasted to remove any remaining material. The machine will track out of the contaminated areas on site and bund location over plywood or other suitable material in order to protect the machine from potential contamination while exiting the contaminated cell/bund area. • Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present. • Any material imported to the site should be screened for invasive species by a suitably qualified ecologist before transportation to the site. • All measures prescribed in the invasive species management plan will be incorporated into the contractor's respective method statements for works where Third		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Schedule invasive species and invasive species of potential concern occur.		
MM69	Aquatic Fauna	EIAR Section 6	In relation to new watercourse crossings, Inland Fisheries Ireland (IFI) will be consulted a minimum of four weeks in advance of the installation of pre-cast concrete bottomless box culverts. The Inland Fisheries Ireland (2016): *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*; and the Scottish Natural Heritage (SNH) *Good Practice During Wind Farm Construction* (SNH, 2019, 4th Edition) will also be adhered to. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI).		
MM70	Habitats	EIAR Section 6 Appendix 6-6	The Proposed Project also provides for the ecological enhancement of areas of cutover bog through rewetting to promote the development of wetland vegetation. It is proposed to restore 11.6ha of Raised bog (PB1) habitat that remains within the southeast of the Site. This area is designated as Article 17 Degraded raised bog still capable of natural regeneration [7120] but has been subject to extensive drainage in the past in order to facilitate the cutting of peat, and therefore has a highly altered hydrological regime.		
MM71	Habitats	EIAR Section 6 Appendix 6-6	The Proposed Project provides for the replacement of the woodland habitats that will be lost in other parts of the site to ensure that there will be no net loss of woodland and scrub. It is proposed to replant approximately 2.89ha of native woodland to the north of Turbine 9. This will result in a net gain of 0.75ha of woodland habitat		
MM72	Habitats	EIAR Section 6	The Proposed Project has been deliberately designed to avoid the majority of the *Molina* Meadow habitat on site. In addition, the Proposed Project provides for the		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		Appendix 6-6	replacement of the *Molina* Meadow habitat that will be lost in other parts of the site to ensure that there will be no net loss of *Molinia* Meadow habitat.		
MM73	Habitats	EIAR Section 6	In order to compensate for the loss of linear vegetation, approximately 1,875 linear metres of new replacement hedgerow planting will be carried out along sections of proposed new and upgraded roads in order to ensure that there will be no net loss of linear habitat features. This proposed planting of 2,419m of hedgerow habitat will result in a net gain of 1,358m in linear habitat within the site. Tree/shrub species planted in these locations will be of a similar composition to those occurring on site, will be native and of local provenance. The areas chosen for the planting of new hedgerows to replace those lost were chosen because they provide habitat connectivity between existing treelines and hedgerows and other areas of the Site.		
MM74	Bats	EIAR Section 6 Appendix 6-2	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).		
MM75	Bats	EIAR Section 6 Appendix 6-2	Where lighting is required, directional lighting will be used to prevent overspill on to woodland/forestry edges. Exterior lighting, during construction and post construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the Site, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. The proposed lighting around the site shall be designed in accordance with the Institute of Lighting Professionals Guidance Note 08/23 Bats and artificial lighting in the UK (ILP, 2023). In addition, the applicant commits to the use of lights during construction, operation and decommissioning (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations: • Every light needs to be justifiable, • Limit the use of light to when it is needed, • Direct the light to where it is needed, • Reduce the light intensity to the minimum needed, • Use light spectra adapted to the environment, • When using white light, use sources with a "warm" colour temperature (less than 3000K).		
MM76	Bats	EIAR Section 6 Appendix 6-2 Appendix 6-6	It is proposed to plant new linear features and bolster existing habitat features to offset any potential loss in linear habitat features and to provide additional new opportunities for commuting and foraging bats. A total of 2,419m of linear habitat will be added, which will result in a net gain of 1,358m in linear habitat features within the Site. The locations in which the proposed linear hedgerow planting will take place will be subject to final landowner agreement. However, indicative areas for planting are proposed in Appendix 6-4 BMEP.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Species planted in these locations will be of a similar composition to those occurring on site, namely, hawthorn and hazel.		
			Operational Phase		
MM77	Bats	EIAR Section 6 Appendix 6-2	Where lighting is required, directional lighting will be used to prevent overspill on to woodland/forestry edges. Exterior lighting, during construction and post construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the Site, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. The proposed lighting around the site shall be designed in accordance with the Institute of Lighting Professionals Guidance Note 08/23 Bats and artificial lighting in the UK (ILP, 2023). In addition, the applicant commits to the use of lights during construction, operation and decommissioning (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations: • Every light needs to be justifiable, • Limit the use of light to when it is needed, • Direct the light to where it is needed, • Reduce the light intensity to the minimum needed,		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Use light spectra adapted to the environment, When using white light, use sources with a "warm" colour temperature (less than 3000K). Commercial forestry felling to facilitate the bat buffers will only be required for Turbine 3 and Turbine 8. The bat buffer formula has also been used to identify the extent of vegetation removal around all other proposed turbines. These vegetation-free areas will be maintained during the operational life of the Proposed Project.		
MM78	Bats	EIAR Section 6 Appendix 6-2	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 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					
MM79	Bats	EIAR Section 6	Where lighting is required, directional lighting will be used to prevent overspill on to woodland/forestry edges. Exterior lighting, during construction and post construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the Site, and consequently on bats i.e. Lighting will be directed		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		Appendix 6-2	away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. The proposed lighting around the site shall be designed in accordance with the Institute of Lighting Professionals Guidance Note 08/23 Bats and artificial lighting in the UK (ILP, 2023). In addition, the applicant commits to the use of lights during construction, operation and decommissioning (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations: • Every light needs to be justifiable, • Limit the use of light to when it is needed, • Direct the light to where it is needed, • Reduce the light intensity to the minimum needed, • Use light spectra adapted to the environment, When using white light, use sources with a “warm” colour temperature (less than 3000K). Commercial forestry felling to facilitate the bat buffers will only be required for Turbine 3 and Turbine 8. The bat buffer formula has also been used to identify the extent of vegetation removal around all other proposed turbines. These vegetation-free areas will be maintained during the operational life of the Proposed Project.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Chapter 7 Ornithology					
Pre-commencement Phase					
MM80	Birds	Appendix 7-7	Pre-commencement surveys will be undertaken prior to the initiation of works at the wind farm. This survey will aim to identify sensitive sites e.g., roosts. Any requirement for construction works to run into the subsequent breeding seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question.		
Construction Phase					
MM81	Birds	Appendix 7-7	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.		
MM82	Birds	Appendix 7-7	If winter roosts or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If the roost/nest is found to be active during the construction phase no works shall be undertaken, works will cease within a species-specific buffer of this location (as per Goodship, N.M. and Furness, R.W., 2022) in line with best practice. No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied. 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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.		
MM83	Birds	EIAR Section 7 Appendix 4-4	The following measures are proposed for the construction phase: • A Construction and Environmental Management Plan (CEMP) has been prepared. The CEMP will be in place prior to the start of the construction phase. Best practice measures which form part of the design of the project are included in Chapter 4 of the EIAR. The CEMP is included as an Appendix to Chapter 4. • Construction works will begin outside the bird nesting season as defined by the Wildlife Act 1976 as amended (1st of March to the 31st of August). • All removal of woody vegetation will be undertaken in accordance with Section 40 of the Wildlife Act 1976 as amended. • 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. • Plant machinery will be turned off when not in use. • All plant and equipment for use will comply with the European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001 (S.I. No. 632/2001) and other relevant legislation. • An Ecological Clerk of Works (ECoW) will be appointed. Duties will include:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Oversee a pre-construction transect/walkover bird survey is undertaken, to avoid significant effects on breeding birds will be avoided. Further details are provided in Section 7.8 below. • Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Proposed Project. • 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.		
Chapter 8: Land, Soils and Geology					
Pre-Commencement Phase					
MM84	Earthworks	EIAR Section 8	Placement of turbines and associated infrastructure in areas with shallower peat has been achieved during the design phase; Maximum use of the existing road network to reduce peat excavation volumes;		
Construction Phase					
MM85	Earthworks	EIAR Section 8	• Placement of turbines and associated infrastructure in areas with shallower peat;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Use of floating roads, where appropriate, to reduce peat excavation volumes; • The peat and subsoil which will be removed during the construction phase will be localised to the wind farm infrastructure turbine location, substation and temporary compounds and access roads; • The Proposed Project has been designed to avoid, insofar as possible, sensitive habitats within the Site; and, • Construction of settlement ponds will be volume neutral, and all excess material will be used locally to form pond bunds and surrounding landscaping.		
MM86	Contamination of Soils	EIAR Section 8	• On-site re-fuelling will be undertaken using a double skinned bowser with spill kits kept on site for accidental leakages or spillages; • Only designated trained operatives will be authorised to refuel plant on-site; • Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system; • All fuel storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area; • Fuel, oil and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage; • The electrical control building (at the substation) will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			interceptor; • The plant used during construction will be regularly inspected for leaks and fitness for purpose; • Safety data sheets for all chemicals used will be kept on-site; and, • An emergency response plan for the construction phase to deal with accidental spillages is contained within the Construction and Environmental Management Plan (which is contained in Appendix 4-4).		
MM87	Erosion of Exposed Subsoils and Peat	EIAR Section 8	• The upper vegetative layer (where still present) of excavated peat will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the stored peat within the peat storage areas; • Re-seeding and spreading/planting will also be carried out in these areas; • Brash/bog mats will be put in place to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur; and, • A full Peat and Spoil Management Plan for the development is included as **Appendix 4-3** of the EIAR.		
MM88	Peat Instability and Failure	EIAR Section 8	Firstly, the key mitigation with regard peat stability risk at the Proposed Project site was the carrying out of a robust, multidisciplinary site investigation and peat stability risk assessment carried out in accordance with best practice guidance (PLHRAG, Scottish Government, 2017).		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			The findings of the peat assessment, which involved analysis of 194 no. locations, showed that the Proposed Project areas have an acceptable margin of safety and that the site is suitable for the Proposed Project. The peat stability risk assessment report provides a number of mitigation/control measures to reduce the potential risk of peat failure at each infrastructure location. Sections of access roads to the nearest infrastructure element will be subject to the same mitigation/control measures that apply to the nearest infrastructure element. The required mitigation/control measures are shown below: The following control measures incorporated into the construction phase of the project will ensure the management of the risks for this site: • Appointment of experienced and competent contractors; • The site will be supervised by experienced and qualified personnel; • Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a localised peat movement); • Prevent undercutting of slopes and unsupported excavations; • Maintain a managed robust drainage system; • Prevent placement of loads/overburden on marginal ground; • Implementation of safety buffers around deep peat areas; • Adhere to the spoil and peat storage restriction areas detailed in the Peat Stability Risk Assessment Report (GDG, 2024); • Set up, maintain and report findings from monitoring systems as outlined in the Peat Stability Assessment Report (GDG, 2024);		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Ensure construction method statements are developed and agreed before commencement of construction and are followed by the contractor; and, • Revise and amend the Construction Risk Register as construction progresses to ensure that risks are managed and controlled for the duration of construction.		
MM89	Turbine Delivery Route Works	EIAR Section 8	• All works are minor and localised and cover very small areas; • These works are distributed over a wide area; and, • All works are temporary in nature.		
MM90	Turbine Base Piling Works	EIAR Section 8	Other than surface level and minor excavation works, any piling works will not produce significant volumes of spoil as the proposed piling system are driven piles (these will displace soil/subsoil within the ground).		
MM91	Peatland Enhancement	EIAR Section 8	To maximise the effectiveness of the re-wetting proposal and to increase the chances of future success, any works undertaken as part of the enhancement works will be based on approaches and methods that were successful at other peatland sites in Ireland.		
			Operational Phase		
MM92	Land, Soils and Geology	EIAR Section 8	Mitigation measures for land, soils and geology during the operational phase include the use of aggregate from authorised quarries for use in road and hardstand maintenance. Oil used in transformers (at the substation and within each turbine) and storage of oils in tanks at the substation could leak during the operational phase and impact on ground/peat and subsoils and groundwater or surface water quality. The substation transformer will be in a concrete bunded capable of holding 110% of the stored oil volume. Turbine transformers are located within the turbines, so any leaks would be contained within the turbine. These mitigation measures are		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			considered sufficient to eliminate potential risks to ground/peat/soils and subsoils, and groundwater and surface water quality.		
Decommissioning Phase					
MM93	Land, Soils and Geology	EIAR Section 8	Mitigation measures applied during decommissioning activities will be similar to those applied during construction phase		
Chapter 9 Hydrology					
Pre-Commencement Phase					
MM94	Drainage	EIAR Section 9	Prior to the commencement of road upgrades (or new road/hardstand or turbine base installs) the following key temporary drainage measures will be installed: • All existing dry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using temporary check dams/silt traps; • Clean water diversion drains will be installed upgradient of the works areas; • Check dams/silt fence arrangements (silt traps) will be placed in all existing drains that have surface water flows and also along existing roadside drains; and, • A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zones such as at watercourse crossings.		
MM95	Grid Connection Earthworks and Watercourse Crossings	EIAR Section 9	Pre-commencement Temporary Drainage Works: Prior to the commencement of substation, cable trenching, access road or end mast works the following key temporary drainage measures will be installed:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• All existing roadside drains (where present) that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps; • Culverts, manholes and other drainage inlets (where present) will also be temporarily blocked; • A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone on the Levally Stream tributary.		
			Construction Phase		
MM95	Gurteen/Cloonmore GWS Spring	EIAR Section 9	The following proposed construction design measures will ensure the bedrock aquifer below the Wind Farm is not disrupted during works: • The proposed construction method for turbine bases located inside the refined ZoC (i.e. T1, T2, T3 and T4) will either be a gravity foundation or pre-cast piling; • The gravity foundation option will seek a suitable founding in the glacial tills at a maximum of 3 - 3.5mblg and therefore excavations will only require the removal of overburden to the final base level which will be within the overburden layer; • A protective layer of overburden will be left in place above the bedrock; • Gravity foundation is the preferred option unless further site investigations deem it unsuitable. If gravity foundation is not suitable at a depth of 3 - 3.5m or above, precast piling will be the approach;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Pre-cast piling will involve driving imported concrete piles down onto the top of bedrock below the glacial tills. The piles will not be drilled into the underlying bedrock aquifer nor will they be grouted in place; • The gravity foundation or pre-cast piling approach will not require excavations or grouting down into the bedrock aquifer and therefore there will be no risk of intercepting potential underlying bedrock conduits/fractures that transmit groundwater to the spring; • Short term pumping/dewatering of turbine base excavations is likely to be required in the gravity base scenario, but this will only be seepage from the overlying glacial overburden; and, • Therefore, with both approaches there will be no potential whatsoever to disrupt underlying groundwater flow paths (conduits/fractures) in the bedrock aquifer that feeds the GWS spring. As a precautionary design measure, the extraction depth of the borrow pit will not go deeper than 67m OD which means the borrow pit floor will always be above the water level in spring source sump (65.811m to 66.371m OD over the monitoring period). There is a shallow road cutting (<2m) required on the north of the Wind Farm site that is located on the northern edge of the GSI SPA/ZoC. The proposed cut is required to achieve appropriate road slope along the site entrance road. The cut will not extent into the underlying bedrock.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			The following mitigation is proposed at all construction works areas inside the refined ZoC: • No storage of fuels, oils, cements or chemicals will be permitted within the refined ZoC; • Refuelling of mobile plant (i.e. diggers, dumpers etc) will only be permitted outside the refined ZoC; • Refuelling of large immobile plant (i.e. cranes) will only be carried out with a double skinned fuel bowser that will be removed from ZoC immediately after use; • Spill kit stations will be present at each turbine location (T1, T2, T3 and T4); • There will be no long term storage of peat/spoil inside the ZoC; • An impermeable liner will be placed below the founding layer where concrete is to be poured; • All cement washout lagoons will be located outside the ZoC; and, • A protective layer of in-situ overburden (2 -3m) will remain above the top of bedrock where gravity foundation excavations are required for groundwater quality protection.		
MM96	Clear Felling	EIAR Section 8 EIAR Section 9	All felling operations will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and DAFM guidance documents, including the specific guidelines listed below, to ensure that felling, planting and other forestry operations result in minimal potential negative effects to the receiving environment. • Forestry Standards Manual (Forest Service, 2015)		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Environmental Requirements for Afforestation (Forest Service, 2016a) • Land Types for Afforestation (Forest Service, 2016b) • Forest Protection Guidelines (Forest Service, 2002) • Forest Operations and Water Protection Guidelines (Coillte, 2013) • Forestry and Water Quality Guidelines (Forest Service, 2000b) • Forestry and the Landscape Guidelines (Forest Service, 2000c) • Forestry and Archaeology Guidelines (Forest Service, 2000d) • Forest Biodiversity Guidelines (Forest Service, 2000e) • Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018) • Coillte Planting Guideline SOP • A Guide to Forest Tree Species Selection and Silviculture in Ireland (Horgan et al., 2003) • Management Guidelines for Ireland's Native Woodlands. Jointly published by the National Parks & Wildlife Service (Cross and Collins, 2017) • Native Woodland Scheme Framework (Forest Service, 2018) • Code of Best Forest Practice (Forest Service, 2000) During the Wind Farm construction phase a self-imposed buffer zone of 50 metres will be maintained for all streams where possible.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows: • Machine combinations (i.e., handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance; • 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. Where possible, existing drains will not be disturbed during felling works; • Ditches which drain from the proposed area to be felled towards existing surface watercourses will be blocked, and temporary silt traps will be constructed. No direct discharge of such ditches to watercourses will occur. Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and will avoid being placed at right angles to the contour; • Sediment traps will be sited in drains downstream of felling areas. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of in the peat disposal areas. Where possible, all new silt traps will		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			be constructed on even ground and not on sloping ground; • All drainage channels will taper out before entering the 50m buffer zone. This ensures that discharged water gently fans out over the buffer zone before entering the aquatic zone, with sediment filtered out from the flow by ground vegetation within the zone. On erodible soils, silt traps will be installed at the end of the drainage channels, to the outside of the buffer zone; • Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled; • Brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; • Timber will be stacked in dry areas, and outside a local 50 metre watercourse buffer. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water run-off; • Checking and maintenance of roads and culverts will be on-going through the felling operation; • Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; • A permit to refuel system will be adopted; • Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors; • Crossing of streams will not be permitted; • Trees will be cut manually from along streams and using machinery to extract whole tree; and, • Travel only perpendicular to and away from stream. **Silt Traps**: Silt traps will be strategically placed down-gradient within forestry drains near streams. The main purpose of the silt traps and drain blocking is to slow water flow, increase residence time, and allow settling of silt in a controlled manner. **Drain Inspection and Maintenance**: The following items shall be carried out during pre-felling inspections and after:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines; › Inspection of all areas reported as having unusual ground conditions; › Inspection of main drainage ditches and outfalls. During pre-felling inspections the main drainage ditches shall be identified. Ideally the pre-felling inspection shall be carried out during rainfall; › Following tree felling all main drains shall be inspected to ensure that they are functioning; › Extraction tracks nears drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; › Culverts on drains exiting the site will be unblocked; and, › All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall. **Surface Water Quality Monitoring**: 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-		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			activity status (i.e., where an impact has been shown). Criteria for the selection of water sampling points include the following: › 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.		
MM97	Earthworks	EIAR Section 9	**Mitigation by Avoidance:** The key mitigation measure during the construction phase of the Proposed Project is the avoidance of sensitive aquatic areas where possible. The key areas of the Wind Farm infrastructure are actually significantly away from the 50m delineated buffer zones with the exception of existing road upgrades, new roads, proposed		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			stream crossings and existing stream crossings requiring upgrading. Additional control measures, which are outlined further on in this section, will be undertaken at these locations. The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operated effectively. The proposed buffer zone will: • Avoid physical damage to watercourses, and associated release of sediment; • Avoid excavations within close proximity to surface water courses; • Avoid the entry of suspended sediment from earthworks into watercourses; and, • Avoid the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone. **Mitigation by Design:** › Source controls: • Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sandbags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures. › In-Line controls: • Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sandbags, oyster bags, straw bales, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps/attenuation lagoons, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems. › Treatment systems: • Temporary sumps and attenuation ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems. It should be noted for this Wind Farm site is that an extensive network of forestry, bog, field and roadside drains already exists, and these will be integrated and enhanced as required and used within the Proposed Project drainage system. The integration of the existing forestry drainage network and the Proposed Project network is relatively simple. The key elements being the upgrading and improvements to water treatment elements, such as in line controls and treatment systems, including silt traps, stilling ponds and buffered outfalls.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			The main elements of interaction with existing drains will be as follows: • Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the Proposed Project drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion; • Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; • Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through stilling ponds and buffered outfalls onto vegetated surfaces; • Buffered outfalls which will be numerous over the site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site; and, • Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sandbags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters. **Water Treatment Train** A final line of defence will be provided by a water treatment train such as a "Siltbuster". If the discharge water from construction areas fails to be of a high quality during regular inspections, then a filtration treatment system (such as a 'Siltbuster' or similar equivalent treatment train (sequence of water treatment processes) will be used to filter and treat all surface discharge water collected in the dirty water drainage system. This will apply for all of the construction phase. **Silt Fences** Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to water courses of sand and gravel sized sediment, released from excavation of mineral sub-soils of glacial and glacio-fluvial origin, and entrained in surface water runoff. Inspection and maintenance of these of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be placed within drains down-gradient of all construction areas inside the hydrological buffer zones. **Silt Bags** Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, the majority of the sediment is retained by the geotextile fabric allowing filtered water to pass		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			through. Silt bags will be used with natural vegetation filters or sedimats Sediment entrapment mats, consisting of coir or jute matting, will be placed at the silt bag location to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure. **Settlement Ponds** The Wind Farm footprint has been divided into drainage catchments (based on topography, outfall locations, catchment size) and stormwater runoff rates based on the 50-year return period rainfall event were calculated for various catchment areas in order to size the settlement ponds. **Level Spreaders and Vegetation Filters** The purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. Level spreaders are not intended to be a primary treatment component for development surface water runoff. They are not stand alone but occur as part of a treatment train of systems that will reduce the velocity of runoff prior to be released at the level spreader. In the absence of levelspreaders, the potential for ground erosion is significantly greater than not using them. Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. In fact, vegetation filters are ultimately a positive consequence of not discharging directly into watercourses which is one of the mitigation components of the drainage philosophy. This makes use of the natural vegetation of the Site to provide a polishing filter for the Wind Farm drainage prior to reaching the downstream watercourses.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Pre-emptive Site Drainage Management The works programme for the entire construction stage of the Proposed Project will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of peat/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities: • General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates; • MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale; • 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events; • Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			is updated every 15 minutes. Radar images are not predictive; and, • Consultancy Service: Met Eireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. Using the safe threshold rainfall values will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event. Works will be suspended if forecasting suggests either of the following is likely to occur: • >10 mm/hr (i.e., high intensity local rainfall events); • >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, • >half monthly average rainfall in any 7 days. Prior to works being suspended the following control measures will be completed: • Secure all open excavations; • Provide temporary or emergency drainage to prevent back-up of surface runoff; and, • Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Management of Runoff from Peat and Spoil Repository Areas It is proposed that excavated spoil and peat will be used for landscaping where required. The excess material will then be placed in 4 no. dedicated Peat Repository Areas (PRA) and 1 no. Spoil Deposition Area (SDA). All proposed PRAs and the SDA are located outside of 50m watercourse buffers and also outside of OPW mapped fluvial flood zones. During the initial construction of repository/deposition areas, silt fences, straw bales and biodegradable geogrids will be used to control surface water runoff from works areas. Where applicable, the vegetative top-soil layer of the peat and spoil management areas will be rolled back to facilitate placement of excavated spoil, following which the vegetative-top soils layer will be reinstated. Where reinstatement is not possible, spoil and peat management areas will be sealed with a digger bucket and seeded as soon possible to reduce sediment entrainment in runoff. Drainage from peat and spoil storage areas will ultimately be routed to an oversized swale and a number of stilling ponds pond with appropriate storage and settlement designed for a 1 in 50-year return period before being discharged to the on-site drains. Peat/subsoil reinstatement areas will be sealed with a digger bucket and vegetated as soon possible to reduce sediment entrainment in runoff. Once re-vegetated and stabilised peat/subsoil reinstatement areas will no longer be a potential source of silt laden runoff.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Timing of Site Construction Works Construction of the site drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works.		
MM98	Excavation Dewatering and Surface Water Quality	EIAR Section 9	Management of excavation inflows and subsequent treatment prior to discharge into the drainage network will be undertaken as follows: • Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; • If required, pumping of excavation inflows will prevent build-up of water in the excavation; • The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; • The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a siltbag; • There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; • Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work will		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			immediately be stopped and a geotechnical assessment undertaken; • At the borrow pit adequately sized settlement ponds will be constructed to treat pumped water prior to discharge into a local manmade drain; • A mobile 'Siltbuster' or similar equivalent specialist treatment system will be made available at the borrow pit location for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed.		
MM99	Hydrocarbons	EIAR Section 9	Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows: • On site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site, and will be towed around the site by a 4x4 jeep to where machinery is located. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound (outside of Gurteen/Cloonmore GWS refined ZoC) when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Onsite 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 (outside of Gurteen/Cloonmore GWS refined ZoC); • 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 (**Appendix 4-4**). Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area.		
MM100	Wastewater Disposal	EIAR Section 9	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.		
MM101	Release of Cement Based Products	EIAR Section 9	• No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place; • Where possible pre-cast elements for culverts and concrete works will be used; • Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			cleaning water will be undertaken at lined cement washout ponds located outside of Gurteen/Cloonmore GWS refined ZoC; • Weather forecasting will be used to plan dry days for pouring concrete; and, • The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event.		
MM103	Morphological Changes to Surface Water Courses and Drainage Patterns	EIAR Section 9	• All proposed new stream crossings will be bottomless or clear span culverts and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location; • Where the proposed 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[1] 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		

[1] *Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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; and, • All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent.		
MM104	Potential Hydrological Effects on Designated Sites	EIAR Section 9	Drainage mitigation measures for surface water quality protection during construction phase are summarised again below: • The proposed mitigation measures which will include 50m buffer zones for avoidance of sensitive hydrological features (streams and rivers); • Pre-construction drainage control measures; • Robust drainage control measures (i.e. interceptor drains, swales, settlement ponds and treatment trains such as Siltbuster) will ensure that the quality of runoff from Proposed Project areas will be very high; and, • Best practice measures with regard use of oils, fuels and cement based compounds.		
MM105	Turbine Delivery Works	EIAR Section 9	• All works are minor and localised and cover very small areas; • These works are distributed over a wide area;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• All works are temporary in nature; and, • Application of the Pre-Construction Drainage Measures for surface water quality protection.		
MM106	WFD Status of Downstream Waterbodies	EIAR Section 9	Comprehensive surface water mitigation and drainage controls are outlined the aforementioned Felling of Coniferous Plantations, Earthworks, Excavation Dewatering, Hydrocarbons, Cement-based Products and Morphological Changes to Watercourses. These will ensure the protection of surface water quality and flows in all downstream receiving watercourses.		
MM107	Use of Siltbuster and Impacts on Downstream Surface Water Quality	EIAR Section 9	Measures employed to prevent overdosing and potential chemical carryover: • The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur; • Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system; • Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment; • Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and, • Use of biodegradable chemical agents can be used at very sensitive sites (i.e. upstream of SACs).		
MM108	Grid Connection Earthworks and Watercourse Crossing	EIAR Section 9	The following mitigation measures are proposed for the underground cabling watercourse crossing works:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• No stock-piling of construction materials will take place along the grid route; • No refuelling of machinery or overnight parking of machinery is permitted in this area; • No concrete truck chute cleaning is permitted in this area; • Works will not take place at periods of high rainfall, and will be scaled back or suspended if heavy rain is forecast; • Local road drainage, culverts and manholes will be temporarily blocked during the works; • Machinery deliveries will be arranged using existing structures along the public road; • All machinery operations will take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed or will occur; • Any excess construction material will be immediately removed from the area and sent to a licenced waste facility; • No stockpiling of materials will be permitted in the constraint zones; • Spill kits will be available in each item of plant required to complete the stream crossing; and, • Silt fencing will be erected on ground sloping towards watercourses at the stream crossings if required. • The area around the Clear Bore™ (or similar alternative) batching, pumping and recycling plants will be bunded using terram and sandbags in order to contain any spillages; • One or more lines of silt fences will be placed between the works area and adjacent rivers and streams on both banks; • Accidental spillage of fluids will be cleaned up immediately and transported off site for disposal at a licensed facility; and,		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Adequately sized skips will be used for temporary storage of drilling arisings during directional drilling works. This will ensure containment of drilling arisings and drilling flush.		
MM109	Groundwater Effects associated with Piled Turbine Foundations	EIAR Section 9	The proposed mitigation measures designed for the protection of downstream surface water quality and groundwater quality within the peat bog will be implemented at all construction work areas. Proposed mitigation measures relative to piling works will comprise: • Strict QA/QC procedures for piling works will be followed; • Piles will be kept vertical during piling works; • Good workmanship will be employed during all piling works; and, • Where required use bentonite seal to prevent upward/downward movement of surface water/groundwater.		
MM110	Wetland Hydrology	EIAR Section 9	The main mitigation with regard the safeguard of existing peatland hydrology was the avoidance of areas of intact bog. Proposed turbine locations T6, T7, T10 and T11 as well as the Grid Connection are at least 50m away from areas of intact bog. As assessed in Section 9.5.2.4 in EIAR Section 9 (groundwater level effects), no significant effects or long-term effects on groundwater levels will occur due to the relatively shallow depth of the gravity foundations (3 – 3.5m deep) and the low permeability nature of the peat and glacial till overburden to be excavated. Significant groundwater inflows into turbine excavations will not occur for these reasons. Any effects on groundwater levels will only be for a temporary basis during the construction work. Groundwater level effects are unlikely to be perceptible beyond 10m from the turbine base excavation. Once construction is completed and the		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			works area reinstated, the local groundwater levels and peat waters levels will return to baseline conditions.		
MM111	Peatland Enhancement	EIAR Section 9	To maximise the effectiveness of the re-wetting proposal and to increase the chances of future success, any works undertaken as part of the enhancement plan will be based on approaches and methods that were successful at other peatland sites in Ireland. Peat water level monitoring, by means proposed piezometer installs, will also be carried out to monitor the effectiveness of the bog re-wetting. The monitoring will continue through the lifetime of the Proposed Project		
Operational Phase					
MM112	Removal of Vegetation Cover and Progressive Replacement of Natural Surface with Low Permeability Surfaces	EIAR Section 9	**Mitigation by Design** The operational phase drainage system of the Proposed Project will be installed and constructed in conjunction with the road and hardstanding construction work as described below and as shown on the drainage drawings submitted with this planning application: • Interceptor drains will be maintained up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it will be re-distributed over the ground by means of a level spreader; • Swales/road side drains will be used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• On steep sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off the road into swales/road side drains; • Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock; • Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, • Settlement ponds will be designed in consideration of the greenfield runoff rate.		
MM113	Runoff Resulting in Suspended Solids Entrainment in Surface Waters	EIAR Section 9	The mitigation measures outlined in Sections 9.5.2.3 & 9.5.3.1 of EIAR Section 9 will ensure all surface water runoff from upgraded roads and new road surfaces (including hardstand and turbine base areas) will be captured and treated prior to discharge/release. Settlement ponds, checks dams and buffered outfalls will prevent roads acting as preferential flowpaths by providing attenuation and water quality treatment. It is proposed that bedrock won from the on-site borrow pit (i.e. limestone) will be used to construct the sub-base layer of proposed upgraded and new access roads, hardstand areas and turbine base areas. Once installed the subbase layer will be overlain by a clean capping layer of high-grade stone material which will be sourced from the borrow pit or local quarries.		
MM114	Gurteen/Cloonmore GWS Spring Source	EIAR Section 9	› During the operational phase of the Proposed Project, the only regular plant which will be required on site will be maintenance/inspection vehicles (jeeps/vans/quads) and these will not be refuelled on-site.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› › Any hydrocarbons (oil) present within the turbine generator and gear box will be enclosed within a bund with 110% capacity. › › There will be storage of fuels, oils and chemicals inside any of the turbines.		
Decommissioning Phase					
MM115	Decommissioning	EIAR Section 9	During decommissioning, it will be possible to reverse or at least reduce some of the potential effects caused during construction, and to a lesser extent operation, by rehabilitating constructed areas such as turbine bases and hard standing areas. This will be done by covering with peatland vegetation/scraw or poorly humified peat to encourage vegetation growth and reduce run-off and sedimentation. 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.		
Chapter 10: Air					
MM116	Exhaust Emissions	EIAR Section 10	• All construction vehicles and plant used during construction will be maintained in good operational order while onsite. If any vehicle requires repairs, this work will be carried out, thereby minimising any emissions that arise. • Turbines components will be transported to the Site on specified routes only, unless otherwise agreed with the Planning Authority. • All machinery will be switched off when not in use.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Users of the Site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants are kept to a minimum. • The majority of aggregate materials for the construction of the Proposed Project will be obtained from the borrow pits on site. This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. • The Materials Recovery Facility (MRF) will be local to the Proposed Project site to reduce the amount of emissions associated with vehicle movements. The nearest licensed waste facility to the Wind Farm Site is located approximately 12.7km to the southeast of the Site of the Proposed Project. • Waste associated with the construction of the underground grid connection cabling route will be disposed of at the closest MRF to where waste is generated along the underground electrical cabling route. The closest licensed waste facilities in the vicinity of the underground electrical cabling route, is located approximately 12.7km to the south.		
MM117	Dust Emissions	EIAR Section 10	• A wheel wash facility will be installed on the Proposed Wind Farm Site and will be used by vehicles before leaving the Site. • In periods of extended dry weather, dust suppression may be necessary along haul roads, site roads, grid route, road widening sections, substation, and construction compounds and around the borrow pit area to ensure dust does not cause a nuisance. If necessary, such as during periods of		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			dry weather, de-silted water will be taken from stilling ponds in the Site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads, turbine bases, borrow pit and site compounds to prevent the generation of dust where required. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff as outlined in the CEMP. • Areas of excavation will be kept to a minimum and stockpiling of excavated material will be minimised by coordinating excavation, placement of material in peat placement areas and restoration of borrow pits. • Turbines components, construction materials and grid connection infrastructure will be transported to the Site on specified haul routes only, as agreed with the local authority. • The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as deemed necessary by the construction Site Supervisor/Site Manager. • The transport of construction materials may have the potential to generate dust in dry weather conditions. Roads will be watered down to suppress dust particles in the air as deemed necessary by the Site Supervisor/Manager. • The transport of dry excavated material from the on-site borrow pits, which may have potential to generate dust will be minimised. If necessary, such as in periods of dry weather, excavated material will be dampened prior to transport from the borrow pits. • A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			(see Appendix 4-4). The CEMP includes dust suppression measures.		
			Operational Phase		
MM118	Exhaust Emissions	EIAR Section 10	› 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 on-site vehicles will be required to turn off engines.		
MM119	Dust Emissions	EIAR Section 10	› Maintenance vehicles brought onsite during the operational phase will be maintained in good operational order, thereby minimising any dust emissions that arise. › › Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements.		
			Decommissioning Phase		
MM120	Decommissioning	EIAR Section 10	The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential impacts.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Chapter 11 Climate					
Construction Phase					
MM121	Greenhouse Gas Emissions	EIAR Section 11	• All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. • When stationary, delivery and on-site vehicles will be required to turn off engines. • Turbines and construction materials will be transported to the site on specified routes only unless otherwise agreed with the Planning Authority. • The majority of aggregate materials for the construction of the Proposed Project will be obtained from the borrow pits on site. This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. • The Construction and Environmental Management Plan (CEMP) (Appendix 4-3) includes a Waste Management Plant (WMP) which outlines the best practice procedures that will occur during the construction phase relating to waste material. ○ Section 4.6 of Chapter 4 for the EIAR refers to the methodology that will be utilised to manage onsite waste. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor,		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			○ The MRF facility will be local to the Proposed Project site to reduce the amount of emissions associated with vehicle movements. • Waste associated with the construction of the underground electrical cabling route will be either brought directly to a licensed MRF or brought back to the onsite temporary construction compounds, whichever is closest to the waste generation location in order to reduce vehicle movements. • Where applicable, low carbon intensive construction materials will be sourced and utilised onsite.		
Operational Phase					
MM122	Greenhouse Gas Emissions	EIAR Section 11	• 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 Proposed Project provides for the restoration of approximately 11.6ha of peatland habitat. This is detailed in the Biodiversity Management and Enhancement Plan, available in Appendix 6-6. • Afforestation of the proposed commercial forestry felling for the Proposed Project will be completed as per the Forest Service's policy on granting felling licenses for wind farm development.		
Decommissioning Phase					
MM123	Decommissioning	EIAR Section 11	The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential impacts.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Chapter 12 Noise					
Pre-Commencement Phase					
MM124	Noise	EIAR Section 12	› Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;		
Construction Phase					
MM125	Noise	EIAR Section 12	Good practices, both for construction of the wind turbines and along the grid connection underground electrical cabling route and road junctions will be implemented to minimise the likely effects. Particular care will be taken at watercourse, culvert and drain crossings along the underground electrical cabling route. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that can be employed onsite: • Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; • All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; • Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use; • All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; • Regularly maintain all equipment used on site, including maintenance related to noise emissions; • Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and • All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided. • At any location within 30 m of a residential receptor, where trenching work or directional drilling activities are required for the underground grid connection cabling route, the installation of temporary boarding alongside the drilling rig or 'acoustic blanket panels' hanging from heras fencing (or similar) may be used to mitigate noise emissions.		
			Operational Phase		
MM126	Noise	EIAR Section 12	The exact model of wind turbine to be used for the Proposed Project will be the result of a future tendering process. The final choice of turbine will, however, have to meet the derived WEDG 2006 noise limits and/or noise limits determined and contained within any planning permission condition imposed. In the event that mitigation is required, modern turbine control systems allow for turbines to operate in a reduced noise mode for a range of wind speeds and wind directions as required. Achievement of the noise limits determined by this assessment would be a key determining factor in the final choice of wind turbines for the site. In order to meet the Total WEDG Noise Limits at NAL5, certain turbines will need to be operated in a lower noise mode for a limited range of wind speeds and wind		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			directions when considering the candidate wind turbines modelled in the noise assessment. Other wind turbine models would be available which may not require the use of low noise modes. Whilst it is not possible to predict if OAM will occur, in the event that complaints are received regarding OAM, mitigation measures are available. The design of such mitigation measures can only be determined once the wind farm is operational if OAM is found to occur frequently and at sustained levels. For this Proposed Project, the developer is committed to investigating noise complaints, inclusive of any complaint which may relate to OAM (i.e. beyond overall noise levels found in planning conditions). To deal with the eventuality of a complaint, the developer proposes the following: › A community liaison officer will be appointed prior to first generation of electricity and contact details made publicly available; › Any complaint relating to noise can be reported to the community liaison officer, who will undertake an initial screening of the complaint (review of logs submitted, review of wind conditions and turbine data etc.) and speak to the complainant in person, with an eventual visit to the complainant location if possible; › Following initial screening, the community liaison officer will be responsible for commissioning a detailed noise complaint investigation. This will include appointing a qualified acoustic consultant to undertake noise measurements at the complaint location and quantify the occurrence and depth (in dB) of OAM for every 10 minute of the measurement campaign. The measured 10 minute noise levels and OAM depth would also be correlated with 10 minute wind conditions and operational data to find patterns; and,		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			➢ If frequent and sustained OAM is found, then appropriate mitigation would be designed and implemented, and the complainant informed by the community liaison officer. Mitigation measures considered would include: changes to the operation of the relevant wind turbine(s) by changing software parameters such as blade pitch for specific wind conditions and time periods, addition of blade furniture (such as vortex generators) to alter the flow of air over the wind turbine blades; and, in extreme cases, targeted wind turbine shutdowns in specific conditions.		
			Decommissioning Phase		
MM127	Decommissioning	EIAR Section 12	• Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; • All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; • Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use; • All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; • Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; • Regularly maintain all equipment used on site, including maintenance related to noise emissions; • Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided. • At any location within 30 m of a residential receptor, where trenching work or directional drilling activities are required for the underground grid connection cabling route, the installation of temporary boarding alongside the drilling rig or 'acoustic blanket panels' hanging from heras fencing (or similar) may be used to mitigate noise emissions.		
Chapter 13 Cultural Heritage					
Pre-Commencement Phase					
MM128	Sub-Surface Archaeological Pattern	EIAR Section 13	• Pre-development archaeological testing of the Proposed Project infrastructure in peatland or greenfield areas will be carried out under licence from the National Monuments Service. This is in order to identify any archaeological features at the earliest stage possible in the project to allow time to deal with any requirements such as preservation in situ (redesign / avoidance) or preservation by record (archaeological excavation). • A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority. • Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the testing.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Construction Phase		
MM129	Recorded Monuments	EIAR Section 13	• A buffer zone of 20m will be established around recorded monument GA030-073— prior to the commencement of construction works associated with the Proposed Wind Farm. • The buffer should comprise durable temporary fencing with keep out signage. • The presence of the monument and the requirement for the buffer zone will be added to the Construction and Environmental Management Plan (CEMP) for the Proposed Project. • No ground works, storage of materials or tracking of machinery will take place within the buffer zone.		
MM130	Sub-Surface Archaeological Pattern	EIAR Section 13	• Archaeological monitoring of all groundworks during the construction stage of the Proposed Project by a licensed archaeologist. • A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. • Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the monitoring.		
			Operational Phase		
MM131	National Monuments	EIAR Section 13	• It is noted that natural screening, boundaries, buildings and vegetation are not taken into account in the ZTV model and therefore potential visual effects may in reality be less severe.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM132	Recorded Monuments	EIAR Section 13	• It is noted that natural screening, boundaries, buildings and vegetation will potentially screen some visual effects.		
MM133	Protected Structures	EIAR Section 13	• It is noted that natural screening, boundaries, buildings and vegetation will potentially screen some visual effects.		
MM134	NIAH Structures and Historic Gardens	EIAR Section 13	• It is noted that natural screening, boundaries, buildings and vegetation will potentially screen some visual effects.		
MM135	Features of Local Cultural Heritage Merit	EIAR Section 13	• It is noted that natural screening, boundaries, buildings and vegetation will potentially screen some visual effects.		
Chapter 14 Landscape					
Pre-Commencement, Construction and Operational Phases					
MM136	Mitigation by Design	EIAR Section 14	Through the iterative project design process, various best practice tools used for assessing the landscape and visual impact of a proposed wind farm development were used to bring forward the optimum design for the Proposed Project with respect to landscape and visual factors. These tools include, landscape modelling, ZTV mapping and preparation of photomontage visualisations. The final design of the Proposed Project and strategic siting of turbines in the landscape was informed by extensive early-stage analysis, including assessment of various turbine layouts and turbine models. The final design is also considered in the context of siting and design guidance stated in the *'Wind Energy Development Guidelines for Planning Authorities'* Published by the Department of Environment, Heritage and Local Government in 2006 – Hereafter referred to as the WEDGs (DoEHLG, 2006). The Proposed Project layout that is the subject of this LVIA, already incorporates the		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			following landscape and visual design considerations for good wind farm design, with a particular focus on site selection: › The turbine layout has been designed to create a coherent cluster of turbines, contiguous and connected to each other visually and with consistent spacing in line with the guidance for design and siting of wind farms within Hilly and Flat Farmland Landscape Types in the Wind Energy Development Guidelines (hereafter referred to as the WEDGs) for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG), 2006). › Strategic siting of the proposed turbines on a flat site, reducing their visual prominence and visual effects in this relatively flat and heavily vegetated landscape, the proposed turbines are strategically sited within a modified working landscape where there is limited visibility (or large set back distances) from large population centres and designated landscape and visual receptors of high sensitivity. › The turbines have been located within a landscape defined by agricultural fields bordered by mature hedgerows and treelines which provide substantial screening effects, particularly when the turbines are viewed from locations in medium to long distance from the Proposed Project. Impacts on the landscape and visual receptors are thus highly localised. › Siting of proposed turbines adheres to the minimum 500 metre set back distance in the WEDGs (DoEHLG, 2006) and also the 4 times tip height set-back distance explicitly set out for residential visual amenity prescribed by the Draft Revised Wind Energy Development Guidelines (hereafter referred to as the draft WEDGs) (Department of Housing, Planning and Local Government (DoHPLG, 2019)).		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Siting of the Proposed Project in a landscape setting (The LVIA Study Area to 20km) which has limited numbers of designated sensitive landscape and visual receptors in local planning policy.		
MM137	Visual Effects	EIAR Section 14	General housekeeping measures, necessary for Health & Safety requirements, will ensure that the active construction areas will be kept tidy, mitigating localised visual impacts during the construction phase.		
MM138	Ancillary Infrastructure	EIAR Section 14	**Ancillary Infrastructure – 220kV Substation, Grid Connection and Access Roads** › Aside from the interface towers located in the townland of Laughil, the intended connection to the national electricity grid is primarily located underground thereby eliminating potential landscape and visual effects during the operational phase from large parts of the underground cabling route. › The proposed 220kV substation is sited within the Site with a large setback distance from the nearest visual receptors, with additional screening from the closest receptors provided by blocks of commercial forestry in the intervening space. › The internal site road layout makes use of the existing tracks wherever possible (to be upgraded for construction and the delivery of wind turbine components), to minimise the requirement for new tracks within the Site. › 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.		
MM139	Borrow Pit	EIAR Section 14	A planting regime is proposed for the northern, western and southern boundaries of the borrow pit upon the exhaustion of the pit. The planting of 544m of hedgerow		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			will provide screening of the borrow pit from the public road and will mitigate against any landscape effects.		
MM140	Grid Connection	EIAR Section 14	The following measures will be implemented to mitigate effects during the construction phase and operational phase of the Grid Connection underground electrical cabling route: • In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. • Where the cable trench is to be located in the road verge, subsoil should be piled on site and re-used after cabling works. Should any medium planting be removed, it should be replaced with the same or similar species whenever it is not possible to salvage and reinstate. • Any areas of bare soil remaining after the landscaping phase will be seeded as soon as possible with a grass seed mix to minimise sediment run-off.		
MM141	Landscape receptors	EIAR Section 14	The following measures have been included in the Proposed Project design in order to avoid or reduce direct effects on landscape receptors (individual landscape features and the landscape character of the Site as a whole) on the Site: • The internal site road layout makes use of the existing roads wherever possible, to minimise the requirement for new tracks within the Site. • To minimise cut and fill activities required to construct the Proposed Project, the proposed access roads, and other infrastructure such as hardstands		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			have been designed to align with the existing terrain within the landscape of the Site. • In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. • During initial vegetation stripping, all topsoil material will be temporarily stored on the Site and used for 'dressing' the edges of the development infrastructure during reinstatement/regrading, including that of the spoil management areas and borrow pit. This will be particularly important in areas of cut and fill. The stripped topsoil will contain a natural seed source of local provenance and result in the re-establishment of baseline vegetation. • The layout and design of the Proposed Project has been designed to ensure minimal loss of valuable landscape receptors and biodiversity corridors such as woodland and hedgerows along field boundaries.		
Chapter 15 Material Assets (Traffic)					
Pre-Commencement					
MM142	Traffic	EIAR Section 15	Mitigation by design measures include the following: • Selection of the most appropriate delivery route to transport the wind turbine components, requiring the minimum remedial works to accommodate the vehicles as set out in Chapter 15.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Construction Phase		
MM143	Traffic	EIAR Section 15	The successful completion of the Proposed Project will require significant coordination and planning and a comprehensive set of mitigation measures will be put in place before and during the construction stage of the Proposed Project, in order to minimise the effects of the additional traffic generated by the Proposed Project. › A detailed **Traffic Management Plan (TMP)**, included as Appendix 15-1 of this EIAR, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior to construction works commencing. The detailed TMP will include the following: › **Traffic Management Coordinator –** a competent Traffic Management Co-ordinator 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. › **Delivery Programme –** a programme of deliveries will be submitted to Galway County Council and other relevant authorities in advance of deliveries of turbine components to the Proposed Project site. › **Information to locals** – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› **A Pre and Post Construction Condition Survey –** 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. › **Liaison with the relevant local authorities -** 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. › **Implementation of temporary alterations to road network at critical junctions** – At locations where required highlighted in Section 15.1.9. › **Identification of delivery routes** – These routes will be agreed and adhered to by all contractors. › **Travel plan for construction workers to Site–** While the assessment above has assumed a robust case that construction workers will drive to the Site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of a routes to / from the site and identification of an area for parking. › **Traffic management measure for temporary construction access junction off the R328** – The traffic management measures that will be implemented at proposed temporary access junction off the R238 will include the following; - Traffic signs in accordance with the *"Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). The proposed traffic management measures		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			will be submitted to Galway Councils Roads section for agreement prior to the construction phase. - An application for a temporary reduction of the speed limit on the R328 for a short section either side of the proposed access junction for the duration of the construction phase. - The presence of a permanent "Flagman" during the entire construction phase. › **Temporary traffic signs** – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions. All measures will be in accordance with the *"Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). A member of construction staff (flagman) will be present at key junctions during peak delivery times. › **Delivery times of large turbine components** - The management plan will include the delivery of large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage. › **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 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					
MM144	Traffic	EIAR Section 15	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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			authority, as described in Chapter 4 and Appendix 4-6 Decommissioning Plan. This plan will include a material recycling / disposal and traffic management plan will be prepared for agreement with the local authority prior to decommissioning.		
Chapter 15 Material Assets (Non-Traffic)					
Pre-Commencement Phase					
MM145	Services and Utilities	EIAR Section 15	The Proposed Wind Farm site infrastructure and Proposed Grid Connection underground electricity cabling route has been designed to avoid identified services and utilities. Prior to commencement of construction the survey of the route will be repeated and updated, to ensure any new services and utilities will not be impacted by the Proposed Project.		
Construction Phase					
MM146	Services and Utilities	EIAR Section 15	Notwithstanding the above, specific measures are incorporated into the CEMP, included as Appendix 4-3 of the EIAR, to ensure that the construction of the Proposed Project will not have effect on underground electrical cables and built services at the Proposed Project site. The mitigation measures include the following: • Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works. • Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. • Excavation permits will be completed and all plant operators and general operatives will be inducted and informed as to the location of any services.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			• The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage, and telecommunications networks.		
			Operational Phase		
MM147	Telecommunications	EIAR Section 15	As outlined in Appendix 15-5 of the EIAR, the Developer and Three have reached agreement in relation to a radio link which traverses the site. The Developer has agreed to bear the costs related to the re-routing of the impacted radio link. The Developer and Three have agreed that any re-routing solution will take place in advance of the construction and operation of the Proposed Project. In the event of interference occurring to telecommunications owned by Enet, the Guidelines acknowledge that 'electromagnetic interference can be overcome' by the use of divertor to relay links out of line with the wind farm. As outlined in the scoping replies, Enet are in agreement regarding the commitment by the Developer for the implementation of the necessary mitigation measures in order to protect the link should both the Proposed Project and the link co-exist.		

18.2 EIAR Monitoring Measures

Table 18-2 Monitoring Measures

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
Pre-Construction Phase						
MX1	Drainage Maintenance	EIAR Section 4 SWMP Section 4	Prior to commencement of works in sub-catchments across the site, main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment by catchment basis prior to the commencement of construction works across the site, as works in all areas will not commence simultaneously.	On going	Monthly	Project Hydrologist
MX2	Forestry Felling Drainage Management	EIAR Section 9 SWMP Section 3	Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) will be appointed to oversee the keyhole and extraction works. The ECoW will be experienced and competent, and will carry out the following measures and operate their record using a Schedule of Works Operation Record (SOWOR): • Attend the site for the setup period when drainage protection works are being installed and be present on site during the remainder of the forestry keyhole felling works. • Prior to the commencement of works, review and agree the positioning by the Operator of the required Aquatic Buffer Zones (ABZs), silt traps, silt fencing (see below), water crossings and onsite storage facilities for fuel, oil and chemicals (see further below).	As Required	Weekly	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			• Be responsible for preparing and delivering the Environmental Tool Box Talk (TBT) to all relevant parties involved in site operations, prior to the commencement of the works. • Conduct daily and weekly inspections of all water protection measures and visually assess their integrity and effectiveness in accordance with Section 3.4 (Monitoring and Recording) and Appendix C (Site Monitoring Form (Visual Inspections)) of the Forestry & Freshwater Pearl Mussel Requirements. • Take representative photographs showing the progress of operation onsite, and the integrity and effectiveness of the water protection measures. • Collect water samples for analysis by a 3rd party accredited laboratory, adhering to the following requirements: ○ Surface water samples will be collected upstream and downstream of the keyhole felling site at suitable sampling locations. ○ Sampling will be taken from the stream / riverbank, with no in-stream access permitted. • The following minimum analytical suite will be used: ○ pH, ○ Electrical Conductivity, ○ Temperature ○ Total Suspended Solids, Biochemical Oxygen Demand, Total Phosphorus, Ortho-Phosphate, Total Nitrogen, and Ammonia.			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			• Review of operator's records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions. • Prepare and maintain an Emergency Response Plan (refer to Section 5 of the Construction and Environmental Management Plan). • Suspend work where potential risk to water from siltation and pollution is identified, or where operational methods and mitigation measures are not specified or agreed. • Prepare and maintain a register of all proposed drainage control/protection measures (Water Protection Measure Register). This document is to be updated weekly by the ECoW.			
MX3	Drainage Inspection	EIAR Section 9 SWMP Section 4	Drainage performance will form part of the civil works contract requirements. During the construction phase the effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treatment of potentially silt-laden water from the works areas will be monitored periodically (daily, weekly, and event based monitoring, i.e. after heavy rainfall events) by the ECoW and/or the Project Hydrologist. The ECoW will respond to changing weather and drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained. Prior to the commencement of construction an inspection and maintenance plan for the on-site drainage system will be prepared by the ECoW in consultation with the Project Hydrologist. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure	Daily/Weekly/Quarterly	As Required	ECoW/Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			there is no build-up of standing water in parts of the systems where it is not intended. 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. The following periodic inspection regime will be implemented: • Daily general visual inspections at pre-determined locations, as chosen by the Project Hydrologist and by ECoW; • Weekly (existing & new drains) inspections of all drainage measures by the ECoW and/or the site Construction Manager; • Inspection to include all elements of drainage systems and all water quality monitoring. Inspections required to ensure that drainage systems are operating correctly and to identify any maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter shall be noted and corrective action shall be implemented. High risk locations such as settlement ponds will be inspected daily by the ECoW. Daily inspections checks will be completed on plant and equipment, and whether materials such as silt fencing or oil absorbent materials need replacement; • Event based inspections by the ECoW as follows: ○ >10 mm/hr (i.e. high intensity localised rainfall event); ○ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			○ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). ○ Monthly site inspections of the drainage measures by the Project Hydrologist during construction phase; and, ○ Quarterly site inspections of the drainage measures by the Project Hydrologist after construction for a period of one year following the construction phase. ○ A written record will be maintained or available on-site of all construction phase monitoring undertaken. The abandonment triggers as set out in the SOWOR will be adopted as part of drainage inspections to ensure that any of the conditions prescribed under any abandonment trigger does not exist at the locations under inspection.			
MX4	Surface Water Monitoring	SWMP Section 4	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 Galway County Council but will be based on the planning stage programme already outlined in the EIAR and CEMP and presented in this document. It is proposed to begin baseline monitoring three months prior to the commencement of the construction phase. 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.	Twice	As Required	Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Monitoring 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. There is an existing drainage network across the site and runoff drains relatively freely to local watercourses and streams. This existing drainage system will continue to function as it is during the pre-construction phase. However, prior to commencement of works in sub-catchments across the site, main 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. 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:			

Ref. No.	Reference Heading	Reference Location	Monitoring 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. Also, daily surface water monitoring forms will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection. 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			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			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.			
MX5	Invasive Species	EIAR Section 6 CEMP Section 3	A pre-commencement survey for Rhododendron will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within the development site and to determine whether there have been any changes in the extent of the infestation since the undertaking of the most recent surveys in January 2024.	Once	As required	Project Ecologist
MX6	Flora and Fauna - Otter	EIAR Section 6	A pre-commencement confirmatory otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works.	Once	As required	Project Ecologist
MX7	Peatland Enhancement	BMEP Section 4.4	Prior to the commencement of the habitat enhancement measures described in this Plan, permanent vegetation monitoring plots will be established within the management areas. The monitoring plot locations will be selected using stratified random sampling. This will allow the monitoring plots to be representative of microtopography and vegetation cover, sampling areas from the wettest, intermediate and driest parts of the management areas. Monitoring plots will be surveyed and classified using the relevé method as per the National Survey of Upland Habitats (Perrin *et al.*, 2014) with plot sizes being 2m x 2m. Biotic and abiotic parameters that form baseline indicators of ecological and hydrological condition of the bog will be recorded. Monitoring plots will be marked out permanently using fencing posts	Daily/Weekly/Quarterly	As Required	ECoW/Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			and their location recorded using GPS. The number of monitoring plots will be determined by the level of plant community heterogeneity identified following felling/drain blocking. However, it is proposed that a minimum of ten 2m x 2m monitoring plots will be established across the enhanced areas. Monitoring plots will be surveyed once annually during the first five years of the windfarm and at 5 year intervals for the lifespan of the windfarm (35 years) by a suitably qualified ecologist. Habitat data gathered during the monitoring surveys will be classified and analysed according to the methodology provided within the following documents: • Vegetation Description and Data Analysis: A Practical Approach, 2nd Edition (Kent, 2011) • The Habitats of Cutover Raised Bog, Irish Wildlife Manuals No. 128 (Smith and Crowley, 2020) • Raised Bog Monitoring and Assessment Survey 2013, Irish Wildlife Manuals No. 81 (Fernandez *et al.*, 2014) Hydrological monitoring will also be required to assess the effectiveness of enhancement works. Water levels within areas where drains are blocked will be recorded bi-annually during the first five years of the windfarm and at 5-year intervals for the lifespan of the windfarm (35 years). A number of dipwells or piezometers will be inserted on the peatland to monitor the height of the water table. These will be constructed from 52mm internal diameter PVC. To stop peat filling the tube from the base, the pipe will be covered with gauze affixed with tape. This will be done prior to restoration to allow monitoring of water levels within both the restoration and			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			enhancement areas. In this way, any positive impacts on the local hydrology can be verified and quantified.			
MX8	Flora and Fauna – Marsh Fritillary	EIAR Section 6	Pre-commencement surveys will be undertaken for marsh fritillary to determine if any marsh fritillary are using the site at that time.	Once	As Required	Project Ecologist
MX9	Flora and Fauna - Badger	EIAR Section 6	From a precautionary basis, a pre-commencement badger survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works to ensure that no additional setts in close proximity to proposed infrastructure have been built. In the event that a badger sett is identified within or immediately adjacent to the Proposed Project footprint, mitigations as per the above TII document (*Guidelines For The Treatment Of Badgers Prior To The Construction Of National Road Schemes* (TII 2009)) will be implemented for the new sett.	Once	As Required	Project Ecologist
MX10	Birds	Appendix 7-1	Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the study area to identify sensitive sites (e.g. roosts). Any requirement for construction works to run into the subsequent breeding seasons following commencement will be subject to a repeat of the pre-commencement 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 winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question. The survey will be undertaken by a suitably qualified ornithologist. The survey will comprise a thorough walkover survey of the development footprint and/or all works areas to a 500m radius, where access allows. If winter roosts or nests of birds of high conservation concern are identified, the roost/nest will be earmarked for continued monitoring during works. If the roost/nest is found to be active during	Once	As required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			works, works will cease within a species-specific buffer of its location in line with best practice guidance (Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007) to avoid disturbance. No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.			
			Construction Phase			
MX11	Woodland Replanting	BMEP Section 2.4	To confirm that habitat creation and enhancement has been successful the above outlined woodland replanting scheme will be monitored by a qualified ecologist at the following intervals: • 6 Months, • 1 Year, • 2 Years. • 3 Years, • 4 Years, • 5 Years. At the end of the 5-year monitoring plan as outlined above, the Project Ecologist will assess the need for and frequency of further monitoring of the woodland replanting area in agreement with the wind farm operator. In order to carry out monitoring, a qualified ecologist will conduct inspections and relevés of the planting area at the above outlined temporal intervals following the main growing season (i.e. in September). These inspections and relevés will be recorded and entered into a monitoring report. The collected information will inform the success of the proposal allow for adaptive intervention if it is deemed necessary e.g. if any shrubs are dead or damaged these will be replaced using the same species within the next planting season. Monitoring will be undertaken in partnership between the developer, the Project Ecologist, and the Landowner.	6 months/Annual	As Required	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
MX12	Linear Habitat Replanting	BMEP Section 3.4	Hedgerows and replanted trees will be inspected following the main growing season (i.e. in September) for the first five years of growth, where the requirement for replacement planting will be assessed. If any shrubs are dead or damaged these will be replaced using the same species within the next planting season. Recommendations for ongoing or remedial management required will be specified within an Environmental and Ecological Report.	Yearly	As Required	Project Ecologist
MX13	Grassland Management	BMEP Section 5.3	Permanent vegetation monitoring plots will be set up within the Molinia meadow habitat proposed for enhancement. Monitoring plots will be surveyed once annually during the first five years of the windfarm and at 5 year intervals for the lifespan of the windfarm (35 years) by a suitably qualified ecologist.	Yearly	As Required	Project Ecologist
MX14	Birds	Appendix 7-1	Any ground clearance of habitat during the period March to August that could support breeding birds will be walked to establish the presence of breeding birds (mainly passerines). This will be done by an ornithologist up to 10 days before the clearance works take place. If 10 days elapse without the clearing commencing, a further survey will take place. The focus will be on the area to be cleared but zones up to 100 m (approximately) around the area will also be included. Should a breeding territory be identified, the surveyor will attempt to establish the phase of building, e.g., nest building, incubating, feeding young, and will advise the contractor accordingly on measures to be followed (see Section 5.2).	As required	As required	Project Ornithologist
MX15	Archaeological Monitoring	EIAR Section 13	Pre-development archaeological testing of the Proposed Project (e.g. turbine bases, hardstands, proposed roads, compounds, substation site, etc) will be carried out by a suitably qualified archaeologist under licence from the National Monuments Service. As many of	As Required	As Required	Project Archaeologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			these areas are covered in dense forestry it is proposed that the testing will be carried out once the keyhole clear-felling required for the Proposed Project has taken place, but prior to the commencement of construction works. Further mitigation such as preservation in situ (avoidance), preservation by record (excavation) or buffer zones may be required depending on the results of the testing. Consultation with the NMS and the Planning Authority may be required to discuss the results of testing and any required mitigation. A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority for consideration. Archaeological monitoring of all groundworks associated with the Proposed Project will be carried out by a suitably qualified archaeologist during the construction stage of the project. A report on the monitoring will be compiled on completion of the work and submitted to the relevant authorities.			
MX16	Water Quality and Monitoring	SWMP Section 4	Daily visual inspections of the installed drains and outfalls will be performed during the construction period to ensure suspended solids are not entering streams and rivers on site, to identify any obstructions to channels and to allow appropriate maintenance of the drainage regime. Should the suspended solids levels measured during construction, at the daily visual inspection locations, be higher than the baseline levels, the source will be identified, and additional mitigation measures implemented.	Daily	Daily	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			Inspection sheets and photographic records will be kept on site. Inspection points will include the in-situ field monitoring point locations, the laboratory analysis sampling points and continuous monitoring locations. Inspection points will depend on works being completed within the catchment upstream of the identified monitoring locations. Visual inspections will also be completed after major rainfall events, i.e. after events of >25mm rainfall in any 24-hour period and data including photographs will be collected by visual inspections and independently assessed by the supervising hydrologist who will monitor and advise on the records being received. Daily Visual Inspection locations will be chosen by the Project Hydrologist and ECoW, prior to the commencement of the construction phase, and a Daily Visual Check Sheet Template is included in Appendix C. Daily Visual Inspections are subject to change upon commencement of construction activity and works in progress within the catchment areas. The following periodic inspection regime will be implemented: › Daily general visual inspections of site operations and inspections of all watercourses within the site and in the surrounding area by the ECoW or a suitably qualified and competent person as delegated by the ECoW; › Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify any maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter shall be noted and corrective action			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			shall be implemented. High risk locations such as settlement ponds will be inspected daily by the ECoW. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement; › Event based inspections by the Environmental Clerk of Works as follows: ○ 10 mm/hr (i.e. high intensity localised rainfall event); ○ 25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ○ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). › Monthly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures during construction phase; › Quarterly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures after construction for a period of one year following the construction phase; and, › A written record will be maintained or available on-site within this Construction Environmental Management Plan (CEMP) which will be maintained on-site during the construction phase.			
MX17	Water Quality and Monitoring	CEMP Section 3	During, the construction phase, continuous, in-situ, monitoring equipment will be installed where required at locations surrounding the wind farm site. The monitoring equipment will provide continuous readings for turbidity levels, flow rate and water depth in	Continuous	As Necessary	ECoW/Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
		SWMP Section 4	the watercourse. This equipment will be supplemented by daily visual monitoring at their locations as outlined in the Section 4.1.2.1. › The proposed locations for continuous, in-situ monitoring will be determined by the Project Hydrologist.			
MX18	Water Quality and Monitoring	SWMP Section 4	Baseline laboratory analysis, at locations chosen by the Project Hydrologist, of a range of parameters with relevant regulatory limits and EQSs will be undertaken as per water monitoring programme for the overall windfarm development and each primary watercourse along the route. This will not be restricted to just these locations around the immediate wind farm site with further sampling points added as deemed necessary by the ECoW, in consultation with the Project Hydrologist and Site Manager, as the construction phase progresses.	Monthly	Monthly	ECoW Project Hydrologist
MX19	Water Quality and Monitoring	EIAR Section 9 SWMP Section 4	Field chemistry measurements of unstable parameters, (pH, specific electrical conductivity, temperature and turbidity) will be taken at the surface water monitoring locations, as per water monitoring programme for the overall wind farm development and each primary watercourse along the route and also at all installed sonde locations. These analyses will be carried out by either the ECoW or the Project Hydrologist. In-situ field monitoring will be completed on a weekly basis. In-situ field monitoring will also be completed after major rainfall events, i.e. after events of >25mm rainfall in any 24-hour period. The Project Hydrologist will monitor and advise on the readings collected by in-situ field monitoring.	At least weekly	As Necessary	ECoW/Project Hydrologist
MX20	Surface Water Quality	CEMP Section 4	Visual inspection and monthly laboratory analysis results of water quality monitoring shall assist in determining requirements for any	As Required	Monthly	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			necessary improvements in drainage controls and pollution prevention measures implemented on site. It will be the responsibility of the Environmental Clerk of Works to present the ongoing results of water quality and weather monitoring at or in advance of regular site meetings. Reports on water quality will consider all field monitoring and visual inspections, and results of laboratory analysis completed for that period. Reports will describe how the results compare with baseline data as well as previous reports on water quality. The reports will also describe whether any deterioration or improvement in water quality has been observed, whether any effects are attributable to construction activities and what remedial measures or corrective actions have been implemented. Any proposed alteration to sampling frequency will be agreed with Galway County Council in advance. 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: • Avoid man-made ditches and drains, or watercourses that do not have year-round flows, i.e. avoid ephemeral ditches, drains or watercourses;			
		SWMP Section 4				

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			• 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. Also, daily surface water monitoring forms will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.			
MX21	Clear felling of Coniferous Plantation	EIAR Section 9	› Checking and maintenance of roads and culverts will be on-going throughout felling activity. › Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines (i.e., hot spot areas). › Inspections of plant and machinery will be conducted prior to any works to assure all are in good condition.	As Required	As Required	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			› Inspection of drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. The pre-felling inspection will be conducted during rainfall events. Following tree felling, all main drains will be inspected to ensure that they are functioning.			
MX22	Construction Drainage System	EIAR Section 9	› Regular inspections of installed drainage systems will be undertaken, especially after heavy rainfall, to check for damage and blockages, and ensure there is no escape or build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.	As Required	As Required	ECoW
MX23	Plant and Equipment Inspections	EIAR Section 9 CEMP Section 4	The plant used during construction will be regularly inspected for leaks and fitness for purpose	As Required	Monthly	ECoW
MX24	Flora and Fauna	CEMP Section 4	The responsibilities and duties of the Project Ecologist will include the following: • Review and input to the final construction phase CEMP in respect of ecological matters; • In liaison with Environmental Clerk of Works, oversee and provide advice on all relevant ecology mitigation measures set out in the EIAR and planning permission conditions;	As required	As required	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			• Regular inspection and monitoring of the development, through all phases of construction/operation and provide ecological advice as required; • Carry out ecological monitoring and survey work as may be required by the planning authority.			
MX25	Piped Slope Drains	EIAR Section 4	Piped slope drains will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and blockages. Stake anchors or fill over the pipe will be checked for settlement, cracking and stability. Any seepage holes where pipe emerges from drain at the top of the pipe will be repaired promptly.	Weekly	As required	ECoW
MX26	Check Dams	EIAR Section 4	Check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.	Weekly	As required	ECoW
MX27	Piped Slope Drains	EIAR Section 4	Piped slope drains will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and blockages. Stake anchors or fill over the pipe will be checked for settlement, cracking and stability. Any seepage holes where pipe emerges from drain at the top of the pipe will be repaired promptly.	Weekly	As required	ECoW
MX28	Stilling Ponds	CEMP Section 3 EIAR Section 4	Inspection and maintenance of all settlement ponds, along with the entire drainage network, will be ongoing through the construction period.	Weekly	As required	ECoW
MX29	Silt Fence	EIAR Section 4	Silt fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it.	Weekly	As required	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
MX30	Peat Management	CEMP Section 2 CEMP Section 3	End-tipping of stone onto the road during the construction/upgrading of the access road will be carefully monitored to ensure that excessive impact loading, which may adversely affect the underlying peat, is limited. The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis (by the Site manager/ECoW/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads. Due to the nature of floating road construction, it will be necessary to monitor the settlement/movement of the road. Survey points will be located along the road at 10m intervals in areas of deep peat (greater than 2m). These surveys points will be surveyed on a weekly basis, and more frequently when construction activities are ongoing in the area. The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis during the works, particularly before/following trafficking by heavy vehicular loads. Inspection and maintenance of all settlement ponds, along with the entire drainage network, will be ongoing through the construction period.	As required/weekly	As required	ECoW/Project Geotechnical Engineer
MX31	Peat and Placement Areas Peat Management	CEMP Section 2 CEMP Section 2	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.	As required/weekly	As required	ECoW/Project Geotechnical Engineer

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			Supervision by the Project Geotechnical Engineer will be carried out for the works. The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis (by the Site manager/ECoW/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads. Due to the nature of floating road construction, it will be necessary to monitor the settlement/movement of the road. Survey points will be located along the road at 10m intervals in areas of deep peat (greater than 2m). These surveys points will be surveyed on a weekly basis, and more frequently when construction activities are ongoing in the area. The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis during the works, particularly before/following trafficking by heavy vehicular loads.			
MX32	Peat and Placement Areas	CEMP Section 2	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.	As required	As required	Project Geotechnical Engineer
MX33	Birds	EIAR Section 7	If winter roosts or nests of birds of high conservation concern are identified, the roost/nest will be earmarked for continued monitoring during works. If the roost/nest is found to be active during works,	As required	As required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			works will cease within a species-specific buffer of its location in line with best practice guidance (Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007) to avoid disturbance. No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.			
MX34	Peatland Enhancement	EIAR Section 8	Peat water level monitoring, by means proposed piezometer installs, will also be carried out to monitor the effectiveness of the bog re-wetting. The monitoring will continue through the lifetime of the Proposed Project.	As required	As required	Project Hydrologist
MX35	Noise	Construction Noise Report Section 6	There are no specific requirements identified for mitigation to lessen noise levels to avoid significant effects, however, good practice during construction is recommended and will be presented in a Construction Environmental Management Plan (CEMP) to minimise any potential noise impacts. Generally construction activities will be confined to the core hours periods 07:00 to 19:00 Monday to Friday, and 07:00 to 13:00 on Saturday. 6Good practices, both for construction of the wind turbines and along the grid connection underground electrical cabling route and road junctions will be implemented to minimise the likely effects. Particular care will be taken at watercourse, culvert and drain crossings along the underground electrical cabling route. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that can be employed onsite: • keep local residents informed of the proposed working schedule, where appropriate, including the times and	As required	As required	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			duration of any abnormally noisy activity that may cause concern; • ensure site work is within core hours and any required work outside core hours shall be programmed carefully with consideration to noise and nearby local residents; • ensure all vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; • select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use; • ensure all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; • instruct that machines will be shut down between work periods or throttled down to a minimum; • regular maintenance of all equipment used on site, including maintenance related to noise emissions; • vehicles will be loaded carefully to ensure minimal drop heights to minimise noise during this operation; and • ensure all ancillary plant such as generators and pumps will be positioned to cause minimum noise disturbance and, if necessary, temporary acoustic screens or enclosures should be provided.			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			• At any location within 30 m of a residential receptor, where trenching work or directional drilling activities are required for the underground grid connection cabling route, the installation of temporary boarding alongside the drilling rig or 'acoustic blanket panels' hanging from Heras fencing (or similar) may be used to mitigate noise emissions.			
			Operational Phase			
MX36	Bats	EIAR Section 6	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. At the end of Year 1, and if a curtailment requirement is identified (i.e. significant bat fatalities encountered), a curtailment programme, in line with relevant guidelines, will be devised around key activity periods and weather parameters, as well as a potential increase in buffers. At the end of each year, the efficacy of the mitigation and monitoring plan will be reviewed, and any identified efficiencies incorporated into the programme. This approach allows for an evidence-based review of the potential for bat fatalities at the Site, post construction, to ensure that the necessary measures, based on a new baseline post-	Yearly	As required	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			construction, are implemented for the protection of bat species locally. The effectiveness of any mitigation/curtailment needs to be monitored in order to determine (a) whether it is working effectively (i.e. the level of bat mortality is incidental), and (b) whether the curtailment regime can be refined such that turbine down-time can be minimised whilst ensuring that it remains effective at preventing casualties.			
MX37	Laboratory Monitoring	SWMP Section 4	Monthly sampling for laboratory analysis for the range of parameters adopted during pre-commencement and construction phases will continue after construction is complete. The project hydrologist will monitor and advise on the readings received from the testing laboratory and monitoring will only cease once the hydrologist is satisfied that the chemical and biological monitoring results show that there is no adverse impact on the quality of surface water within the natural watercourses draining the site.	Monthly	As required	Project Hydrologist
MX38	Birds	EIAR Section 7	Survey methods employed for operational monitoring will be in line with guidelines issued by the Scottish Natural Heritage (SNH, 2009 and SNH, 2017). Operational monitoring will be undertaken in Years 1, 2, 3, 5, 10 and 15 of the wind farm's lifetime. Post-construction monitoring will include vantage point surveys, breeding bird surveys, winter distribution and abundance surveys and a programme of regular corpse searching of birds that may potentially collide with operating turbines during the operational phase of the wind farm project. Bird monitoring will include the following survey methods: • Flight activity surveys: vantage point surveys	Yearly	As required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			• Breeding bird surveys: O'Brien & Smith methodology. • Winter distribution and abundance surveys: hen harrier roost surveys • Targeted bird collision surveys (corpse searches) will be undertaken by a trained dog and handler. The surveys will include detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust. Vantage point surveys will be undertaken monthly during operational years 1, 2, 3, 5, 10 and 15 of the lifetime of the wind farm. The methodology for vantage point watches will follow guidelines issued by the NatureScot (2009) and NatureScot (2017). The proposed vantage point watches will adhere to a minimum of 36 hours/VP per season as per guidelines issued by NatureScot (2017). During monitoring years, monthly visits will be undertaken for twelve months commencing at the beginning of breeding or non-breeding season: depending on which comes first. During each visit, six-hour vantage point watches will be undertaken from each fixed vantage point location that offers an un-interrupted view of the study area. Vantage points will be undertaken from the same locations that pre-planning surveys which informed the EIAR application of the Proposed Project (i.e., VPs 1 & 2). Vantage point surveys will be timed to provide a spread over the full daylight period including dawn and dusk watches to coincide with the highest periods of bird activity. Behavioural categories for the observation of bird interactions with operational wind farms will be in line with terminology outlined by Meredith *et al.* (2002). During monitoring years, operational phase distribution and abundance surveys will consist of O'Brien & Smith walkover surveys. Survey methodology will be similar to methods employed for baseline			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			EIAR surveys which will allow a comparison of data to be made for each monitoring year. The timing of visits will follow the recommendations of Calladine et al. (2009). Transects should ensure all areas of suitable breeding/ foraging habitat are approached to within 100m. Target species will include waders, raptors, waterbirds, gulls and other birds of conservation concern. Along with target species, all additional species observed will be recorded to inform the evaluation of supporting habitat. These surveys will follow the same routes that were followed during pre-planning surveys. A total of four site visits will be undertaken during the bird breeding season for each monitoring year and timed to coincide with the core breeding period April - July. Notes will be recorded on nesting and territorial behaviour and breeding signs using standard BTO codes. Non-breeding behaviour such as birds flying over the site will also be recorded. During monitoring years, operational phase winter distribution and abundance surveys will consist of hen harrier roost surveys. Survey methodology will be similar to methods employed for baseline EIAR surveys which will allow a comparison of data to be made for each monitoring year. Suitable habitat for roosting hen harrier within 500m of the Wind Farm Site (as per NatureScot, 2017) will be surveyed for the presence of hen harrier during the winter season. Survey work will be undertaken in accordance with the methodology devised by Gilbert et al. (1998) and the 'Irish Hen Harrier Winter Roost Survey' (unpublished document coordinated by members of NPWS).			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			Surveys for bird casualties will follow survey methods broadly based on guidelines issued by the Scottish Natural Heritage (2009) and search methods adopted by Duffy & Steward, 'Turbine Search Methods and Carcass Removal Trials at the Braes of Doune Windfarm' (Natural Research Information Note 4. Natural Research Ltd, Banchory, UK, 2008). It is proposed to undertake a minimum of one visit per month during each survey year by a trained dog and handler. During each visit, searches will be undertaken at each operating turbine location by a trained dog and handler. Edkins (2014) "Impacts of Wind Energy Developments on Birds and Bats: Looking into The Problem", recommends the "search width should be equal to the maximum rotor tip height". Given a turbine rotor tip height of 180m the search area surrounding the base of the turbine would be taken as a radius of 90m centred on the turbine base. This area will be the subject of target searches for bird casualties. Searches will incorporate the use of transects spaced at 10m intervals apart with the observer covering 5m on either side for each transect. Locations and coordinates of transect routes will be confirmed using a portable GPS recording device. Recording sheets will be used to document bird carcasses encountered in the field. The following details will be considered during field surveys: GPS location of each bird carcass, photographic record, carcass condition (intact (carcass that is completely intact or not badly composed), scavenged (evidence that the carcass was fed upon by a scavenger/predator) or feather spot (ten or more feathers indicating predation or scavenging or two or more primary feathers must be			

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			present to consider the carcass a casualty)), distance from the turbine location, date, time, etc. Carcass removal trials and searcher efficiency trials will be undertaken to account for the ability of the dog team to find bird carcasses and the likelihood of scavenging of corpses by animals. This is done to ensure a more accurate estimation of the total number of collision victims. During carcass removal trials, a carcass is placed in a study area periodically and is monitored for a set number of days or until scavengers remove the carcass (this can be done with the use of a trail camera). A determination on carcass removal is made when no body parts containing flesh or bone or >10 disarticulated feathers can be found. During searcher efficiency trials, a number of carcasses are placed in a study area by one worker, then searched for by another worker with the dog. These may be conducted on the same day as surveys are carried out to avoid flooding the area with carcasses and increasing scavenger activity. The result of these trials provides a correction factor that can be applied to the results of the carcass searches.			
MX39	Surface Water Quality Sampling	EIAR Section 9	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).	As required	As required	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			Criteria for the selection of water sampling points include the following: • 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. Also, daily surface water monitoring forms will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.			
MX40	Major Accidents	EIAR Section 16	The operator of the Proposed Project will continue to assess the risk of major accidents and/or disasters on site on an on-going basis during operation.	Ongoing	As required	ECoW

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			The maintenance programme, record of reported incidents, as well as general site activities will be monitored on an on-going basis to ensure risk of major accidents does not increase over time.			
Decommissioning Phase						
MX41	Decommissioning Plan	EIAR Section 4 EIAR Section 16	As outlined in Section 4.9 of the EIAR, a Decommissioning Plan has been prepared (Appendix 4-6) the final detail of which will be agreed with the local authority prior to any decommissioning. The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will be finalised with the competent authority at that time.	As required	As required	ECoW
MX42	Surface Water Quality Monitoring	Surface Water Management Plan Section 2	Monthly sampling for laboratory analysis for the range of parameters adopted during pre-commencement and construction phases will continue after construction is complete. The project hydrologist will monitor and advise on the readings received from the testing laboratory and monitoring will only cease once the hydrologist is satisfied that the chemical and biological monitoring results show that there is no adverse impact on the quality of surface water within the natural watercourses draining the site.	Monthly	As required	ECoW
MX43	Invasive Species	DP Section 3 EIAR Section 6	Prior to the commencement of works in the Decommissioning phase, a pre-commencement survey for Rhododendron will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within the development site and to determine whether there have been any changes in the extent of the infestation since the undertaking of the most recent surveys in January 2024.	As required	As required	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
MX44	Birds	EIAR Section 7 Bird Monitoring Programme Section 2	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 study area to identify sensitive sites (e.g. roosts). Any requirement for construction works to run into the subsequent breeding seasons following commencement will be subject to a repeat of the pre-commencement 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 winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question. The survey will be undertaken by a suitably qualified ornithologist. The survey will comprise a thorough walkover survey of the development footprint and/or all works areas to a 500m radius, where access allows. If winter roosts or nests of birds of high conservation concern are identified, the roost/nest will be earmarked for continued monitoring during works. If the roost/nest is found to be active during works, works will cease within a species-specific buffer of its location in line with best practice guidance (Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied. 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.	Monthly	As required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
			The restricted area will also be marked to alert all personnel on site to the suspension of works within that area			