

Environmental Impact Assessment Report (EIAR)

Crumhach Wind Farm, Co.
Sligo

Chapter 18 – Schedule of Mitigation and
Monitoring Measures





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SCHEDULE OF MITIGATION AND MONITORING MEASURES

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; and
- > Decommissioning Phase.

The mitigation proposals in the below format provides an easy-to-audit list that can be reviewed and reported on during each phase of the Proposed Project. The proposals for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as Appendix 4-5 of this EIAR. The tabular format in which the below information is presented can be further expanded upon during each Proposed Project phase to provide a reporting template for site compliance audits.

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

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

18.1

EIAR Mitigation Measures

Table 18-1 Schedule of Mitigation Measures

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
EIAR Chapter 4 – Description of the Proposed Project					
Pre-Construction Phase					
MM1	Environmental Management	EIAR Chapter 4 Appendix 4-5	➤ All proposed construction activities and associated mitigation measures for the site will be provided for in a Construction and Environmental Management Plan (CEMP). A CEMP has been prepared for the Proposed Project and is included in Appendix 4-5 of this EIAR. ➤ The CEMP sets out the key environmental considerations to be considered by the contractor during construction of the Proposed Project. The CEMP includes details of drainage, peat and spoil management, waste management, and details the mitigation and monitoring measures to be implemented in order to comply with the environmental commitments outlined in the EIAR and NIS. The contractor will be contractually obliged to comply with all such measures. In the event planning permission is granted for the Proposed Project, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for approval		
MM2	Environmental Management	Appendix 4-5	➤ The Project Developer will be required to engage an independent and suitably qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of ECoW to oversee the construction works and audit the implementation of the CEMP. The ECoW will report to the Project Developer and Project Contractor but will liaise closely with the Construction Manager in relation to the Project Contractor's day-to-day implementation of the CEMP on site.		

			› The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, Developer's Project Manager, and any Authorities or other Agencies, will be agreed by all parties prior to commencement of construction, and may be further adjusted as required during the course of the Proposed Project.		
MM3	Surface Water Quality	Appendix 4-4	› 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 Sligo County Council but will be based on the planning stage programme already outlines in the EIAR, CEMP and SWMP. › Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standards (EQSs) and sampling will be undertaken for each stream that drains the construction site. › Baseline sampling will be completed on at least two occasions, and these will coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell. › 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. › Prior to commencement of works in sub-catchments across the Site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. These inspections will be done on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously.		
MM4	Site Drainage Plan	EIAR Chapter 4 Appendix 4-4 Appendix 4-5	› The Project Hydrologist will complete a detailed drainage design and maintenance plan before construction commences and will attend the Site to set out and assist with micro-siting of proposed drainage controls as outlined in Section 4.6 of the EIAR › The drainage system will be excavated and constructed in conjunction with the access track and hard standing construction. Drains will be excavated, and settlement ponds constructed to eliminate any suspended solids within surface water running off the Site. › Prior to commencement of works in sub-catchments across the Site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that		

		Appendix 4-7	may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously. ➤ Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off. ➤ The routes of any natural drainage features will not be altered as part of the Proposed Project. Turbine locations have been selected to avoid natural watercourses. 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 watercourses. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Project and are indicated on the drainage design drawings. ➤ Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place. ➤ Existing artificial drains in the vicinity of Existing Wind Farm access tracks will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas post treatment, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If access track widening or improvement works are necessary along the existing access tracks, where possible, the works will take place on the opposite side of the access track to the drain. ➤ The key principles of drainage design that will be implemented and adhered to as part of the Proposed Project are as follows: ➤ Keep clean water clean by intercepting it upgradient of works areas and divert it around the works areas for discharge as diffuse overland flow or for rewetting of land.		
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			○ Collect potentially silt-laden runoff from works areas via downgradient collector drains and manage via series of avoidance, source, in-line, treatment and outfall controls prior to controlled diffuse release as overland flow or for rewetting of land. ○ No direct hydraulic connectivity from construction areas to watercourses or drains connecting to watercourses. ○ Where possible, maintain 50-metre watercourse buffer zones for the wind turbines. ○ No alteration of natural watercourses. ○ Maintain the existing hydrology of the Site. ○ Blocking of existing manmade drainage as appropriate. ○ Daily inspection and recording of surface water management system by onsite Environmental Manager and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the Site. ○ Use of siltbuster or equivalent system if required.		
MM5	Preparative Site Drainage Management	Chapter 4 Appendix 4-5 Appendix 4-7	➤ The detailed drainage design will specify all materials and equipment necessary to implement the drainage measures effectively, which will be brought on site in advance of any works commencing. ➤ An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the detailed drainage design measures as necessary. The detailed drainage measures will be installed prior to, or at the same time as the works they are intended to drain.		
MM6	Drainage Inspection	Appendix 4-4 Appendix 4-5 Appendix 4-7	➤ Prior to commencement of works in sub-catchments across the Site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously. ➤ An inspection and maintenance plan for the drainage system onsite will be prepared in advance of commencement of any works on the Proposed Project. Regular inspections of all installed drainage features will be carried out, especially after heavy rainfall, to check for		

			blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the Project Hydrologist.		
MM7	Collector Drains	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	➤ Collector drains will be installed downgradient of the main works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and collected 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. ➤ New collector drains and sediment traps will be installed during ground preparation to intercept water upgradient of felling areas and divert it away. Collector drains will be excavated at an acute angle to the contour (0.3%-3% gradient), to minimise flow velocities. ➤ All new collector drains will taper out before entering the aquatic buffer zone to ensure the discharging water gently fans out over the buffer zone before entering the aquatic zone.		
MM8	Interceptor Drains	EIAR Chapter 4, 9 Appendix 4-5 Appendix 4-7	➤ Interceptor drains will be installed upgradient of any works areas to collect clean surface flow runoff and prevent it reaching excavations and construction areas of the Site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area. ➤ The interceptor drains will be installed in advance of any main construction works commencing		
MM9	Watercourse Inspection	EIAR Chapter 4 Appendix 4-5	➤ Confirmatory inspections of the proposed watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.		
MM10	Drainage Maintenance	Chapter 4	➤ An inspection and maintenance plan for the drainage system onsite will be prepared in advance of commencement of any works on the Proposed Project. Regular inspections of all installed drainage features will be carried out, especially after heavy rainfall, to check for		

		Appendix 4-5 Appendix 4-7	blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the Project Hydrologist. › If necessary, any excess sediment build up behind check dams will be removed. For this reason, check dams will be inspected and maintained weekly during the construction phase of the Proposed Project to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam. › Check dams will also be inspected weekly during the construction phase of the Proposed Project and following rainfall events to ensure the structure of the dam is still effective in controlling flow. Any scouring around the edges of the check dams or overtopping of the dam in normal flow conditions will be rectified by reinforcement of the check dam. › Drainage swales will be regularly inspected for evidence of erosion along the length of the swale. If any evidence of erosion is detected, additional check dams will be installed to limit the velocity of flow in the channel and reduce the likelihood of erosion occurring in the future. › Silt traps will be inspected weekly during the construction phase of the Proposed Project and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows. › The frequency of drainage system inspections will be reduced following completion of the construction phase of the Proposed Project. The Project Hydrologist will inspect and review the drainage system after construction has been completed to provide guidance on the requirements of an operational phase drainage system.		
MM11	Pre-construction Drainage	Appendix 4-4 Appendix 4-5 Appendix 4-7	› Prior to commencement of works in sub-catchments across the Site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously. › Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off.		

			Prior to the commencement of new tracks/hardstands (or track upgrades) 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 50m watercourse such as at watercourse crossings. › Where drains, mainly forestry drains, are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert forestry drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place. › Existing drains in the vicinity of existing Proposed Wind Farm tracks will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.		
MM12	Tree Felling Drainage Measures	Appendix 4-5	Prior to the commencement of tree felling for subsequent road construction the following key temporary drainage measures will be installed: › All existing land and forestry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps; › Clean water interceptor drains will be installed upgradient of the works areas; › Check dams/silt fence arrangements (silt traps) will be placed in all existing that have surface water flows; and,		

			› A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone. Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) shall be appointed to oversee the keyhole and extraction works. The ECoW shall be experienced and competent, and shall have the following functions and operate their record using a Schedule of Works Operation Record (SOWOR), as proposed in the planning application: › Attend the Site for the setup period when drainage protection works are being installed and be present onsite during the remainder of the forestry keyhole felling works. › Prior to the commencement of works, review and agreement of the positioning by the Operator of the required Aquatic Buffer Zones (ABZs), silt traps, silt fencing (see below), water crossings and onsite storage facilities for fuel, oil and chemicals (see further below). › Be responsible for preparing and delivering the Environmental Toolbox 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 4.2 and Appendix 3 (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 monthly for analysis by a 3rd party accredited laboratory, adhering to the following requirements: › Surface water samples shall be collected upstream and downstream of the keyhole felling at suitable sampling locations. › Sampling shall be taken from the stream / riverbank, with no in-stream access permitted. › The following minimum analytical suite shall be used: pH, EC, TSS, BOD, Total P, Ortho-P, Total N, and Ammonia. › Review of operator's records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions. › Prepare and maintain a contingency plan.		
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			› 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 Water Protection Measure Register. This document is to be updated weekly by the ECoW. To protect watercourses, the following measures will be adhered to during all keyhole/tree felling activities. › All relevant measures, best practice methods and requirements set out in Chapter 9 of the EIAR will be adhered to including Forestry & Water Quality Guidelines, Forest Harvesting & the Environment Guidelines and the Forest Protection Guidelines. › The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing. › Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance; › All machinery will be operated by suitably qualified personnel; › Checking and maintenance of tracks and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use track infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; › Machines will traverse the Site along specified access track routes (referred to as racks); › The location of racks will be chosen to avoid wet and potentially sensitive areas; › Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; › Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected spoil		
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			repository areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground; › In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed onsite during construction; › Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; › Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; › Timber will be stacked in dry areas, and outside watercourse buffer zones. Check dams and silt traps will be emplaced on the down gradient side of timber storage/processing sites; › Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; › All refuelling will be completed outside of the designated 50m hydrological buffer zones. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and, › Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.		
MM13	Peat and Spoil Management	EIAR Chapter 4 Appendix 4-2	› An interceptor drain will be installed upslope of the designated peat management areas to divert any surface water away from these areas. This will help ensure stability of the placed peat and reduce the likelihood of debris run-off. › All the recommendations/best practice guidelines for the placement of spoil in identified spoil management areas and alongside access tracks will be confirmed by the Geotechnical Engineer prior to construction.		
MM14	Proposed Grid Connection Route	EIAR Chapter 4 Appendix 4-5	› Before works commence, updated surveying will take place along the Proposed Grid Connection Route, with all existing culverts and services identified, as detailed in Section 4.8.3 of the EIAR. All relevant bodies i.e., ESNB, Sligo County Council, GNI etc. will be contacted and all up to date information for all existing services sought. Structural bridge surveys will be		

			carried out and the current proposals will be subject to detailed design prior to construction. HDD launch and reception pits at locations along the Proposed Grid Connection Route will be determined following site investigations. ➤ When the Proposed Grid Connection Route is located on public roads, a traffic management plan will be prepared prior to any works commencing. A road opening licence will be obtained where required and all plant operators and general operatives will be inducted and informed as to the location of any services.		
MM15	Underground Cabling and Communications Cabling	EIAR Chapter 4 Appendix 4-5	➤ Before works commence, updated surveying will take place along the underground cabling route, with all existing culverts and services identified, as detailed in Section 4.8.3 of the EIAR. All relevant bodies i.e., ESBN, Sligo County Council, GNI etc. will be contacted and all up to date information for all existing services sought. Structural bridge surveys will be carried out and the current proposals will be subject to detailed design prior to construction. HDD launch and reception pits at locations along the underground cabling route will be determined following site investigations. ➤ On completion, the ground will be reinstated as described in Section 4.8.2.6. All underground cabling watercourse crossings along the public road corridor (L2702 and L6309 local roads) will be completed via horizontal directional drilling methodology. Details of all watercourse crossing methodologies for the Proposed Project are outlined in Section 4.8.3.2 below.		
MM16	Waste Management	EIAR Chapter 4 Appendix 4-5	➤ 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.		

MM17	Traffic Management	EIAR Chapter 4, 15 Appendix 4-5 Appendix 15-2	› A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures set out within this CEMP along with Chapter 15 of the EIAR, will be finalised and detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on Site. The detailed TMP will include the following: › Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the development, 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 Sligo County Council in advance of deliveries of turbine components to the Proposed Wind Farm. Liaison with the relevant local authorities, Transport Infrastructure Ireland (TII) and Motorway Maintenance and Renewal Contractors (MMaRC) will be carried out where required regarding requirements such as delivery timetabling. The programme will ensure that deliveries are scheduled in order to minimise the demand on the local network and minimise the pressure on the access to the Proposed Wind Farm. › Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. the delivery of turbine components at night via letter drops and posters in public places. Information will include the contact details of the Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided. › A Pre and Post Construction Condition Survey – Where required by the local authority, a pre-condition survey of roads associated with the Proposed Project will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. › Liaison with the relevant local authority - Liaison with Sligo County Council and An Garda Síochána, will be carried out during the delivery phase of the large turbine vehicles, when		
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			an escort for all convoys will be required. Once the surveys have been carried out and “prior to commencement” status of the relevant roads established, (in compliance with the provisions of the CEMP), the Roads Section of Sligo County Council will be informed of the relevant names and contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager. ➤ Implementation of temporary alterations to road network at critical junctions – at locations highlighted in Section 15.1.9 of the EIAR. ➤ Identification of delivery routes – These routes will be agreed with Sligo County Council and adhered to by all contractors. ➤ Delivery times of large turbine components - The TMP will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage. ➤ Travel plan for construction workers – While the assessment above has assumed the worst case in that construction workers will drive to the Site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the Site and identification of an area for parking. ➤ Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on site and sweeping / cleaning of local roads as required. These are set out in the CEMP which is contained in Appendix 4-5. ➤ Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. ➤ Diversion routes during grid construction – The identification and agreement with Sligo County Council of suitable diversion routes during the construction of the Proposed Grid Connection Route.		
Construction Phase					
MM18	Refuelling	EIAR Chapter 4, 8, 9	➤ Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. ➤ All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the Site.		

		Appendix 4-5 Appendix 4-6 Appendix 4-7	› On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site. › Heavy plant and machinery will be refuelled on-site by a fuel truck, with spill kits kept onboard, that will come to the Site as required on a scheduled and organised basis. › Other refuelling will be carried out using mobile double skinned fuel bowser. The fuel bowser will be parked on a level area in the construction compound when not in use › Only designated trained operatives will be authorised to refuel plant on-site; › Refuelling or maintenance of machinery will not occur within the delineated hydrological buffer zones; › Fuels stored on the Proposed Wind Farm will be minimised; › Any diesel or fuel oils stored at the temporary construction compound will be banded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity; and, › An emergency plan for the construction phase to deal with accidental spillages will be contained within the CEMP. Spill kits will be available to deal with accidental spillages		
MM19	Concrete-Based Products Deliveries and Management	EIAR Chapter 4, 9 Appendix 4-5	› No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place: › Where possible pre-cast elements for culverts and concrete works will be used; › Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning will be undertaken at lined concrete washout ponds; › Weather forecasting will be used to plan dry days for pouring concrete; and, › The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event; › Concrete truck bodies will not be washed out on the Site but will be directed back to their batching plant for washout; › Site access tracks 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 access tracks will not be provided until all turbine foundations 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 foundations 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 at the Site.		
MM20	Concrete Pouring	EIAR Chapter 4 Appendix 4-5	➤ 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 (including drains and ditches) while placing concrete. ➤ Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets. ➤ Ensuring that covers are available, and used, when necessary, 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, ➤ Disposing of surplus concrete after completion of a pour in agreed suitable locations away from any watercourse or sensitive habitats.		
MM21	Road Cleanliness	EIAR Chapter 4 Appendix 4-5	➤ The Proposed Wind Farm roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt. ➤ A road sweeper will be available if any section of the public roads requires cleaning due to construction traffic associated with the Proposed Project. ➤ When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper.		

MM22	Watercourse Buffers	EIAR Chapter 4, 9 Appendix 4-3 Appendix 4-5	› 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. › The Proposed Project has where possible, been kept a minimum of 50 metres from natural watercourses. 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 watercourses.		
MM23	Water Discharge	EIAR Chapter 4, 9 Appendix 4-5 Appendix 4-7	› 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 be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters.		
MM24	Wastewater Management	EIAR Chapter 4	› During the construction phase there will be 4 no. temporary construction compounds each of which will contain a self-contained port-a-loo with an integrated waste holding tank will		

			be used at each of the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works; › 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 a licensed wastewater treatment facility. It is not proposed to treat wastewater on-site		
MM25	Interceptor Drains	EIAR Chapter 4, 9 Appendix 4-5 Appendix 4-7	› 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 collected 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. › The interceptor drains will be installed in advance of any construction works commencing.		
MM26	Check Dams	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	› The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive › Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be left in place at the end of the construction phase to limit erosive linear flow in the drainage swales during extreme rainfall events. › 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.		
MM27	Vegetation Filters	EIAR Chapter 4 Appendix 4-5	› 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.		

		Appendix 4-7			
MM28	Stilling / Settlement Ponds	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	- Stilling ponds will be used to attenuate runoff from works areas of the Site 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. - Stilling ponds will be located towards the end of swales, close to where the water will be reconverted to diffuse sheet flow. Upon exiting the stilling pond system, water will be immediately reconverted to diffuse flow via a fan-shaped rock apron if there is adequate space and ground conditions allow. Otherwise, a swale will be used to carry water exiting the stilling pond system to a level spreader to reconvert the flow to diffuse sheet flow.		
MM29	Silt Bags	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	- Dewatering silt bags allow the flow of water through them while trapping any silt or sediment suspended in the water. The silt bags provide a passive non-mechanical method of removing any remaining silt contained in the potentially silt-laden water collected from works areas within the site. - Dewatering silt bags can also be used as an additional filtration measure downgradient of settlement ponds, wherever it is deemed appropriate, throughout the site. The water will flow, via a pipe, from the settlement 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 silt into the stream. - The dewatering silt bag, when full, will be removed from the Proposed Wind Farm by a waste contractor with the necessary waste collection permit, who will then transport the silt bag to an appropriate, fully licensed waste facility.		

MM30	Siltbuster	Chapter 4 Appendix 4-5	A “siltbuster” or similar equivalent piece of equipment may be used to filter any water pumped out of excavation areas, if necessary, prior to its discharge to settlement 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. The mobile units are specifically designed for use on construction sites.		
MM31	Clear Span Watercourse crossing	EIAR Chapter 4 Appendix 4-5	The watercourse crossing will be constructed to the specifications of the OPW bridge design guidelines ‘<i>Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945</i>’, and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. Confirmatory inspections of the proposed new watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.		
MM32	Culvert Crossing	EIAR Chapter 4, 9. Appendix 4-5	➤ All new proposed culverts and proposed culvert upgrades at field drain crossings required for the Proposed Wind Farm will be suitably sized for the expected peak flows in the relevant drain. ➤ Some culverts may be installed to manage drainage waters from works areas of the Proposed Wind Farm, particularly where the waters must be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base but will have a minimum 900mm diameter. In all cases, culverts will be oversized to allow mammals to pass through the culvert. ➤ All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.		
MM33	Silt Fences	EIAR Chapter 4, 9	➤ Silt fences will be installed as an additional water protection measure around existing watercourses where works are proposed within the 50m zone of a stream or 100m buffer zone of a lake. These areas include around existing culverts and around the headwaters of watercourses.		

		Appendix 4-5 Appendix 4-7	➤ Silt fences will be installed as single, double or a series of triple-silt fences, depending on the space available and the anticipated sediment loading. The silt fence designs follow the technical guidance document ‘<i>Control of Water Pollution from Linear Construction Projects</i>’ published by CIRIA (No. C648, 2006). ➤ All silt fencing will be formed using Terrastop Premium or equivalent silt fence product. ➤ Silt fences will be inspected regularly to ensure water is continuing to flow through the fabric and the fence is not coming under strain from water backing up behind it.		
MM34	Sedimats	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	➤ 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	Internal Cabling Trench	EIAR Chapter 4 Appendix 4-5	For the trenching and ducting works the following step by step methodology will apply: ➤ Grade, smooth and trim trench floor when the required 1315mm depth and 825mm width have been obtained. ➤ Place bedding layer of Cement Bound Granular Mixture B (CBGM B) material in accordance with the specification and compact it so that the compacted thickness is as per the drawings. ➤ Lay the bottom row of ducts in trefoil formation as detailed on the design drawings. Use spacers as appropriate to establish horizontal duct spacing. Fit a secure cap / bung to the end of each duct run to prevent the ingress of dirt or water. ➤ Carefully surround and cover ducts with CBGM B in accordance with the design drawings and specifications and thoroughly compact without damaging ducts. ➤ Place cable protection strips on compacted CBGM B directly over the ducts. ➤ Lay the top row of ducts onto the freshly compacted CBGM B including the cable protection strips above the bottom row of ducts. Place a secure cap at the end of each duct to prevent the ingress of dirt or water.		

			› Carefully surround and cover ducts with CBGM B material in accordance with the drawings and thoroughly compact without damaging ducts. › Place red cable protection strip on top of compacted CBGM B over each set of ducts as shown on the drawings. › Place and thoroughly compact CBGM B material or Clause 804 backfill, or soil backfill as specified and place warning tape at the depth shown on the drawings. › For concrete and asphalt/bitmac road sections, carry out immediate permanent reinstatement in accordance with the specification and to the approval of the local authority and/or landowners, unless otherwise agreed with local authority (Figure 3). › For unsurfaced/grass sections, backfill with suitable excavated material to ground level leaving at least 100 mm topsoil or match existing level at the top to allow for seeding or replace turves as per the specification of the local authority or landowner (Figure 4). › Clean and test the ducts in accordance with the specification by pulling through a brush and mandrel. Install 12 mm polypropylene draw rope in each duct and seal all ducts using robust duct end seals fitted with rope attachment eyes in preparation for cable installation at a later date. All the works should be witnessed by ESNB Clerk of Works (CoW) as required.		
MM36	Temporary Construction Compound	EIAR Chapter 4 Appendix 4-5	› The area to be used as the compounds will be marked out at the corners using ranging rods or timber posts. Drainage runs and associated settlement ponds will be installed around the perimeter; › A limited amount of fuel will have to be stored in appropriately bunded containers and a designated area for oil storage will be constructed within the compound. › A waste storage area will be provided within the compound; › 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 a licensed wastewater treatment facility, and; › The water supply to the Site will be from temporary water storage tanks which will be filled using mobile water tanks which will source water locally as required. › The compounds will be fenced and secured with locked gates if necessary; and, › Upon completion of the Proposed Project, the temporary construction compounds will be decommissioned and allowed to vegetate naturally.		

Operational Phase					
MM37	Wastewater Management	EIAR Chapter 4	The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. Full details of the proposed tank alarm system can be submitted to the Planning Authority in advance of any works commencing onsite. The wastewater storage tank alarm will be part of a continuous stream of data from the sites' turbines, wind measurement devices and electricity substation that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007 (as amended), will be employed to transport wastewater away from the substation underground storage tank.		
Decommissioning Phase					
MM38	Decommissioning	EIAR Chapter 4 Appendix 4-6	A Decommissioning Plan has been prepared (Appendix 4-6). 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 agree with the competent authority at that time. The potential for effects during the decommissioning phase of the Proposed Project has been fully assessed in the EIAR.		
MM39	Decommissioning	EIAR Chapter 4 Appendix 4-6	➤ Upon decommissioning of the Proposed Wind Farm, the wind turbines and the meteorological mast would be disassembled. All above ground turbine and mast components would be separated and removed off-site for recycling. Turbine and mast foundations would remain underground and would be covered with earth and allowed to revegetate. Leaving the foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in significant temporary environment nuisances such as noise, dust and/or vibration. Site roadways will be used during the operational phase by farm machinery and therefore will be retained where requested post-decommissioning to facilitate these activities. ➤ The underground electrical cabling connecting the turbines to the onsite substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a		

			mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility. › The Proposed Grid Connection Route and onsite substation will remain in place as it will be part of the Electricity Grid under the ownership and control of the ESB and EirGrid.		
MM40	Refuelling	EIAR Chapter 4, 8, 9 Appendix 4-5	Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site. Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis. All refuelling will be carried out outside designated watercourse buffer zones. Only designated trained competent operatives will be authorised to refuel plant onsite. Mobile measures such as drip trays and fuel absorbent mats will be used during refuelling operations as required. All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage. The following mitigation measures are proposed to avoid release of hydrocarbons at the Site: › Road-going vehicles will be refuelled off site wherever possible; › Fuels volumes stored on site will be minimised; › Any fuel storage areas 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; › Oils or fuels stored in turbines will be drained and disposed of off-site by a licenced waste contractor, to prevent leakage to groundwater or surface water; › The plant used 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 (refer to Section 5.1.6 of this Decommissioning Plan). Spill kits will be available to deal with an accidental spillage in and outside the refuelling area. › A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase.		

EIAR Chapter 5: Population and Human Health					
Pre-construction Phase					
MM41	Human Health	EIAR Chapter 5	Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be made known. Local access to properties will also be maintained throughout any construction works and local residents will be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum.		
MM42	Traffic and Transport	EIAR Chapter 5	A Traffic Management Plan (TMP) has been developed in order to minimise any potential effect on the local population during the construction phase of the Proposed Project due to traffic.		
Construction Phase					
MM43	Human Health	EIAR Chapter 5 Appendix 4-5	The Proposed Project will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including: ➤ Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); ➤ Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016); ➤ S.I. No. 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). ➤ A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage. ➤ All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety		

			legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Site where uncontrolled access is not permitted. ➤ Goal posts will be established, where necessary, under overhead electricity lines for the entirety of the construction phase of the Proposed Wind Farm. ➤ The suitability of machinery and equipment for use near power lines will be risk assessed. ➤ All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site are made aware of the location of lines before they come on to Site. ➤ Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire. ➤ When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required. ➤ Information on safe clearances will be provided to all staff and visitors. ➤ Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on Site. ➤ All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'¹. This will encompass		
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¹ Health & Safety Authority (2013) Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013. Available at: https://www.hsa.ie/eng/publications_and_forms/publications/construction/guidelines_on_the_procurement_design_and_management_requirements_of_the_safety_health_and_welfare_at_work_construction_regulations_2013_updated_.pdf

			the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan. › Temporary diversion routes avoiding the L6309 local road will be in place along the Sligo Way trail during the duration of the construction period. The scale and scope of the Proposed Project necessitates that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's <i>'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'</i>. The PSDP appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): › Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project; › Where possible, eliminate the hazards or reduce the risks; › Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan; › Ensure that the work of designers is coordinated to ensure safety; › Organise co-operation between designers; › Prepare a written Safety and Health Plan; › Prepare a safety file for the completed structure and give it to the client; and › Notify the Authority and the client of non-compliance with any written directions issued. The PSCS appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): › Development of the Safety and Health Plan for the construction stage with updating where required as work progresses; › Compile and develop safety file information. › Reporting of accidents / incidents; › Weekly Site meeting with PSCS;		
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			› Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out: › Induction of all Site staff including any new staff enlisted for the project from time to time; › Toolbox talks as necessary; › Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date; › Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance; › Monitor the compliance of contractors and others and take corrective action where necessary; and › Notify the Authority and the client of non-compliance with any written directions issued.		
MM44	Air Quality: Dust and Exhaust Emissions	EIAR Chapter 5, 10	The majority of aggregate material for the construction of roads and turbine bases will be sourced from the onsite borrow pits, therefore limiting the distance needed to transport material to the Proposed Wind Farm. Truck wheels will be washed to remove mud and dirt before leaving the Proposed Wind Farm. All plant and materials vehicles shall be stored in the temporary construction compound areas or other dedicated areas. Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. Construction traffic will be restricted to defined routes, and a speed limit will be implemented. The active construction area along the Proposed Grid Connection Route will be small, ranging from 100-200m in length at any one time. Should separate crews be used during the construction phase they will generally be separated by 1-2km. All construction machinery will be maintained in good operational order while on-site, minimising any emissions that are likely to arise. Aggregate materials for the construction of the cabling route will be sourced locally to reduce the amount of emissions associated with vehicle movements. Potential dust emissions during the construction period will not be significant and will be relatively short-term in duration. All mitigation as outlined in order to reduce insofar as possible, impacts on air quality in the vicinity of Proposed Project construction works are detailed in MM99 to MM101.		

MM45	Water Quality	EIAR Chapter 5 EIAR Chapter 9	➤ A bespoke drainage design which includes but is not limited to interceptor drains, check dams, swales and ponds will be implemented on the Site and will be subject to review, finalisation and updating (if required), please see Section 4.6 in Chapter 4 for details on the different type of drainage measures to be implemented on the Site. Chapter 9 of this EIAR details all best practice and mitigation measures to minimise the potential for entrainment of suspended sediment or potential hydrocarbon leak. Please see Chapter 9 for details		
MM46	Noise and Vibration	Chapter 5, 12 Appendix 4-5	Good onsite practices, both for construction of the Proposed Wind Farm and the Proposed Grid Connection Route will be implemented to minimise the likely effects. Particular care will be taken at watercourse crossings along the Proposed Grid Connection Route. Section 8 of BS 5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will 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; ➤ Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; ➤ Regularly maintain all equipment used onsite, 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 30m of a residential receptor, where directional drilling activities are required for the Proposed Grid Connection 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.		
MM47	Major Accidents & Natural Disasters	Chapter 5, 16	➤ 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 on site 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 on site, and mitigation of the same during operation. ➤ A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Project and is included in Appendix 4-5 of this EIAR. Upon a grant of planning permission for the Proposed Project, the CEMP will be updated to reflect the conditions stipulated in the consent prior to the commencement of the development. The CEMP will be a live document maintained by the contractor that will work to ensure that potential risks of major accident and/or disaster are identified, avoided and mitigated, as necessary. Refer to Appendix 4-5 for the CEMP that sets out the minimum standards to be employed by the contractor. ➤ Potential effects associated with contamination during construction, operation and decommissioning are addressed fully in Chapter 8: Land, Soils and Geology, and Chapter 9: Hydrology and Hydrogeology. The mitigation measures outlined in Chapter 8 and Chapter 9 to protect environmental receptors as well as the procedures and measures described in the CEMP will ensure that the risk from these sources is low.		

Operational Phase					
MM48	Property Values	EIAR Chapter 5	› All mitigation relevant to property values, outlined above and the corresponding chapters: Chapter 10: Air Quality, Chapter 12: Noise and Vibration, Chapter 13: Landscape and Visual, and Chapter 15 Material Assets, will be implemented in order to reduce insofar as possible, impacts on property values at properties located in the vicinity of the Proposed Project construction works. › The Proposed Project has been designed in accordance with the parameters set out in the Guidelines (DoEHLG, 2006) and with cognisance of the Draft Guidelines (DoHPLG, 2019), adhering to the required setback distances from sensitive receptors set out in those documents.		
MM49	Human Health	EIAR Chapter 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. The doors will only be unlocked as required for entry by authorised personnel and will be locked again following their exit. › Staff associated with the Proposed Project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed, faded, or are becoming hidden by vegetation or foliage, with prompt action taken as necessary. › Signs will also be erected at suitable locations across the Site as required for the ease and safety of operation of the wind farm. These signs include: ○ Buried cable route markers at 50m (maximum) intervals and change of cable route direction; ○ Directions to relevant turbines at junctions; ○ “No access to Unauthorised Personnel” at appropriate locations; ○ Speed limits signs at Site entrance and junctions; ○ “Warning these Premises are alarmed” at appropriate locations; ○ “Danger HV” at appropriate locations; ○ “Warning – Keep clear of structures during electrical storms, high winds or ice conditions” at Site entrance; ○ “No unauthorised vehicles beyond this point” at specific Site entrances; and ○ Other operational signage required as per Site-specific hazards.		

			➤ The proposed onsite 110kV substation, which will be operated by ESB and Eirgrid, will be locked and fenced off from public access. The substation will be operational remotely and manually 24 hours per day, 7 days a week. Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link. ➤ Periodic service and maintenance work which include some vehicle movement. ➤ For operational and inspection purposes, substation access is required. ➤ Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following: ○ Six-month service – three-week visit ○ Annual service – six-week visit ○ Weekly and daily visits as required. ➤ An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the Site. Access for emergency services will be available at all times.		
MM50	Residential Amenity	EIAR Chapter 5	➤ There are no turbines proposed within 720m (4 x tip height) of any sensitive receptors. As detailed above, the closest proposed turbine (T02) is 735m from the nearest sensitive receptor. ➤ All mitigation as outlined under noise and vibration, dust, traffic, visual amenity, shadow flicker, and telecommunications in this EIAR will be implemented in order to reduce insofar as possible impacts on residential amenity at properties located in the vicinity of the Proposed Project works, including along the proposed turbine and construction materials haul route and the Proposed Grid Connection Route.		
MM51	Shadow Flicker	EIAR Chapter 5	Where daily or annual shadow flicker exceedances are predicted at any of the 17 no. properties identified above, a site visit will be undertaken firstly to determine the presence of existing screening and window orientation at each potentially affected property. This will determine if the receptor has an actual line of sight to any turbine and actual potential for shadow flicker to occur. Once this exercise is completed at all of the potentially affected properties, the following measures will be employed.		

			<u>Wind Turbine Control Measures</u> 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 farm's turbine to be programmed and controlled using the wind farm's control system such as Supervisory Control and Data Acquisition (SCADA) or the NorthTech system to change a particular turbine's operating mode during certain conditions or times or even turn the turbine off if necessary. All predicted incidents of shadow flicker can be pre-programmed into the wind farm's control software. The wind farm's control system can be programmed to shut down any particular turbine at any particular time on any given day to avoid excessive shadow flicker occurrences at properties which are not naturally screened. 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, will be continuously monitored at the Proposed Wind Farm and the data fed into the wind farm's control system. The strength of direct sunlight will be measured by way of photocells, and if the sunlight is of sufficient strength to cast a shadow, the shadow flicker control mechanisms will come into effect. Wind speed and direction will be 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 will come into effect. The moving blades of the turbine will require a short period of time to cease		
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			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. In order to ensure that the model and the wind farm's control 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. <i>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.).</i> <i>1. Recording the house number, time and duration of site visit and the observation point GPS coordinates.</i> <i>2. Recording the nature of the sensitive receptor, its orientation, windows, landscaping in the vicinity, any elements of the built environment in the vicinity, vegetation.</i> <i>3. In the event of shadow flicker being noted as occurring the details of the duration (times) of the occurrence will be recorded.</i> <i>4. The data will then be sent to the wind farm operational team to confirm that the model and SCADA system are working.</i> <i>5. 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.</i> 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. Where properties exceed the 30 minute maximum daily shadow flicker, the relevant turbine(s) would be programmed to switch off for the time required to reduce daily shadow flicker to below the Guidelines (DoEHLG, 2006) limit of 30 minutes. The SCADA control system would be utilised to control shadow. Notwithstanding this, should shadow flicker associated with the Proposed Wind Farm be perceived to occur at any home, the affected homeowner is invited to		
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			engage with the Wind Farm operator. Should a complaint or query in relation to shadow flicker be received, field investigation/monitoring will be carried out by the wind farm operator at the affected property. The homeowner will be asked to log the date, time and duration of shadow flicker events occurring. 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. Likewise, the Proposed Project could be brought in line with the requirements of the Draft Guidelines (DoHPLG, 2019) should they be adopted during the planning application process for this development.		
Decommissioning Phase					
MM52	Decommissioning Phase	EIAR Chapter 4, Chapter 5 Appendix 4-6	› The wind turbines proposed as part of the Proposed Project are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Proposed Turbines may be decommissioned fully. The Proposed Grid Connection Route and on-site substation will remain in place as it will form part of the Electricity Grid under the ownership and control of the ESB and Eirgrid. › The works required during the decommissioning phase are described in Section 4.10 in Chapter 4: Description of the Proposed Project. Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent, and the mitigation measures outlined above will be implemented during the decommissioning phase also. A Decommissioning Plan has been prepared as part of this EIAR and is included as Appendix 4-6. This Decommissioning Plan follows the most up to date NatureScot guidance. By its nature, the Decommissioning Plan is a working document and, in accordance with the NatureScot guidance, an updated Decommissioning Plan will be agreed with the local authorities three months prior to decommissioning the Proposed Project. The principles that will inform the final decommissioning plan are contained in the CEMP in Appendix 4-5.		
EIAR Chapter 6 Biodiversity					
Pre-Construction					

MM53	Invasive Species Management	EIAR Chapter 6 Appendix 6-5	➤ A pre-commencement survey for invasive species within the footprint of the Proposed Wind Farm will be carried out by a suitably qualified ecologist to ensure there is no new growth of Third Schedule invasive species in these areas. If additional invasive species are recorded within the construction areas, an Invasive Species Management Plan will be prepared in advance of construction which will incorporate the measures necessary to prevent spread additional to the measures laid out below. A Toolbox Talk will be given by the Ecological Clerk of Works (ECoW) in relation to the management of invasive species within construction areas. ➤ <i>Rhododendron ponticum</i>, a species listed under the Third Schedule of the S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011, was recorded within the Proposed Project site. ➤ A pre-commencement survey for <i>Rhododendron</i> will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within the Proposed Wind Farm and to determine whether there have been any changes in the extent of the infestation since the undertaking of surveys in 2023, 2024 and 2025. The locations and extent of <i>Rhododendron</i> within the Proposed Wind Farm will be clearly marked out using hazard tape to ensure they are not disturbed. For <i>Rhododendron</i> stands that occur outside of the construction footprint and will not be directly impacted, a 10m buffer zone surrounding each stand will also be applied using temporary fencing, to avoid disturbance of potentially contaminated soils.		
MM54	Flora and Fauna	EIAR Chapter 6	Otter No otter holts were recorded within 150m of any Proposed Project infrastructure within the Proposed Project site. However, it is noted that this is a mobile species and could potentially migrate within the site. As such, prior to the commencement of construction works associated with the installation of watercourse crossings, a pre-commencement otter survey will be undertaken 150m upstream and downstream any the proposed watercourse crossings to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (TII, 2008). This will be undertaken by a suitably qualified ecologist in accordance with standard best practice guidance. The new watercourse crossing within the Proposed Wind Farm will comprise clear span watercourse crossings and will therefore avoid any loss of riverbed or riverbank habitat. If a holt is found within 150m of construction areas, the works		

			will be undertaken in line with TII guidelines and if a potential for disturbance is identified, these works will not be undertaken until a derogation licence is obtained. Badger Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction badger survey will be carried out in order to assess activity levels at setts and to identify any sett entrances that may have been established in the intervening period. All setts within 50m of the Proposed Wind Farm infrastructure will subsequently be monitored for a minimum period of 2 weeks using remote cameras in order to ascertain use by badgers and levels of activity. All badger survey work will be undertaken in line with current best practice guidance. If a sett is found within 50m of the Proposed Project, further monitoring and mitigation in line with TII guidelines, and in consultation with the NPWS will be prescribed as appropriate.		
Construction Phase					
MM55	Surface Watercourses and Sensitive Aquatic Faunal Species	EIAR Chapter 6, 9 Appendix 4-4	Aquatic Habitats A minimum distance of 100m between the SAC and proposed infrastructure was maintained in the design of the Proposed Wind Farm. Only the proposed turbine T5 is located within the Easky Margaritifera catchment, however a distance of over 100m was maintained between any proposed infrastructure and the Easky River draining into the Margaritifera catchment. Instream works are not required at any watercourse crossing along the Proposed Grid Connection Route. Watercourses will not be directly impacted upon since no instream works are proposed. The new watercourse crossing within the Proposed Wind Farm will comprise clear span watercourse crossings and will therefore avoid any loss of riverbed or riverbank habitat. A drainage design for the Proposed Project is provided in the Surface Water Management Plan in Appendix 4-4 of this EIAR. This plan provides details of how water quality will be protected during the construction of the Proposed Project.		

MM56	Bats	EIAR Chapter 6 Appendix 6-2	➤ The following construction best practice will be employed to minimise general noise and disturbance potential. ➤ 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). ➤ Where lighting is required, directional lighting will be used to prevent overspill on to forestry edges. Exterior lighting during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. ➤ 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 at Night. In addition, the Applicant commits to the use of lights during construction (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).		
MM57	Habitats	EIAR Chapter 6, 9	Aquatic Habitats The pathways that would allow potential impacts to occur due to deterioration of water quality were considered in the design of the Proposed Project. The environmental management framework to be adhered to during the construction phase of the Proposed Project includes comprehensive detail regarding site set up, pollution prevention and hydrocarbon management and incorporates mitigating measures as detailed in Chapter 9 of the EIAR and in the CEMP in		

			Appendix 4-5 to ensure that there is no significant effect on water quality or aquatic receptors within or downstream of the Proposed Project. The measures include the use of interceptor drains and collector drains to collect and intercept run-off from construction areas, temporary settlement ponds to attenuate and treat runoff, the use of silt fences between works and watercourses and dewatering silt bags to remove silts from pumped waters. The measures are outlined in full in Chapter 9. Habitats The Proposed Project has been specifically designed to avoid uncut and good condition areas of blanket bog habitat where possible and to minimise impacts thereon. This was achieved through an early-stage ecological constraints study informed by field surveys and habitat mapping. The proposed layout was thereby altered through the iterative design process to avoid uncut blanket bog habitats. Proposed new wind farm access tracks and road upgrades will be constructed sensitively to ensure that hydrological connectivity is maintained between areas of peatland habitat. Upgrades to the existing road along the adjacent QI blanket bog habitat of the Ox Mountains Bogs SAC will only be carried out westwards, away from the SAC habitat. No stockpiling within, or access to, the SAC area is permitted. Upgrade works along this stretch of road are to be supervised by the ECoW. The loss of 0.66ha of marginal upland blanket bog for the Proposed Project, considered significant, will be fully offset through the implementation of the Biodiversity Management and Enhancement Plan (BMEP) which includes for the enhancement and management of an area of degraded blanket bog measuring 36ha (Tawnadremira Bog) which is located between two sections of the Ox Mountains Bogs SAC. The design of the Proposed Wind Farm infrastructure fully avoids the area of wet heath habitat. In advance of construction of the Proposed Wind Farm, the area will be fenced off from the surrounding infrastructure; this fencing is to be maintained throughout the lifetime of the Proposed Wind Farm. In advance of construction of the Proposed Wind Farm, the Project Ecologist/ ECoW will inspect the fencing surrounding the habitat to ensure it is in good repair and that there is no possibility of access to the area, or any storage of materials. Site workers will be fully briefed on		
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			the sensitivity of the habitat. Signage will be installed on the fences outlining that no access or placement of materials is permitted.		
MM58	Flora and Fauna	EIAR Chapter 6	Otter The pathways that would allow potential impacts to occur due to deterioration of water quality were considered in the design of the Proposed Project. Specific mitigation is provided in relation to water quality in Chapter 9 of this EIAR. The Construction Environmental Management Plan (CEMP) provided in Appendix 4-5 provides the details of how the measures will be implemented during construction. Badger During the breeding season (December to June inclusive) no works will be undertaken within 50m of active setts. If such works are required, exclusion measures will be put in place (as outlined above) prior to construction in line with TII Guidelines to ensure that the sett is evacuated. All of the above works will be undertaken or supervised by an appropriately qualified ecologist. Geyer's Whorl Snail The design of the Proposed Wind Farm infrastructure fully avoids the area of Geyer's whorl snail habitat. In addition, the following measures will be in place: › In advance of construction of the Proposed Wind Farm, the area will be fenced off from the surrounding infrastructure; this fencing is to be maintained throughout the lifetime of the Proposed Wind Farm.		

			› In advance of construction of the Proposed Wind Farm, the Project Ecologist/ ECoW will inspect the fencing surrounding the habitat to ensure it is in good repair and that there is no possibility of access to the area, or any storage of materials. › Site workers will be fully briefed on the sensitivity of the habitat. › Signage will be installed on the fences outlining that no access or placement of materials is permitted. › The area will be checked by the site ECoW periodically during the decommissioning of the existing Duneill Wind Farm.		
Operational Phase					
MM59	Bats	EIAR Chapter 6 Appendix 6-2	Detailed mitigation measures in relation to bats is provided in Section 6 of the Bat Report in Appendix 6-2 and summarised below. Mitigation measures are proposed together with post-construction monitoring: › Introduce felling buffers around turbines › Implement blade feathering as a standard › Lighting and noise restrictions › A minimum of three years operational monitoring to assess changes in bat activity patterns post construction and to monitor the implementation of the mitigation strategy.		
MM60	Habitats	EIAR Chapter 6, 9 Appendix 4-4	Aquatic habitats The proposed design measures will prevent road surface and other hardstand areas acting as preferential flowpaths. All development site runoff will be collected, attenuated, treated and then released in a diffuse and regular manner that does not significantly change the natural drainage regime/hydrology of the site. › 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/roadside drains will be used to collect runoff from access tracks and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling; - On steep sections of access track 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 track drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock;		
Decommissioning Phase					
MM61	Decommissioning Phase	EIAR Chapter 6	- It is anticipated that there will be no additional habitat loss associated with the decommissioning of the Proposed Project and therefore there will be no significant effects in this regard. In addition, the removal of the infrastructure will involve similar operations to those involved in construction but without the large-scale earth moving or excavations as the turbine bases and roads etc. will be left in place. These works would therefore be of a smaller scale but would have similar impacts on ecology to those experienced during construction. There would be no additional or ancillary impacts associated with the decommissioning phase. - The same mitigation to prevent significant impacts on water quality and associated aquatic fauna and other terrestrial fauna during construction will be applicable to the decommissioning phase.		
EIAR Chapter 7 Birds					
Pre-Construction Phase					
MM62	Birds	EIAR Chapter 7 Appendix 7-7	- It is proposed that major 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. - A pre-commencement survey will be undertaken prior to the initiation of works at the Proposed Wind Farm. This survey will be conducted a maximum of three weeks before the commencement of works. Following commencement, construction phase surveys will be conducted during works. These surveys will be conducted once per month during the		

			breeding season (April to July) and once at the start of the winter season (October). These surveys will continue to be conducted each season for the duration of the construction period. The aim of the pre-commencement and construction phase surveys is to identify sensitive sites (e.g., nests or roosts) in proximity to works.		
Construction Phase					
MM63	Birds	EIAR Chapter 7 Appendix 7-7 Appendix 4-5	A Construction and Environmental Management Plan has been prepared and will be in place prior to the start of the construction phase. Full details are available in Appendix 4-5 of this EIAR. Note that the majority of these measures are proposed as industry best practice rather than to mitigate any identified significant effect and will be updated as required to address any conditions of a permission or findings of any pre-construction survey results. ➤ The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022. Where sections of woody vegetation are removed for the purposes of the junction and road upgrades, these will be replaced with suitable hedge/tree species which are common in the local context. ➤ During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. ➤ Silt fences will be installed as an additional water protection measure around existing watercourses. ➤ If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g., NatureScot, 2022). No works shall be permitted within the buffer until it can be demonstrated that the birds are no longer dependent on the roost/nest. ➤ The closest infrastructure to the dunlin breeding territory is a section of new road and the Proposed Turbine hardstands for T1 and are located 360m from DN-1. There is no infrastructure to the west of the access track of T1, T3 and T5, therefore there will be no construction works to the west of the development footprint of the Proposed Wind Farm.		

			Given this distance and the existing land use at this location, significant impacts to breeding dunlin are considered unlikely. ➤ Notwithstanding this, a pre-construction survey should be undertaken prior to any works during the dunlin breeding season (March to July) to establish whether the territory remains occupied. If the potential for breeding dunlin is recorded during pre-construction surveys, an Ecological Clerk of Works (ECoW) will supervise works in the vicinity of DN-1 or any territories found in proximity to works. The role of the ECoW will be to monitor for the following risks: (1) disturbance of the nesting pair and their young; (2) injury of the nesting pair, nest, eggs or young or; (3) damage to habitat depended on by the nesting pair or their young. If the ECoW determines a high level of risk for any of these events to occur, works will cease within the risk area until the dispersal of juveniles from the natal area. Should works be required within 200m of a confirmed breeding territory, these will be scheduled outside the dunlin breeding season (March to July), from when initial territory establishment may occur until the likely dispersal of juveniles from the natal area (see also Appendix 7-7).		
Operational Phase					
MM64	White-tailed Eagle	EIAR Chapter 7 Appendix 7-7	➤ It is possible that white-tailed eagle are using the topography of the landscape around the Proposed Wind Farm to utilise thermals and search for food. There is sheep farming in the area, and carcasses of fallen sheep (or other livestock and wild animals such as deer) may provide food for white-tailed eagle. ➤ Although no significant effects of collision risk are anticipated at the Proposed Wind Farm, the literature highlights eagles as a species group that can be particularly vulnerable to collision with wind turbines (e.g., May et al., 2011). The carcasses of fallen animals can attract soaring eagles to scavenge. ➤ To reduce the likelihood of white-tailed eagles being attracted to the Proposed Wind Farm, fallen animal carcasses will be removed from the Proposed Wind Farm. The removal of fallen animal carcasses should be conducted throughout the lifetime of the Proposed Wind Farm to make the area less attractive to eagles. Full details of the fallen animal removal protocol are provided in Appendix 7-7.		
Decommissioning Phase					

MM65	Decommissioning	EIAR Chapter 7 Appendix 4-6	Taking a precautionary approach, 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 Proposed Wind Farm and its surroundings. Decommissioning monitoring surveys will be undertaken prior to the initiation of works at the Proposed Wind Farm. The survey will aim to identify sensitive sites (e.g., nests or roosts). Any requirement for decommissioning works to run into subsequent breeding or winter seasons following the commencement of works will be subject to a repeat of the decommissioning bird surveys. Monitoring will be undertaken by a suitably qualified ornithologist. The survey will include a thorough walkover survey to a 500m radius of the development footprint and/or all works areas. 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 decommissioning phase. If the roost/nest is found to be active during the decommissioning phase no works shall be undertaken, works will cease within a species-specific buffer of this (Forestry Commission Scotland, 2006; NatureScot, 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 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. Regarding Ornithology and Avian Populations, the decommissioning plan will include industry best practice measures to mitigation the impact of works on birds, which may include the following: ➤ No removal of woody vegetation or scrub will be carried out within the bird breeding season (March 1st to August 31st) ➤ Vantage Point surveys will be carried out for the season before and during the decommissioning process.		
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			➤ The areas within 50m of the hard-stand and turbine foundations will be subject to a pre-works ornithology walkover to highlight any constraints that may be present (e.g. breeding or resting places of protected species). If any significant constraints are identified, appropriate controls will be developed and integrated into the live decommissioning plan ahead of the commencement of the work. ➤ Speed limits will be enforced on internal access tracks.		
EIAR Chapter 8 Land, Soils and Geology					
Construction Phase					
MM66	Peat, Subsoil and Bedrock Excavation	EIAR Chapter 4, 8 Appendix 4-2	All work will be in accordance with the Peat and Spoil Management Plan (Appendix 4-2). The site layout design has been iteratively developed using comprehensive site-specific site investigation dataset, which includes peat probes, gouge cores, boreholes and trial pits. <u>Proposed Wind Farm</u> ➤ Utilisation of Existing Wind Farm infrastructure where possible to reduce extent of new works; ➤ Placement of turbines and associated infrastructure in areas with suitable ground conditions (based on detailed site investigation data – the areas of deeper peat and high instability have been avoided by the Proposed Wind Farm infrastructure); ➤ The peat/soils and subsoils which will be removed during the construction of turbine hardstands will be localised to the turbine locations. The peat/soil/subsoil will be placed/used for landscaping alongside the excavations or stored within the designated peat management areas or borrow pits; ➤ Excavated peat/soils/subsoils shall be excavated and stored separately to topsoil; this will prevent mixing of materials and facilitate reuse afterwards; ➤ The peat placed within the peat management areas will be restricted to a maximum height of 1.25m. Weak/liquified peat will be stored in the centre of the peat management areas with firmer/drier peat placed around the outside;		

			➤ The placement of excavated peat will be avoided without first establishing the adequacy of the ground to support the load. The placement of peat within the peat management areas will require the use of long reach excavators, low ground pressure machinery and possibly bog mats in particular for drainage works; ➤ It will be ensured that the surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat will be carried out as placement of peat within the peat and spoil management area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat; ➤ Finished/shaped side slopes in the placed peat will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate; ➤ Where available, the acrotelm will be placed on the finished surface with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the placed peat and spoil within the management areas; ➤ 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; and, ➤ An interceptor drain will be installed upslope of the designated peat management areas to divert any surface water away from these areas. This will help ensure stability of the placed peat and reduce the likelihood of debris run-off. (interceptor drains will not be required at all areas as the existing drainage network can function as interceptor drains – silt fences will be installed upgradient of the peat management areas in these locations). <u>Proposed Grid Connection Route:</u> Excess spoil material or pavements materials containing tar generated during the cable route construction will be transported by permitted waste contractors to a suitable permitted/licensed site for disposal/recovery.		
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MM67	Leakages and Spillages	EIAR Chapter 4, 8 Appendix 4-4 Appendix 4-5	› On-site re-fuelling will be undertaken at the compound or using a mobile fuel bowser with spill kits kept both onboard and 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. Ancillary equipment such as hoses, pipes will be contained within the bunded area; › Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage; › The proposed 110kV onsite substation and Existing Wind Farm control buildings will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; › The plant used during construction will be regularly inspected for leaks and fitness for purpose; and, › An emergency response plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (which is contained in Appendix 4-5).		
MM68	Erosion of Exposed Subsoils and Peat	Chapter 8 Appendix 4-2	› Peat removed from turbine locations and access tracks will be used for landscaping close to the extraction area; › Where possible, the upper vegetative layer (where still present) of peat will be stored with the vegetation part of the sod (acrotelm) 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; and, › A full Peat and Spoil Management Plan for the development is included in Appendix 4-2 of the EIAR.		
MM69	Peat Instability and Failure	Chapter 8 Appendix 8-1	› Appointment of experienced and competent contractors; › The site should 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; ➤ Set up, maintain and report findings from monitoring systems (as outlined in the Geotechnical and Peat Stability Report); ➤ 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.		
MM70	Erosion of Exposed Peat, Soils and Subsoils During Tree Felling	EIAR Chapter 8	All proposed felling works will be completed in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte and DAFM guidance documents to ensure that felling results in minimal potential negative effects on the local soil and subsoil environment. In addition, the following mitigation measures will be implemented during felling operations: ➤ Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff; ➤ The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ➤ All machinery will be operated by suitably qualified personnel; ➤ These machines will traverse the Proposed Wind Farm along specified off-road routes (referred to as racks); ➤ Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur; ➤ As felling progresses, the harvester will collect brash produced by the felling and place it in front of the machine before it advances forward along the rack; ➤ The condition of the racks will be continually monitored and fresh brash will be applied when the brash mat becomes heavily used and worn, ensuring that the mat remains effective throughout the operational phase; and, ➤ The location of racks will be chosen to avoid wet and potentially sensitive areas.		

MM71	Biodiversity Management and Enhancement Plan (BMEP)	EIAR Chapter 8	A site-specific monitoring and evaluation programme will be implemented to ensure that the success of the proposed measures remains long-term. It will also assist in situations where the habitat establishment may not have been successful by providing evidence of shortcomings, allowing a revised management plan to be formulated. Monitoring results will be reported by the Project Ecologist will produce monitoring reports per the schedule outlined in the BMEP. Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the plan will be prepared. The enhancement plan will be updated and amended where required to improve the efficacy of the enhancement work.		
MM72	Turbine Delivery Route	EIAR Chapter 8	› All works are minor and localised and cover very small areas › These works are distributed over a wide area › All works are temporary in nature		
Operational Phase					
MM73	Site Access Track/ Road Maintenance	EIAR Chapter 4, 8 Appendix 4-5	› Use of aggregate from authorised quarries for use in road and hardstand maintenance.		
MM74	Site Vehicle/ Plant Use	EIAR Chapter 4, 8 Appendix 4-5	› Vehicles used during the operational phase will be refuelled off site before entering the site; › No fuels will be stored on-site during the operational phase; › Spill kits will be available in all site vehicles to deal with an accidental spillage and breakdowns; and, › An emergency plan for the operational phase to deal with accidental spillages and breakdowns will be contained in the CEMP (Appendix 4-5).		

MM75	Use of Oil in Transformers	Chapter 8 Appendix 4-5	› All transformers will be banded to 110% of the volume of oil used in each transformer; and, › An emergency plan for the operational phase to deal with accidental spillages will be contained in the CEMP (Appendix 4-5).		
Decommissioning Phase					
MM76	Decommissioning Phase	EIAR Chapter 8	› The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of reduced magnitude. › Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant. › Mitigation measures to avoid contamination by accidental fuel leakage will be implemented as per the construction phase mitigation measures.		
EIAR Chapter 9 Hydrology and Hydrogeology					
Construction Phase					
MM77	Clear Felling	Chapter 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); › Forest Protection Guidelines (Forest Service, 2002); › Forest Operations and Water Protection Guidelines (Coillte, 2013); › Forestry and Water Quality Guidelines (Forest Service, 2000b); › 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); and,  Code of Best Forest Practice (Forest Service, 2000). Mitigation by Avoidance: There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document <i>"Forestry and Water Quality Guidelines"</i> During the Proposed Project design phase a self-imposed buffer zone of 50 metres was maintained for all natural watercourses where Proposed Wind Farm infrastructure such as Proposed Turbines, borrow pits, peat and spoil management areas and temporary construction compounds were kept outside of buffer zones. Due to downstream Freshwater Pearl Mussel populations in the Easky River, a 100m buffer will be maintained for a tributary stream of the Easky River which flows to the south of Proposed Turbine T5. These buffer zones are shown on Figure 9-9 of the EIAR and Appendix 4-3. With the exception of minor encroachment of proposed felling areas inside the 50m buffer zone at Proposed Turbines T8 (0.31ha), T13 (0.195ha) and T17 (0.67ha), the majority of the proposed felling areas (27.92ha of the total 29.3ha proposed) are located outside of imposed buffer zones. Additional mitigation (detailed below) will be carried out where tree felling is required inside the buffer zones. The large distance between most of the proposed felling areas (which are outside the 50m and 100m buffer zone) and sensitive aquatic zones means that potential poor-quality runoff from felling areas, will be adequately managed and attenuated prior to even reaching the aquatic buffer zone and primary drainage routes.		
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			Mitigation by Design: Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows: ➤ Machine combinations (i.e., handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance; ➤ All machinery will be operated by suitably qualified personnel; ➤ Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Existing drains will not be disturbed during felling works; ➤ Machines will traverse the Site along specified off-road routes (referred to as racks); ➤ The location of racks will be chosen to avoid wet and potentially sensitive areas; ➤ 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 (approximately 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 be constructed on even ground and not on sloping ground; ➤ All drainage channels will taper out before entering the 50m and 100m 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;		
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			› 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 50m and 100m watercourse buffer. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; › Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water run-off; › Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Fuel truck, drip kits, qualified personnel will be used where refuelling is required; › A permit to refuel system will be adopted; › 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:		
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			The following items will be carried out during pre-felling inspections and after: › 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. Main drainage ditches will be identified during pre-felling inspections. The pre-felling inspection will be carried out during rainfall; › Following tree felling all main drains will be inspected to ensure that they are functioning; › Extraction tracks near drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; › Culverts on drains exiting in 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-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;		
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			- 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 (for visual inspections and field chemistry measurements) will also be utilised at every works site near any watercourse. These will be taken daily and kept on-site for record and inspection.		
MM78	Earthworks Resulting in Suspended Soils Entrainment in Surface Waters	EIAR Chapter 4, 9 Appendix 4-3 Appendix 4-4 Appendix 4-5 Appendix 8-1	Mitigation by Avoidance: The key mitigation measure during the construction phase of the Proposed Wind Farm is the avoidance of sensitive aquatic areas where possible. From Figure 9-9 of the EIAR it can be seen that all of the key areas of the Proposed Wind Farm infrastructure are located significantly further from the 50m and 100m delineated buffer zones with the exception of 9 no. existing watercourse crossing locations that are proposed for upgrade and TDR overrun areas. No works are proposed inside the 100m buffer imposed for a tributary stream of the Easky River which flows to the south of Proposed Turbine T5. 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 sand bags, oyster bags filled with gravel, filter fabrics, and ○ 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, sand bags, 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 that a network of bog, forestry, wind farm and roadside drains already exist at the Proposed Wind Farm, and these will be integrated and enhanced as required and used within the Proposed Project drainage system. The integration of the existing 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.		
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			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, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters. Pre-commencement Temporary Drainage Works Prior to the commencement of new tracks/hardstands (or track upgrades) 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,		
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			➤ A double silt fence perimeter will be placed down-slope of works areas that are located inside the 50m watercourse such as at watercourse crossings. Refer to the drainage plan (Appendix 4-3) for the location of these temporary measures. 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 structures during construction phase will be carried out on a weekly basis. 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 50m 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 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		
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			to the full width of the outfall to ensure all water passes through this additional treatment measure. Settlement Ponds: The Proposed Wind Farm infrastructure footprint has been divided into drainage catchments (based on topography, outfall locations, and catchment size) and stormwater runoff rates based on the 10-year return period rainfall event were calculated for various catchment areas in order to size the settlement ponds as shown in Table 9-18 of the EIAR. The location and dimensions of proposed settlement ponds are shown on the Proposed Wind Farm drainage plan drawings (Appendix 4-3). All proposed settlement pond locations have been thoroughly assessed from a geotechnical and peat stability perspective (refer to Appendix 8-1 for the Geotechnical and Peat Stability Assessment Report). Level Spreaders and Vegetation Filters: Level spreaders and vegetation filters will be implemented at the settlement ponds. 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 level spreaders, 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 Proposed Wind Farm drainage prior to reaching the downstream watercourses. Again, vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not stand alone but are intended as part of a treatment		
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			train of water quality improvement/control systems (i.e. source controls→check dams→silt traps→settlement ponds→level spreaders →silt fences→vegetation filters). 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 is updated every 15 minutes. Radar images are not predictive; and, ➤ Consultancy Service: Met Eireann provides a 24-hour telephone consultancy service. The forecaster will provide an 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.		
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			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. 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 dedicated peat and spoil management areas as well as placement of peat/spoil in the 3 no. proposed borrow pits once the rock is fully extracted. › All proposed peat and spoil storage areas including borrow pits have been thoroughly assessed from a geotechnical and peat stability perspective (refer to Appendix 8-1 for the Geotechnical and Peat Stability Assessment Report). › All proposed peat and spoil management areas, including the 3 no. borrow pits are located outside of 50m and 100m watercourse buffer zones (refer to Figure 9-9 of the EIAR). › 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.		
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			- 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 10-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. - Therefore, at each stage of the peat and spoil management area development the above mitigation measures will be deployed to ensure protection of downstream water quality. 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.		
MM79	Groundwater Levels during Excavation Works	EIAR Chapter 9	Impact Assessment/Proposed Mitigation Measures by Design: The proposed 3 no. borrow pits are located in competent Quartzites, Gneisses & Schists bedrock which is generally unproductive in terms of groundwater flow (Poor Aquifer classification) Also, the topographical and hydrogeological setting of the proposed borrow pits and Proposed Turbines means no significant groundwater dewatering is anticipated to be required during the operation of the borrow pits or turbine base construction. Moreover, direct rainfall and surface water runoff will be the main inflows that will require water volume and water quality management. For the avoidance of doubt dewatering is defined as a requirement to permanently drawdown the local groundwater table by means of over pumping, e.g. as would be required for the operation of a bedrock quarry in a valley floor. It is considered that this example is very different in scale and operation from the proposed		

			operation of a temporary shallow borrow pit on elevated ground. The basis for this consideration is as follows: › Firstly, the 3 no. proposed borrow pit areas are located on elevated ground where the ground elevation is >240mOD and therefore are rock outcrops (which are visible to the eye); › These elevations are above the elevations of the local valleys and streams; › The proposed borrow pits will be between approximately 13 – 19mbgl which is notable. However, in the context of the topographical/elevated setting of the proposed borrow pits, this depth range is relatively shallow; › The local bedrock is ‘poorly productive’ and typically has low intrinsic permeability due to the competency of the rock. This means that groundwater flows will be limited to seepages at worst; › The flow paths (i.e. the distance from the point of recharge to the point of discharge) in this type of geology is short, localised, and will also be relatively shallow; › Regional groundwater flow regime, i.e. large volumes of groundwater flow, will not be encountered at these elevations; › Therefore, shallow groundwater inflows will largely be fed by recent rainfall, and possibly by limited groundwater seepage from localised shallow bedrock; › The sloping nature of the ground/ridges on the hills where the borrow pits are proposed along with the coverage of soil means groundwater recharge will be very low; › As such the shallow groundwater flow system will be small in comparison to the expected surface water flows from the bog surface; › This means that there will be a preference for high surface water runoff as opposed to groundwater recharge and flow; and, › Hence, the management of surface water will form the largest proportion of water to be managed and treated. Similarly, no significant groundwater dewatering is anticipated to be required during the construction of the Proposed Turbine bases.		
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MM80	Surface Water Quality from Excavation Dewatering	EIAR Chapter 9 Appendix 4-3	Proposed Mitigation Measures: Management of excavation inflows and subsequent treatment prior to discharge into the drainage network will be undertaken as follows: ➤ Appropriate interceptor drainage (as shown in Appendix 4-3), 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 silt bags or silt buster; ➤ 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 immediately be stopped and a geotechnical assessment undertaken; ➤ At the turbine locations and borrow pits adequately sized settlement ponds will be constructed to treat pumped water prior to discharge into a local manmade drain; and, ➤ A mobile 'Siltbuster' or similar equivalent specialist treatment system can be made available at turbine locations 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.		
MM81	Leakages or Spillages from Hydrocarbons	EIAR Chapter 4, 9	Mitigation measures proposed to avoid release of hydrocarbons at the Site are as follows:		

		Appendix 4-4	› On site re-fuelling of machinery will be carried out using a fuel truck at a dedicated refuelling area located at the temporary construction compounds. The fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages; › Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; › On-site refuelling will be carried out by trained personnel only; › A permit to fuel system will be put in place; › Fuels stored on-site will be minimised. Fuel storage areas if required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor; › The plant used during construction will be regularly inspected for leaks and fitness for purpose; and, › An emergency plan for the construction phase to deal with accidental spillages will be included within the Construction and Environmental Management Plan (Appendix 4-4). Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area.		
MM82	Wastewater Disposal	EIAR Chapter 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. › During the construction phase there will be 4 no. temporary construction compounds each of which will contain a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works. ›		
MM83	Release of Cement-Based Products	EIAR Chapter 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 cleaning will be undertaken at lined cement washout ponds located outside 50m and 100m watercourse buffer zones); ➤ 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 a sudden rainfall event.		
MM84	Watercourse Crossing Works	EIAR Chapter 9	➤ The 1 no. replacement culvert will be bottomless or clear span structure 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 internal cable route follows an existing track or track proposed for upgrade, the cable will pass over or below the culvert within the access track; ➤ All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland² is incorporated into the design of the proposed crossings; ➤ As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document “Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites”, i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI); ➤ During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas; ➤ The upgraded watercourse crossing will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent; and, ➤ The crossing structure will be designed to accommodate a 100-year design flood with allowance for 300mm freeboard.		

² Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters

			The watercourse crossing will be constructed to the specifications of the OPW bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. Confirmatory inspections of the proposed new watercourse crossing location will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing. In relation to the new proposed culverts and proposed culvert upgrades at forestry drain crossings, the culverts will be suitably sized (approx 900mm) for the expected peak flows in the relevant drain. All culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.		
MM85	Hydrologically Connected Designated Sites	EIAR Chapter 9	➤ Drainage mitigation measures for surface water quality protection during the construction phase are summarised again below: (Please refer Sections 9.5.2.1, 9.5.2.2 & 9.5.2.4 in Chapter 9: Hydrology and Hydrogeology for the full description of these measures and how they will be applied). ➤ The proposed mitigation measures will include 50m to 100m buffer zones for avoidance of sensitive hydrological features (streams and rivers); ➤ Pre-construction drainage control measures (Section 9.5.2.2); ➤ 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 (Section 9.5.2.5) and cement based compounds (Section 9.5.2.7).		
MM86	Turbine Delivery Route Works	EIAR Chapter 9	All works are minor and localised and cover very small areas; These works are distributed over a wide area; All works are typically temporary in nature or with very minor permanent adjustments; All areas will be reinstated shortly after the works and reseeded; and, Application of the Pre-Construction Drainage Measures (see Section 9.5.2.2) for surface water quality protection.		
MM87	WFD Status and Objectives	EIAR Chapter 9	Comprehensive surface water mitigation and drainage controls are outlined in Section 9.5.2.1 (Felling of Coniferous Plantations), Section 9.5.2.2 (Earthworks), Section 9.5.2.4 (Excavation Dewatering), Section 9.5.2.5 (Hydrocarbons), Section 9.5.2.7 (Cement-based Products) and Section 9.5.2.8 (Morphological Changes to Watercourses). These will ensure the protection of surface water quality and flows in all downstream receiving watercourses.		
MM88	Use of Siltbuster	EIAR Chapter 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 will be carried out, which 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 will be used at very sensitive sites (i.e. upstream of SACs).		
MM89	Earthworks and Watercourse Crossings (Proposed Grid	EIAR Chapter 9	Pre-commencement Temporary Drainage Works: Prior to the commencement of the cable trenching or crossing works the following key temporary drainage measures will be installed:		

	Connection Route)		› 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; and, › A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside a watercourse 50m buffer zone. The following mitigation measures will be implemented for the underground cabling watercourse crossing works: › No stock-piling of construction materials will take place along the Proposed Grid Connection Route; › No refuelling of machinery or overnight parking of machinery is permitted within 100m of a watercourse crossing; › No concrete truck chute cleaning is permitted along the Proposed Grid Connection Route; › 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; › 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. Fracture Blow-out (Frac-out) Prevention and Contingency Plan for HDD: › The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e. Clear Bore Drilling Fluid or similar will be used);		
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			› The area around the drilling fluid batching, pumping and recycling plants will be bunded using terram and/or sandbags to contain any potential spillage; › Double lines of silt fencing will be placed between the works area and the adjacent river; › Spills of drilling fluid will be cleaned up immediately and transported off-site for disposal at a licensed facility; › Adequately sized skips will be used where temporary storage of arisings are required; › The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse; › This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur, then drilling will be immediately stopped; › Any frac-out material will be contained and removed off-site; › The drilling location will be reviewed, before re-commencing with a higher viscosity drilling fluid mix; and, › If the risk of further frac-out is high, a new drilling alignment will be sought at the crossing location.		
MM90	Biodiversity Management and Enhancement Plan	EIAR Chapter 9	All proposed habitat management and enhancement works will be in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte, DAFM and NatureScot guidance documents to ensure minimal potential negative effects on the local peat, soil and subsoil environment. Given the nature of the restoration measures the following mitigation measures are proposed: › Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff; › Proposed off-road routes will be walked in advance of any machinery; › All machinery operators will be experienced; › The proposed areas will be walked before a machine goes off-road; › Bog mats will be used where the excavator is required to travel over wet ground; › A low ground pressure excavator with wide tracks (1.9m or greater) will be used to reduce compaction of the peat and subsoils.		

MM91	Freshwater Pearl Mussel Populations	EIAR Chapter 9 Appendix 4-3	As discussed above, only the western section of the Proposed Wind Farm is located within the Easky River catchment and only 1 no. Proposed Turbine (T5) is located upstream of where freshwater pearl mussel populations potentially exist. This is positive in terms of potential negative effects on freshwater pearl mussel populations. The Proposed Project design team were at all times aware that freshwater pearl mussel populations existed in the downstream watercourses, and as such all proposed mitigation and drainage design proposals were designed towards providing a “best in class” drainage management proposal for the development considering the significant catchment sensitivities. A 100m buffer will also be maintained for a tributary stream of the Easky River which flows to the south of Proposed Turbine T5. During the layout optimisation process, all surface waters at the site were classified as very sensitive/high importance. Very sensitive surface waters are receptors of high environmental importance such as designated sites (i.e. NHA or SAC) or a public drinking water supply source. The surface waters at the Proposed Project were applied the highest possible sensitivity rating. As stated previously in the chapter, a comprehensive surface water management plan and drainage plan is proposed (refer to Appendix 4-3) and this will ensure that surface water runoff from the developed areas of the Site will be of a high quality and will therefore not impact on the quality of downstream rivers. Detailed drainage management design and pollution prevention measures proposed during the construction phase are presented above in this chapter. These proposals are best in class and in line with current best practice approaches for surface water quality protection on wind farm and forestry sites. As described in Section 9.5.2.2 of Chapter 9, while settlement ponds form an important element of the drainage proposals for the Site, they are not stand alone but occur as part of a treatment train of systems that will be applied in series to ensure protection of downstream watercourses. The treatment of site runoff occurs before and also continues after the settlement		
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			ponds, with the “after” treatment also utilising natural elements of the site such as the existing vegetated ground. Therefore, the final “polished” discharge effluent quality will not be achieved until the discharge passes through the last element of the treatment series train which is the vegetated ground upslope of the local watercourse (i.e. compliance point). A final line of defence can be provided by a water treatment train such as a “Siltbuster” if required. If the discharge water from construction areas fails to be of a high quality, then a filtration treatment system (such as a ‘Siltbuster’ or similar equivalent 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. Daily inspections will be undertaken to assess the effectiveness of the water treatment trains and this will include a visual assessment of water quality and also portable probes for field hydrochemistry monitoring (turbidity, pH, electrical conductivity etc) will be used by the Ecological Clerk of Works (ECoW) to make on the spot checks.		
MM92	Existing Wind Farm Turbine Removal	EIAR Chapter 9	Pre-commencement Temporary Drainage Works: Prior to the commencement of the removal works the following key temporary drainage measures will be installed: ➤ 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, grips and other drainage inlets (where present) will also be temporarily blocked; and, ➤ A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside a watercourse 50m buffer zone. Once the turbine base and hardstand are backfilled and covered with soil material, vegetation will be established to prevent risk to downstream surface water quality due to runoff.		
Operational Phase					

MM93	Replacement of Natural Surface with Low Permeability Surfaces	EIAR Chapter 4, 9 Appendix 4-3	Proposed Mitigation by Design: The proposed drainage philosophy outlined in Section 9.4.2.1 states that runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies. Two distinct methods will be employed to manage drainage water within the Proposed Project. The first being ‘keeping clean water clean’ and the second involving the collection of any drainage waters from work area and to route them towards stilling ponds prior to controlled diffuse release over vegetated surfaces. The second method relates to proposed design measures that will prevent road surface and other hardstand areas acting as preferential flowpaths. All development site runoff will be collected, attenuated, treated and then released in a diffuse and regular manner that does not significantly change the natural drainage regime/hydrology of the site. 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 (Appendix 4-3) 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 track and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling; › On steep sections of access track 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 track 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,		
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			› Settlement ponds will be designed in consideration of the greenfield runoff rate. These measures will ensure all surface water runoff from upgraded roads and new road surfaces (including hardstands and turbine base areas) will be captured and treated prior to discharge/release. Settlement ponds, check dams and buffered outfalls will prevent roads acting as preferential flowpaths by providing attenuation and water quality treatment.		
MM94	Water Quality Effects from Runoff	EIAR Chapter 9 Appendix 4-3	The mitigation measures outlined in Sections 9.5.2.2 and 9.5.3.1 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 (refer to Appendix 4-3).		
MM95	Effects from Hydrocarbons	EIAR Chapter 9	Proposed Mitigation Measures (by Design): › Onsite re-fuelling of normal operational vehicles will not be carried out during the operational phase of the development. These vehicles will be refuelled offsite; › Fuels stored on-site will be minimised and any hydrocarbons stored on-site will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity; › The substation will be bunded appropriately to the volume of oils likely to be stored, and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; › Oil in the turbine transformers will be fully bunded within the enclosed turbine and as such, there is no potential pathway to the water environment i.e. the pathway has been blocked; › Any plant used during the operational phase will be regularly inspected for leaks and fitness for purpose; and, › Spill kits will be available to deal with accidental spillages.		
MM96	Effects on WFD Status and Objectives	EIAR Chapter 9	There is no direct discharge from the Proposed Project to downstream receiving waters. Mitigation for the protection of surface water during the operational phase of the Proposed Project will ensure the qualitative status of the receiving SWBs will not be altered by the Proposed Project.		

			Similarly, there is no direct discharge to groundwaters associated with the Proposed Project. Mitigation for the protection of groundwater during the operational phase of the Proposed Project will ensure that the qualitative status of the receiving GWB will not be altered by the Proposed Project.		
Decommissioning Phase					
MM97	Decommissioning	EIAR Chapter 9	The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.		
EIAR Chapter 10 Air Quality					
Construction Phase					
MM98	Exhaust Emissions: Construction of the Proposed Project Infrastructure	EIAR Chapter 10 Appendix 4-5	➤ Proposed Project Construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager will produce and follow a site inspection and machinery checklist which will be followed and updated as required. ➤ All plant and materials vehicles shall be stored in dedicated areas (onsite). Machinery will be switched off when not in use. ➤ Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. Please see Chapter 15 Material Assets for details. ➤ Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. ➤ All waste generated during the construction of the Proposed Wind Farm will be source segregated at the Site. The waste will be separated, and put in labelled, covered skips to promote reuse, recycling and diversion from landfill. 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 recycled, recovered or disposed of appropriately. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements. ➤ 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. ➤ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-5). The CEMP includes measures to reduce exhaust emissions.		
MM99	Exhaust Emissions: Transportation to and from the Site	EIAR Chapter 10 Appendix 4-5	➤ 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. ➤ Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. Please see Chapter 15 Material Assets for details. ➤ All waste generated during the construction of the Proposed Wind Farm will be source segregated at the Site. The waste will be separated, and put in labelled, covered skips to promote reuse, recycling and diversion from landfill. 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 recycled, recovered or disposed of appropriately. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements. ➤ A CEMP will be in place throughout the construction phase (see Appendix 4-5).		
MM100	Dust Emissions: Construction of the Proposed Project and Transport to and from the Site	EIAR Chapter 10	➤ Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads, site access tracks, Proposed Grid Connection Route, road widening sections, substation, and construction compounds and around the borrow pit area to ensure dust does not cause a nuisance.		

			○ Water bowser movements will be carefully monitored to ensure water is evenly dispersed and sprayed to address potentially dusty areas. › All plant and materials vehicles shall be stored in dedicated areas within the Site. › 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 and spoil management areas and restoration of borrow pits. › The Proposed Turbines components, construction materials and the associated infrastructure for the Proposed Grid Connection Route 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 transportation of construction materials from locally sourced quarries for the Proposed Grid Connection Route infrastructure and for the Proposed Wind Farm will be covered by tarpaulin where necessary. › 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. › Weather will be monitored in conjunction with visual checks on dust generation in order to decrease response times. 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 to reduce the amount of emissions associated with vehicle movement. › A CEMP will be in place throughout the construction phase (see Appendix 4-5). The CEMP includes dust suppression measures		
Operational Phase					

MM101	Exhaust Emissions	EIAR Chapter 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 onsite vehicles will be required to turn off engines. - 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					
MM102	Air Quality	EIAR Chapter 10	Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, albeit of lesser impact. The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential impacts.		
EIAR Chapter 11 Climate					
Construction Phase					
MM103	Greenhouse Gas Emissions	EIAR Chapter 11	- As is in line with SSE company policy, none of the turbine components will be sent to landfill after being removed from site. All turbine components will be broken down before their removal from site and will be reused in varying capacities. - Construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager produce and follow a site inspection and machinery checklist which will be followed and updated if/when required. - 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. Please see Chapter 15 for details. › 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 and spoil management areas › A Construction and Environmental Management Plan (CEMP) (Appendix 4-5) will be in place throughout the construction phase. › The CEMP (Appendix 4-5) includes a Resource Waste Management Plan (RWMP) which outlines the best practice procedures that will occur during the construction phase relating to waste material. › 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 seen as a last resort. › Section 4.4.1.7 of Chapter 4 for this EIAR refers to the methodology that will be utilised to manage onsite waste. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor, › The MRF facility will be local to the Proposed Project to reduce the amount of emissions associated with vehicle movements. › Where applicable, low carbon intensive construction materials will be sourced and utilised onsite.		
Operational Phase					
MM104	Greenhouse Gas Emissions	EIAR Chapter 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.		
Decommissioning Phase					
MM105	Decommissioning Phase	EIAR Chapter 11	Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, albeit of lesser impact. The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential impacts.		

EIAR Chapter 12 Noise					
Construction Phase					
MM106	Noise Mitigation Measures	EIAR Chapter 12 Appendix 12-1	No Mitigation measures proposed, though good practice during construction is recommended; Section 8 of BS 5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will 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; ➤ Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; ➤ Regularly maintain all equipment used onsite, including maintenance related to noise emissions; ➤ Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and ➤ All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided.		
Operational Phase					
MM107	Noise Operational Phase	EIAR Chapter 12	No mitigation proposed for noise during the operational phase.		

		Appendix 12-1			
Decommissioning Phase					
MM108	Noise Decommissioning Phase	EIAR Chapter 12 Appendix 12-1	No mitigation measures proposed, however the same good practice measures proposed during the construction phase are recommended.		
EIAR Chapter 13 Landscape and Visual					
Construction Phase					
MM109	Landscape Effects during Construction	EIAR Chapter 13	› In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. › For the Proposed Grid Connection Route, where the cable trench is to be located in the road verge, subsoil will 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.		
MM110	Visual Effects during Construction	EIAR Chapter 13	› 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.		
Operational Phase					

MM111	Landscape Effects during Operation	EIAR Chapter 13	Regarding mitigation measures to help reduce landscape effects of the Proposed Wind Farm, this LVIA points to the Biodiversity Management and Enhancement Plan (BMEP) which has been prepared as part of this EIAR (see Appendix 6-4). The BMEP will have the dual effect of providing ecological enhancement to the landscape area of the Proposed Wind Farm as well as enhancement of the landscape character of the area of the Proposed Wind Farm, namely in the southwest part of the Proposed Wind Farm comprising cutover peatland, thereby also mitigating effects on landscape character during the Operational Phase. The following measures from the BMEP which have been included in the Proposed Wind Farm design are deemed to have the effect of avoiding or reducing direct effects on landscape receptors, meaning individual landscape features and the landscape character of the Proposed Wind Farm as a whole: › In the southwest of the Proposed Wind Farm, where drainage and erosion have caused significant areas of bare peat, steps will be taken to reinstate vegetation in the areas. › Larger areas of bare peat will be revegetated using mulching and textile application after flow management has been instated. › Hydrological flow management and grazing management will be instated to ensure natural revegetation of the peatland areas. › In addition to measures from the BMEP, factors resulting from the early-stage design modifications contribute to ensuring that potential landscape character effects and visual effects are mitigated as much as possible during the Operational Phase. The early iterations of the Proposed Wind farm design are detailed in the EIAR Chapter 3: Site Selection and Reasonable Alternatives, The factors include: › The Proposed Wind Farm utilises as much built infrastructure from the Existing Wind Farm within the viable area outlined above as possible, namely 3.7ha (41%) of the 9.0 ha development footprint of the Existing Wind Farm. › The number of turbines in the initial design of the Proposed Wind Farm was reduced from 25 no. to 17 no. Proposed Turbines. › Turbines were removed to ensure hydrological connectivity between greenfield sites and to avoid risk of peat instability and risk of impacting landscape areas of high ecological sensitivity.		
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			➤ The Proposed Turbines were micro-sited to ensure set-back distance from residential receptors and appropriate spacing between turbines in the final proposed design, thereby following guidance in the DoEHLG 2006 Guidelines and Draft 2019 Guidelines.		
EIAR Chapter 14 Cultural Heritage					
Construction Phase					
MM112	Recorded Monuments (Direct Effects)	EIAR Chapter 14	➤ Archaeological monitoring of the ground works associated with the Proposed Grid Connection Route where it extends across recorded monument SL019-111— Ringfort -rath. The monitoring will be carried out under licence from the National Monuments Service (NMS) by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. ➤ The location of recorded monument SL019-111— Ringfort should be clearly shown in the Construction and Environmental Management Plan (CEMP).		
MM113	Previously Unrecorded Monuments within the Site	EIAR Chapter 14	➤ A walk-over survey of the forested areas of the Site where proposed infrastructure will be located will be carried out post-clear-felling but prior to any other works. ➤ The location of any potential Cultural Heritage features therein will be recorded and a photographic record made of same. A report on the results of the walk-over survey will be compiled on completion of same and will include any further required mitigation measures such as buffer zones, etc, deemed necessary.		
MM114	Sub-Surface Archaeological Potential	EIAR Chapter 14	➤ Archaeological monitoring under licence from the NMS of any geotechnical / engineering trial pits or investigations will be carried out by a suitably qualified archaeologist. A report detailing the results of the monitoring will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body.		

			Pre-development testing, under licence from the NMS, will be carried out in areas where peat depths allow a meaningful investigation. Testing will only be undertaken in areas where ground disturbance will take place as part of the Proposed Project. Where peat depths become a limitation to testing, monitoring at the construction stage will be undertaken. The areas to be tested will be chosen by the appointed archaeologist and the number of test trenches agreed between the archaeologist and the NMS through the licensing system. A report on the testing will be compiled on completion of the work. Should archaeological finds, structures or deposits be uncovered as a result of the testing further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented, where relevant, following consultation with the NMS. Archaeological monitoring of ground works during the construction stage of the Proposed Wind Farm under licence from the NMS will be carried out by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. Archaeological monitoring of ground works associated with the construction of the Proposed Grid Connection Route through the Zones of Notification for the recorded monuments specified above. The monitoring will be carried out under licence from the NMS by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body.		
EIAR Chapter 15 Material Assets					

Material Assets - Traffic					
Construction Phase					
MM115	Mitigation by Design	Chapter 15	Mitigation by design has been implemented by selecting the most appropriate delivery route to transport the wind turbine components, requiring the least amount of remedial works to accommodate the vehicles as set out in Section 15.1.2.3.		
MM116	Delivery of Abnormal Loads	Chapter 15	The following are the main points to note for these deliveries which will take place after peak evening traffic: The delivery of turbine components is a specialist transport operation with the transportation of components carried out at night when traffic is at its lightest and the impact minimised. The deliveries will be made in consultation with the Local Authority and An Garda Síochána. It is estimated that 120 abnormal sized loads will be delivered to the site, comprising 45 convoys of 3 vehicles, undertaken over 45 separate nights. These nights will be spread out over an approximate period of 9 weeks and will be agreed in advance with the relevant authorities, In order to manage each of the travelling convoys, for each there will be two Garda escort vehicles that will stop traffic when required at the front and rear of the convoy of 3 vehicles. There will also be two escort vehicles provided by the haulage company for each convoy.		
MM117	Other Traffic Management Measures	EIAR Chapter 15 Appendix 15-2	➤ Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the development, 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 Sligo County Council in advance of deliveries of turbine components to the Proposed Wind Farm. Liaison with the relevant local authorities, TII and MMaRC and will be carried out where required regarding requirements such as delivery timetabling. The programme will ensure that deliveries are scheduled in order to minimise the demand on the local network and minimise the pressure on the access to the Proposed Wind Farm.		

			➤ Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. the delivery of turbine components at night via letter drops and posters in public places. Information will include the contact details of the Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided. ➤ A Pre and Post Construction Condition Survey – Where required by the local authority, a pre-condition survey of roads associated with the Proposed Project will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. ➤ Liaison with the relevant local authority - Liaison with Sligo County Council and An Garda Síochána, will be carried out during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. Once the surveys have been carried out and “prior to commencement” status of the relevant roads established, (in compliance with the provisions of the CEMP), the Roads Section of Sligo County Council will be informed of the relevant names and contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager. ➤ Implementation of temporary alterations to road network at critical junctions – at locations highlighted in Section 15.1.9. ➤ Identification of delivery routes – These routes will be agreed with Sligo County Council and adhered to by all contractors. ➤ Delivery times of large turbine components - The TMP will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage. ➤ Travel plan for construction workers – While the assessment above has assumed the worst case in that construction workers will drive to the Site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the Site and identification of an area for parking. ➤ 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		
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			wheel washing facilities on site and sweeping / cleaning of local roads as required. These are set out in the CEMP which is contained in Appendix 4-5. ➤ Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. ➤ Diversion routes during grid construction – The identification and agreement with Sligo County Council of suitable diversion routes during the construction of the Proposed Grid Connection Route.		
Decommissioning Phase					
MM118	Decommissioning Phase	EIAR Chapter 15 Appendix 4-6	In the event that the Proposed Project is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Chapter 4 and Appendix 4-6 Decommissioning Plan. This plan will include preparation of a material recycling / disposal and traffic management plan for agreement with the local authority prior to decommissioning, in accordance with Scottish Natural Heritage report (SNH) <i>Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms</i> (SNH, 2013).		
Material Assets - Other					
Pre-Construction/Construction Phase					
MM119	Electricity	EIAR Chapter 4, 5, 15 Appendix 4-5	➤ Goal posts will be established under overhead lines for the entirety of the construction phase. They will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks³ ○ Prior to construction, the Applicant will engage with ESB via the ‘Dial Before You Dig’ procedure online. ESB will be contacted via dig@esb.ie before excavating near any overhead lines. ➤ The suitability of machinery and equipment for use near power lines will be risk assessed. ➤ All staff will be trained on the routes and operating voltages of overhead electricity lines running above the Proposed Grid Connection Route. All staff will be trained to be aware		

³ <https://www.esbnetworks.ie/docs/default-source/publications/code-of-practice-for-avoiding-danger-from-overhead-electricity-lines.pdf>

			of the risks associated with overhead lines. All contractors that may visit the sites are made aware of the location of lines before they come on to site. › Barriers will run parallel to overhead lines at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire. › Prior to the delivery of turbines to the Proposed Wind Farm, a dry run of the route using vehicles with similar dimensions will occur. Please see Section 15.1.9 of chapter 15: Material Assets for details. › When activities must be carried out beneath overhead lines, e.g. component delivery or grid cable laying, a site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used is undertaken prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required. › Information on safe clearances will be provided to all staff and visitors. › Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site. › All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan. › All health and safety measures as detailed in Section 5 of the CEMP and Chapter 5 Population and Human Health will be adhered to during the construction, operation and decommissioning phases. › Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works. › Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. › Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services. › The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.		
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MM120	Water	EIAR Chapter 4, 5, 15 Appendix 4-5	➤ The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks. ➤ In advance of any construction activity, the contractor will undertake pre-commencement surveys to confirm the presence or otherwise of any services such as water supply. If found to be present, the relevant service provider will be consulted with in order to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works. ○ In the event that water mains are encountered the water supply will be turned off by the utility so work can commence on diverting the service. The section of existing pipe will be removed and will be replaced with a new pipe along the new alignment of the service. The works will be carried out in accordance with the specifications of the relevant utility provider.		
MM121	Waste Management	EIAR Chapter 15 Appendix 4-5	➤ The CEMP, Appendix 4-5 of this EIAR, includes a Waste Management Plan (WMP) which outlines the best practice procedures during the construction and decommissioning phases of the project. ➤ All waste generated on site during the construction phase will be contained in waste skips at waste storage areas on site. These waste storage areas will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. ➤ The waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licenced waste contractor where the waste will be sorted into individual waste stream for recycling, recovery or disposal. ➤ Site personnel will be instructed at induction that under no circumstances can personal waste be brought on site for disposal in the onsite waste skip. It will also be made clear that the burning of waste material on site is forbidden. ➤ Further details on waste management are presented in Section 3.8 of the CEMP, which is included as Appendix 4-5.		
Operational Phase					

MM122	Waste Management Services	EIAR Chapter 15	- During the operational phase, the Proposed Project will include appropriate signage encouraging members of the public to leave the area waste free and bring waste materials home for proper disposal. - Any waste generated due to the operation and maintenance of the Proposed Project will be source segregated at the Site before it is disposed of in covered skips, located within the proposed onsite 110kV substation compound and the existing offices. The waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licenced waste contractor where the waste will be recycled, recovered or disposed of appropriately.		
Decommissioning Phase					
MM123	Decommissioning Phase	EIAR Chapter 15	As stated in Section 15.2.6.2 in Chapter 15, the potential for electromagnetic interference from the Proposed Turbines occurs only during the operational phase of the Proposed Project (i.e., the Proposed Wind Farm and Proposed Grid Connection Route). There are no electromagnetic interference impacts associated with the decommissioning phase of the Proposed Project, and therefore no mitigation is required.		

18.2

EIAR Monitoring Measures

Table 18-2 Schedule of Monitoring Measures

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Pre-Construction Phase						
MX1	Invasive Species	EIAR Chapter 6 Appendix 4-5 Appendix 6-5	Ongoing monitoring will be required, with suitable follow-up management in order to control new growth or re-establishment of <i>Rhododendron ponticum</i> within the infested areas. Following the initial treatment and completion of the Proposed Wind Farm, the treated areas will be re surveyed annually and if necessary, re-treated until no growth is recorded for two consecutive years. If invasive plants are found to be re-establishing, they shall be treated as per the measures outlined in this report.	Once	As required	Project Ecologist
MX2	Birds	EIAR Chapter 7 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. Pre-commencement surveys will be undertaken prior to the initiation of works at the Proposed Wind Farm. The survey will aim to identify sensitive sites (e.g., nests or roosts). Any requirement for construction works to run into subsequent breeding or winter seasons following the commencement of works will be subject to a repeat of the pre-construction bird surveys. These surveys will be conducted once per month during the breeding season (April to July) and once at the start of the winter season (October).	Once	As required	Project Ornithologist

			Monitoring will be undertaken by a suitably qualified ornithologist. The survey will include a thorough walkover survey to a 500m radius of the development footprint and/or all works areas. 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 in line with best practice guidance (e.g., Forestry Commission Scotland, 2006; NatureScot, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied.			
MX3	Tree Felling	ELAR Chapter 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	Monthly	ECoW
Construction Phase						
MX4	Health and Safety	ELAR Chapter 4, 5 Appendix 4-5	The Project Supervisor Construction Stage (PSCS) appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): ➤ Development of the Safety and Health Plan for the construction stage with updating where required as work progresses; ➤ Compile and develop safety file information.	Daily	Daily	PSCS

			› Reporting of accidents / incidents; › Weekly site meeting with PSCS; › Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out: › Induction of all site staff including any new staff enlisted for the project from time to time; › Toolbox talks as necessary; › Maintenance of a file which lists personnel on site, their name, nationality, current SafePass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date; › Report on site activities to include but not limited to information on accidents and incidents, disciplinary action taken and Personal Protective Equipment (PPE) compliance; › Monitor the compliance of contractors and others and take corrective action where necessary; and › Notify the Planning Authority and the client of non-compliance with any written directions issued.			
MX5	Drainage Maintenance	EIAR Chapter 4, 9 Appendix 4-5	An inspection and maintenance plan for the drainage system on-site will be prepared in advance of commencement of any works on the Proposed Project. Regular inspections of all installed drainage features will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the Project Hydrologist. The drainage inspection and maintenance plan are included in the CEMP in Appendix 4-5 of this EIAR.	Ongoing	Monthly	Project Hydrologist
MX6	Reactive Site Drainage Management	EIAR Chapter 4, 9	The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW or	As required	As Necessary	ECoW

			supervising hydrologist onsite. The ECoW or supervising hydrologist will respond to changing weather, ground or drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary onsite. The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to situation on the ground as a particular time.			
MX7	Water Quality and Monitoring	ELAR Chapter 9 Appendix 4-4 Appendix 4-5	Daily inspection and recording of surface water management system by on-site ECoW and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the site. The following periodic inspection regime will be implemented: ➤ Daily general visual inspections of site operations and inspections of all drainage infrastructure 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 and maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter will be noted and corrective action will be implemented. High risk locations such as settlement ponds will be inspected daily. 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 ECoW as follows: ➤ >10 mm/hr (i.e. high intensity localised rainfall event);	Daily	As Necessary	ECoW / Project Hydrologist

			>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/ ECoW during construction phase.			
MX8	Tree Felling	EIAR Chapter 9	Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Existing drains will not be disturbed during felling works.	As Required	Monthly	ECoW
MX9	Plant and Equipment Inspections	EIAR Chapter 9	The plant used will be regularly inspected for leaks and fitness for purpose.	As Required	Monthly	ECoW
MX10	Traffic and Transport	Appendix 4-5	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.	As Required	Monthly	ECoW
MX11	Biodiversity	Appendix 4-5	The Project Ecologist/ Ornithologist will be available to support the ECoW on matters relating to the protection of sensitive habitats and species encountered prior to or during the construction phase of the Proposed Project. The Project Ecologist will not be full time on site but will undertake pre-commencement surveys and visit the Site as required. The responsibilities and duties of the Project Ecologist/Ornithologist will include the following: - Undertake a pre-construction transect/walkover bird survey to ensure that significant effects on breeding birds will be avoided. - Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Site.	As Required	As required	Project Ecologist/Ornithologist

			- 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.			
MX12	Birds	EIAR Chapter 7 Appendix 7-7	All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked off to alert all personnel on site to the suspension of works within that area.	Once	As required	Project Ornithologist
MX13	Peat and Spoil Management	EIAR Chapter 4 Appendix 4-2	Inspections of the peat and spoil management areas will be made by the Project Geotechnical Engineer through regular monitoring of the works.	As required	As required	Project Geotechnical Engineer
MX14	Archaeological Monitoring	EIAR Chapter 14	Archaeological monitoring of ground works during the construction stage of the Proposed Project under licence from the NMS will be carried out by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion.	As Required	As Required	Project Archaeologist
Operational Phase						

MX15	Drainage Inspections	Chapter 4	The drainage system will be monitored in the operational phase until such a time that all areas that have been reinstated become re-vegetated and the natural drainage regime has been restored.	Monthly	Monthly	ECoW
MX16	Bats	EIAR Chapter 6 Appendix 6-2	Bat Monitoring Plan Monitoring Year 1 Bat activity surveys ➤ The post-construction surveys will be carried out as per the pre-construction survey effort. Static monitoring will take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). Full spectrum recording detectors will be utilised for the same duration as during pre-application surveys and at the same density (NatureScot, 2021). The assessment of bat activity levels will include the use of 'Ecobat' (or similar alternative), a web-based interface, allowing uploaded activity data to be contrasted with a comparable reference range, allowing objective and robust interpretation. Walked survey transects will also be conducted. ➤ Key weather parameters and other factors that are known to influence collision risk will be monitored and shall include: ○ Windspeed in m/s (measured at nacelle height) ○ Temperature (°C) ○ Precipitation (mm/hr) Carcass searches ➤ Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with NIEA (2021) guidance. This shall include searcher efficiency trials and an assessment of scavenger removal rates to determine the appropriate correction factor to be applied in relation to determining an accurate estimate of collision mortality. Surveys should cover all activity seasons, and the use of a trained dog	Years 1, 2, 3	Annually	Project Ecologist

			detection team will be carried out to ensure maximum efficiency. If human led searches are used under circumstances where it is not possible to use a trained dog detection team, they must show a minimum search rate efficiency of 50% (NatureScot 2021). Monitoring Years 2 & 3 ➤ Monitoring surveys shall continue in Year 2 and 3, and where a curtailment requirement has been identified, the success of the curtailment strategy shall be assessed in line with the baseline data collected in the preceding year(s). The performance of any curtailment programme in terms of its ability to respond to the changes in bat abundance based on temperature and wind speed shall be analysed to confirm it is neither significantly over- nor under- curtailment during different periods of bat activity. ➤ At the end of each year, the efficacy of any mitigation/curtailment programme shall be reviewed, and any identified efficiencies incorporated into the programme. The requirement for continued post-consent monitoring will also be considered. Should no bat fatalities be recorded in Year 1, curtailment (where applicable) in Year 2 and Year 3 could be reduced/re-evaluated or removed with monitoring continuing to inform this strategy.			
MX17	Biodiversity	ELAR Chapter 6 Appendix 6-4	The following measures will be the subject of ongoing monitoring to assess the effectiveness of the measures proposed and employed and to contribute to advances in habitat management methods, which can be applied to future similar projects. The monitoring can also aid adaption and implementation of improved methods and measures as they emerge. Detailed Vegetation analysis			

			› Vegetation sampling: A number of fixed relevé sites (i.e. permanent relevés) will be set up in the peatland enhancement areas. Data will be recorded prior to the commencement of habitat enhancement activities. The character of each relevé will be recorded (e.g. species proportions present using Domin scale, vegetation structure) and photographs will be taken of each relevé from a fixed point. These relevés will then be re-examined in years 1, 3, 5, 10, 15, 20, 25 and 30 following commencement of the Plan to establish the extent of habitat improvement resulting from management practices. Habitat condition assessment as detailed in Wildlife Manual No. 79 (Perrin <i>et al.</i> 2014) will be undertaken to further assess the relevé sites. › Vegetation Analysis is going to be undertaken for both the restoration area and the peat and spoil management area. Interim vegetation assessments › Yearly high-level assessments of the sites will be undertaken in the peatland habitats following the ACRES scorecards⁴ for peatland habitats in years where no relevé assessments are being undertaken for the first 10 years after the implementation of the measures. The scorecard assessments will be submitted with the monitoring report for the subsequent monitoring year. › Should the score cards show deteriorating conditions, this will be addressed directly and with remedial actions and changes to the management Hydrological monitoring › Water levels within areas where drains are blocked will be recorded quarterly for two years and again for years 3 and 5.	Years 1, 3, 5, 10, 15, 20, 25 and 30 Annually For the first 10 years Quarterly for the first 2 years and	Following very monitoring year Annually For the first 10 years Annually For the first 2 years	Project Ecologist Project Ecologist Project Ecologist
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⁴ <https://assets.gov.ie/static/documents/acres-scorecards-general-co-operation-approach.pdf>

			Phreatic standpipes will be installed (prior to restoration) to allow monitoring of water levels within the restoration area and outside the restoration area. In this way, any positive impacts on the local hydrology can be verified and quantified. Monitoring Reporting › An initial monitoring report will be undertaken for the construction year detailing baseline conditions and measures undertaken › A monitoring report detailing the actions undertaken, the vegetation analysis and the condition assessments and providing a compilation of the interim scorecards will be prepared in years 1, 3, 5, 10, 15, 20, 25 and 30 and submitted to the relevant authority. › Analysis of the data collected will be the basis for a review of the measures and techniques employed. Should any adjustments to the plan be deemed necessary or advisable, these will be undertaken in consultation with the NPWS prior to any alterations to the plan.	annually for years 3 and 5. Years 1, 3, 5, 10, 15, 20, 25 and 30	Following very monitoring year	Project Ecologist
MX18	Birds	ELAR Chapter 7 Appendix 7-7 Appendix 6-5	Operational monitoring will be undertaken in prescribed monitoring years during the operational lifetime of the Proposed Wind Farm. The NatureScot guidance document '<i>Monitoring the impact of onshore wind farms on birds</i>' (SNH, 2009) requires that bird monitoring in wind farms should occur in years 1, 2, 3, 5, 10 and 15 after the turbines become operational. These monitoring requirements are proposed for the Proposed Wind Farm. In addition, as enhancement is being undertaken at the Proposed Wind Farm (refer to Appendix 6-5 Biodiversity Management and Enhancement Plan), there is an associated requirement for an increase in the frequency of monitoring surveys compared to guidance. Monitoring will be conducted annually. Any future decision to reduce the frequency of surveys, will be confirmed in writing with the Planning Authority and will include	Years 1-5, 10 and 15	As Necessary	Project Ornithologist

			consultation with the National Parks and Wildlife Service (NPWS), allowing an adaptive approach to monitoring. The ornithological surveys that will be undertaken during the prescribed monitoring are listed below: ➤ Breeding dunlin surveys (in the areas where breeding dunlin territories were recorded) ➤ Breeding red grouse surveys (in bog habitat across the Proposed Wind Farm) ➤ Breeding walkover surveys (within 500 of infrastructure) ➤ Collision monitoring ➤ Fallen animal monitoring and removal			
MX19	Peat and Spoil Management / Instability	Appendix 4-2 Appendix 8-1	To monitor possible peat movements following the construction of the Proposed Wind Farm, it is recommended that the site is inspected by a suitably qualified engineer once every six months for the first three years following commissioning of the Proposed Wind Farm. Particular attention should be given to the peat deposition areas and the proposed borrow pits, as well to any areas where the site drainage is not functioning as intended. Should any signs of instability be noted, a site visit by a suitably qualified geotechnical engineer should be arranged and suitable remediation measures enacted and the site inspections should continue on an annual basis for a further three years.	As required	Every 6 Months	Geotechnical Engineer
Decommissioning Phase						
MX20	Decommissioning	Appendix 4-6	As noted in the Scottish Natural Heritage report (SNH) <i>Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms</i> (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the wind farm, technological advances and preferred approaches to	End of Operational Life	As Required	Developer Appointed/ Contractor

			reinstatement are likely to change. According to the SNH guidance, it is therefore: <i>“best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm”.</i> In this regard, the Decommissioning Plan (DP) (Appendix 4-6) will be reviewed and updated prior to commencement of decommissioning works to take account of the relevant conditions of the planning permission and current health and safety standards at the time of decommissioning.			
MX21	Decommissioning	Appendix 4-6	The ECoW will maintain responsibility for monitoring the decommissioning works and Contractors/Sub-contractors from an environmental perspective. The ECoW will act as the regulatory interface on environmental matters. The Site Manager will be responsible for reporting to and liaising with Local Authority and other statutory bodies as required.	End of Operational Life	As Required	Site Manager/ ECoW
MX22	Decommissioning	Appendix 4-6	The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.	End of Operational Life	As Required	Site Manager/ ECoW
MX23	Decommissioning	Appendix 4-6	Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the site to identify invasive species where any minor excavation will be required. If present in these areas, the ecologist will propose suitable management measures.	End of Operational Life	As Required	Project Ecologist
MX24	Health and Safety	Appendix 4-6	➤ Report on site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;	End of Operational Life	As Required	PSCS

			- Monitor the compliance of contractors and others and take corrective action where necessary; and - Notify the Authority and the client of non-compliance with any written directions issued.			
MX25	Birds	Appendix 4-6 Appendix 7-7	- 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 surveys will be undertaken within one month prior to the initiation of works. The purpose of these surveys is to identify sensitive roosting sites. - If works run into the subsequent breeding season(s) (April-September), surveys will be conducted to identify sensitive nesting sites. Breeding season surveys will be conducted once per month from April to July inclusive of when works are taking place. If works run into the subsequent winter season(s) (October to March), surveys will be repeated to identify sensitive roost sites. These surveys will be conducted at the beginning of each winter season (e.g., October) and continue if there is evidence to justify continuing (i.e. potential roosting behaviour of birds of conservation concern). - Surveys 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) to avoid disturbance. No works shall be permitted within the buffer	End of Operational Life	As Required	Project Ornithologist

			until it can be demonstrated that the roost/nest is no longer occupied. Aerial surveys using a drone may be used to confirm the presence or absence of birds, where conditions are suitable. > 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 decommissioning staff. The restricted area will also be marked to alert all personnel on site to the suspension of works within that area.			
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