16. SCHEDULE OF MITIGATION AND MONITORING PROPOSALS

16.1 Introduction

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

All mitigation which will be implemented during the various phases of the project are presented in Table 16-1 below. The mitigation measures have been grouped together according to their environmental field/topic and are presented under the following headings:

- Construction Management
- Drainage Design and Management
- Felling,
- Peat, subsoils and bedrock
- Biodiversity
- Noise and Vibration
- Air Quality/Dust
- Landscape and Visual
- Traffic

The mitigation proposals in the below format provides an easy to audit list that can be reviewed and reported on during the future phases of the project. The proposal for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as Appendix 4-8 of this EIAR. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

All monitoring measures which will be implemented during the pre-commencement, construction, operational and decommissioning phases of the project are outlined in Table 16-2. All monitoring measures were set out in the relevant chapters of this EIAR. The monitoring proposals are presented in terms of the monitoring requirement, frequency of monitoring and the mechanism for reporting results where applicable. By presenting the monitoring proposals in the below format, it is intended to provide a monitoring schedule that can be reviewed and tracked during all phases of the project to ensure all the required monitoring is completed as required.

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

16.2 EIAR Mitigation Measures

Table 16-1 Schedule of Mitigation

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase					
MM1	Environmental Management	EIAR Chapter 4	All proposed site activities will be provided for in an Environmental Management Plan, prepared prior to the commencement of any operations onsite. The environmental management plan will set out all measures necessary to ensure works are carried out in accordance with the mitigation measures set out in the EIAR and will set out the monitoring and inspections procedures and frequencies.		
MM2	Environmental Management	EIAR Chapter4 CEMP Section 4	The Environmental Manager will maintain responsibility for monitoring the works and Contractors/Sub-contractors from an environmental perspective. In addition, an Environmental Clerk of Works or Project Ecologist, Project Hydrologist, Project Geotechnical engineer will visit the site regularly and report to the Site Environmental Office.		
MM3	Environmental Management	EIAR Chapter 4 CEMP Section 4	A Site Environmental Manager will oversee the site works and implementation of the Environmental Management Plan and provide on-site advice on the mitigation measures necessary to ensure the project proceeds as intended. The level, detail and frequency of reporting expected from the Site Environmental Manager 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 project.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM4	Environmental Management	EIAR Chapter 6	› An Ecological Clerk of Works (ECoW) will be appointed. Duties will include: o Undertake a pre-construction transect/walkover bird survey to ensure that significant effects on breeding birds will be avoided. o Inform and educate on-site personnel of the ornithological and ecological sensitivities within the proposed development site. o Oversee management of ornithological and ecological issues during the construction period and advise on ornithological issues as they arise o Provide guidance to contractors to ensure legal compliance with respect to protected species onsite. o Liaise with officers of consenting authorities and other relevant bodies where required with regular updates in relation to construction progress.		
MM5	Concrete Deliveries	EIAR Chapter 4 CEMP Section 4	The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures.		
MM6	Wastewater Management	EIAR Chapter 4, 9 CEMP Section 4	The removal and disposal of wastewater from the site will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations, 2007.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM7	Site Drainage Plan	CEMP Section 4	The Project Hydrologist/Design Engineer will complete a site drainage plan before construction commences.		
MM8	Drainage Swales	EIAR Chapter 4, 9. CEMP Section 4	Drainage swales will be installed in advance of any construction works commencing.		
MM9	Culverts	EIAR Chapter 4. CEMP Section 4	Culverts will be installed at locations where drainage channels cross the new proposed track route. All works involving culverts, whether they are new, upgraded or extended, will be carried out to follow a method statement to be agreed with Inland Fisheries Ireland.		
MM10	Protection of watercourses	EIAR Chapter 4	All materials and equipment necessary to implement the drainage measures outlined above, will be brought on-site in advance of any works commencing. An adequate amount of clean stone, silt fencing, stakes, etc. will be kept on site at all times to implement the drainage design measures as necessary. The drainage measures outlined in the above will be installed prior to, or at the same time as the works they are intended to drain.		
MM11	Pre-emptive site drainage management	EIAR Chapter 4. CEMP Section 4	The works programme for the groundworks part of the construction phase of the project will also take account of weather forecasts, and predicted rainfall in particular.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM12	Drainage Inspection	CEMP Section 5	Prior to commencement of works in sub-catchments across the site main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage.		
MM13	Drainage Maintenance	EIAR Chapter 4. CEMP Section 5	An inspection and maintenance plan for the drainage system on site will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the site Environmental Manager or the supervising hydrologist.		
MM14	Earthworks	EIAR Chapter 8	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.		
MM15	Earthworks	EIAR Chapter 8	A 50-metre buffer zone will be maintained around watercourses during the windfarm construction. With the exception of road crossings of streams and associated culvert construction, no other development infrastructure, construction activity or stock-piling of construction materials or construction waste will take place within this zone.		
MM16	Felling	EIAR Chapter 6 CEMP Section 10	The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2018. Any required removal of vegetation will be undertaken following inspection by a suitable qualify ornithologist to ensure no nesting birds are affected.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM17	Archaeology	EIAR Chapter 13	› A pre-construction walkover survey / inspection of areas proposed for excavation will be undertaken to re-assess the bog for new sites that may be exposed. › If present, the sites shall be archaeologically excavated under licence prior to construction. The archaeologist will liaise with the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs regarding the methods being proposed for excavation. › Pre-construction archaeological testing of turbine bases and hardstands proposed for excavation will be carried out. Liaise with DAHRRGA should archaeology be uncovered. › A report on the results of the monitoring shall be compiled and submitted to the relevant authorities on completion of the project.		
MM18	Traffic Management Plan	EIAR Chapter 4, CEMP Section 4	A detailed Traffic Management Plan (TMP) will be provided specifying details relating to traffic management and included in the CEMP prior to the commencement of the construction phase of the proposed development. The TMP will be agreed with the local authority and An Garda Síochána prior to construction works commencing on site. The detailed TMP will include a Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management.		
Construction Phase					
Construction Management					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM19	Health and Safety	EIAR Chapter 5	During construction of the proposed development, all staff will be made aware of and adhere to the Health & Safety Authority's *'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006'*. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan.		
MM20	Health and Safety	EIAR Chapter 5	Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate health and safety signage will be erected at locations around the site		
MM21	Health and Safety	EIAR Chapter 5	During construction of the proposed development, all staff will be made aware of and adhere to the Health & Safety Authority's *'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006'*. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan		
MM22	Groundwater quality,	EIAR Chapter 4, 5, 9 CEMP Section 4	On-site refuelling will be carried out 100m from watercourses using a mobile double skinned, bunded fuel bowser. The fuel bowser will be towed around the site by a 4x4 jeep to where machinery is located. It is not practical for all vehicles to travel back to a single refuelling point, given the size of the cranes, excavators, etc. that will be used during the construction of the proposed wind farm development. The 4x4 towing vehicle will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction when not in use.		
MM23	Potential Release of Hydrocarbons	EIAR Chapter 4, 5, 9 CEMP Section 4	› All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; › Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the time period of the construction; › The electrical control building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan. Spill kits will be available to deal with accidental spillages.		
MM24	Plant and Equipment Inspections	EIAR Chapter 9. CEMP Section 4	A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the construction phase.		
MM25	Fuel and hazardous material storage	EIAR Chapter 5, 9 CEMP Section 4	Fuel and lubricant oils will be stored within a bunded area, sized to 110% of the volume of stored oils. The storage area will be located within a safe part of the sub-station building, with due attention to fire hazard. The bunded area will be roofed to prevent the ingress of rainwater and will be equipped with an appropriate oil interceptor.		
MM26	Accidental Spillage of Hydrocarbons	EIAR Chapter 4, 9 CEMP Section 6	The contractor will nominate an approved, certified clean-up consultant and will be available on 24-hour notice to commence a clean-up in the event of a hydrocarbon spillage from plant or vehicles the details of whom will be included in the Emergency Response Plan to be finalised by the appointed contractor.		
MM27	Temporary water supply and onsite Sanitation	EIAR Chapter 9	Water supply for the site office and other sanitation will be brought to site and removed after use from the site to be discharged at a suitable off-site treatment location. Potable water will be supplied via water coolers located within the staff facilities, which will be restocked on a regular basis as required during the construction		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			phase. A supply contract will be set up with a water cooler supply company with water supplies delivered to site as required on a regular basis.		
MM28	Pre-emptive site drainage management	EIAR Chapter 4, 9 CEMP Section 4	The works programme for the groundworks part of the construction phase of the project will also take account of weather forecasts, and predicted rainfall in particular.		
MM29	Protection of Watercourses	EIAR Chapter 9	During the near stream construction work and tree felling, double row silt fences may be emplaced immediately down-gradient of the working areas for the duration of the construction phase.		
MM30	Concrete Deliveries and Management	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. Only ready-mixed concrete will be used during the construction phase, with all ready-mixed concrete being delivered from local batching plants in sealed concrete delivery trucks.		
MM31	Concrete Deliveries and Management	EIAR Chapter 9	No washing out of any plant used in concrete transport or concreting operations will be carried out onsite. When concrete is delivered to site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the site. Concrete trucks will be directed back to their batching plant for washout.		
MM32	Concrete Deliveries and Management	EIAR Chapter 4, 9	No concrete will be transported around the site in open trailers or dumpers so as to avoid spillage while in transport.		
MM33	Concrete Deliveries and Management	EIAR Chapter 4	Clearly visible signs in prominent locations will be placed close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the site		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM34	Concrete Deliveries and Management	EIAR Chapter 4	Main pours will be planned days or weeks in advance. Large pours will be avoided when prolonged periods of heavy rain are forecast.		
MM35	Concrete Deliveries and Management	EIAR Chapter 4	Concrete pumps and machine buckets will be restricted from slewing over watercourses while placing concrete.		
MM36	Concrete Deliveries and Management	EIAR Chapter 4	Excavations will be sufficiently dewatered before concreting begins. Dewatering will continue while concrete sets.		
MM37	Concrete Deliveries and Management	EIAR Chapter 4	Covers will be available for freshly placed concrete to avoid the surface washing away in heavy rain.		
MM38	Concrete Deliveries and Management	EIAR Chapter 4	Surplus concrete after completion of a pour will be returned to the concrete suppliers batching plant for recycling.		
MM39	Road Cleanliness	EIAR Chapter 4. CEMP Section 4	A road sweeper will be available if any section of the public roads were to be dirtied by trucks associated with the proposed development.		
MM40	Road Cleanliness	EIAR Chapter 4	Where it is deemed necessary, wheel washes will be provided near all site entrances to the public road		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 4			
MM41	Construction Traffic	EIAR Chapter 4	Construction traffic will be subject to standard construction health and safety requirements which will ensure traffic speeds are limited to 15 mph/25 kmph.		
MM42	Waste Materials	CEMP Section 4	All waste materials will be removed to an appropriately licenced facility		
MM43	Felling	EIAR Chapter 4,	The tree felling activities required as part of the proposed development will be the subject of a Felling Licence application to the Forest Service, as per the Forest Service's policy on granting felling licenses		
MM44	Staff Facilities	EIAR Chapter 9	› At the site compound a self-contained port-a-loo with an integrated waste holding tank will be used within the works area and at the site compound (substation), maintained by the providing contractor, and removed from site on completion of the construction works; › At the site compound the water supply for the site office (if necessary) and other sanitation will be brought to site and removed after use from the site to be discharged at a suitable off-site treatment location; and, No water will be sourced along the works area/at the site or discharged to same.		
Drainage Design and Maintenance					
MM45	Wastewater Management	EIAR Chapter 4, 9. CEMP Section 4	During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used on site for toilet facilities. This will be maintained by the service contractor on a regular basis and will be removed from the site on completion of the construction phase. Water supply for the site office and other sanitation will be brought to site and removed after use from the site to be discharged at a suitable off-site treatment location; and,		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			No water will be sourced on the site or discharged to the site.		
MM46	Watercourse Buffer	EIAR Chapter 4, 9, CEMP Section 4	It is proposed to limit any works in any areas located within 50m of any water course including the stockpiling of excavated soils and subsoils. A constraint/buffer zone will be maintained for all crossing locations where possible whereby all watercourses will be fenced off		
MM47	Drainage Swales	EIAR Chapter 4, CEMP Section 4	Swales will be used to intercept and collect run off from construction areas of the site during the construction phase, and channel it to settlement ponds for sediment attenuation as per the drainage design.		
MM48	Interceptor Drains	EIAR Chapter 4, CEMP Section 4	Interceptor drains will be installed up-gradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site. It will then be directed to areas where it can be re-distributed over the ground as sheet flow as per the drainage design.		
MM49	Transverse drains	EIAR Chapter 9	On steep sections of access road transverse drains ('grips') will be constructed where appropriate in the surface layer of the road to divert any runoff off the road into swales/road side drains;		
MM50	Silt Fences	EIAR Chapter 4, CEMP Section 4	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 the existing drainage network of sand and gravel-sized sediment, released from excavation of mineral sub-soils of glacial and glacio-fluvial origin and entrained in surface water runoff. Inspection and maintenance of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase.		
MM51	Check dams	EIAR Chapter 4, CEMP Section 4	Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be installed at regular intervals along interceptor drains to restrict flow velocity, minimise channel erosion and promote sedimentation behind the dam as per the drainage design.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM52	Level Spreaders,	EIAR Chapter 4, 9. CEMP Section 4	A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations where they are not likely to contribute further to water ingress to construction areas of the site.		
MM53	Vegetation filters	EIAR Chapter 4, 9. CEMP Section 4	Vegetation filters, that is areas of existing vegetation, accepting drainage water issuing from level spreaders as sheet flow, will remove any suspended sediment from water channelled via interceptor drains or any remaining sediment in waters channelled via swales and settlement ponds.		
MM54	Settlement ponds	EIAR Chapter 4, 9. CEMP Section 4	Settlement ponds, placed either singly or a pair in series, will buffer volumes of run-off discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to water courses as per the drainage design.		
MM55	Dewatering Silt Bag	EIAR Chapter 4. CEMP Section 4	Dewatering silt bags will be used which allow the flow of water through 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.		
MM56	Culverts	EIAR Chapter 4	Culverts will be installed at locations where interceptor drains cross the new proposed track route. All works involving culverts, whether they are new, upgraded or extended, will be carried out to follow a method statement to be agreed with Inland Fisheries Ireland.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM57	Culverts	EIAR Chapter 9	Where possible all proposed new stream crossings will be bottomless culverts and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no impact on the stream at the proposed crossing location.		
MM58	Culverts	EIAR Chapter 9	Any guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland will be incorporated into the design of the proposed crossings. A 10m buffer is applied to the main drain (*i.e.* drain D1) s to allow for future OPW maintenance;		
MM59	Culverts	EIAR Chapter 9 CEMP Section 4	The following mitigation is proposed for completion of the watercourse crossings: › Protection of the riparian zone watercourses by implementing a constraints zone around stream crossings, in which construction activity will be limited to. › No stock-piling of construction materials will take place within the constraints zone. No refuelling of machinery or overnight parking of machinery is permitted in this area; › The shuttered for the bridge deck to be poured over the precast concrete slabs will be sealed and water tested before concrete pouring can commence. › When pouring concrete during the construction of the clear-span crossing, concrete pumps and machine buckets will be restricted from slewing over watercourses while placing concrete. › No concrete truck chute cleaning is permitted in this area; › Works shall not take place at periods of high rainfall, and shall be scaled back or suspended if heavy rain is forecast;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Plant will travel slowly across bare ground at a maximum of 5km/hr. Bog mats will be employed to protect tracked areas as necessary; › Machinery deliveries shall be arranged using existing structures along the public road; › All machinery operations shall 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 shall be immediately removed from the area and taken to a licensed waste facility; › Spill kits shall 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		
MM60	Grid Connection	EIAR Chapter 4, 9	Within the wind farm site where the proposed grid connection cable route runs adjacent to a proposed access road or an existing access road proposed for upgrade, the cable will pass over the culvert (where one exists or is proposed) within the access road;		
MM61	Silt Fences,	EIAR Chapter 4, 9. CEMP Section 3	Silt fences will be installed along the routes of existing watercourses or drainage ditches where site roads pass over the watercourses, immediately downstream of the construction area.		
MM62	Sediment disposal	EIAR Chapter 4	Sediment that is removed from settlement ponds, check dams, silt bags etc. as part of routine maintenance will be carefully disposed of away from all aquatic		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 4	zones, or will be transported off-site for disposal or re-use elsewhere if deemed necessary.		
MM63	Temporary Stockpiles	EIAR Chapter 4, 9 CEMP Section 4	Material excavated to create the working area will be stored locally for later reuse in backfilling the working area around the turbine foundation. The excavated material will be covered with polythene sheets as required and surrounded by silt fences to ensure sediment-laden run-off does not occur.		
MM64	Temporary Material Storage Areas Drainage Controls	EIAR Chapter 4 CEMP Section 4	Construction and drainage controls around temporary stockpiles will be implemented prior to the development of the stockpile where temporary management of surface water run-off during stockpile filling may require pumping to a local settlement pond for sedimentation and water treatment prior to discharge;		
MM65	Grid Connection Drainage	EIAR Chapter 9	Where construction of the grid cable connection route is undertaken along sections of proposed access road or existing roads requiring upgrade, the proposed wind farm drainage infrastructure (as outlined above) will be in place to manage and control runoff from the trench excavation area. Where the cable trench is to be constructed off-road (within the development site) or along public roads surface water control measures such as silt fences will be employed when work is required within hydrological buffer zones.		
MM66	Timing of Site Construction Works	EIAR Chapter 9	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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Felling					
MM67	Felling Licence	EIAR Chapter 4	Felling will be carried out under the terms of a licence application to the Forest Service, as per the Forest Service's policy on granting felling licenses for wind farm developments		
MM68	Clear felling of Coniferous Plantation	EIAR Chapter 9. CEMP Section 4	Best practice Forestry Service Guideline mitigation measures will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses as follows: › Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance; › Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; › Ditches which drain from the proposed area to be felled towards existing surface watercourses will be blocked, and temporary silt traps will be constructed. No direct discharge of such ditches to watercourses will occur. Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and should avoid being placed at right angles to the contour;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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; › In areas particularly sensitive to erosion, it may be necessary to install double or triple sediment traps. This measure will be reviewed on site during construction; › All drainage channels will taper out before entering the aquatic buffer zone. This ensures that discharged water gently fans out over the buffer zone before entering the aquatic zone, with sediment filtered out from the flow by ground vegetation within the zone. On erodible soils, silt traps will be installed at the end of the drainage channels, to the outside of the buffer zone; › Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled; › Brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal 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 should be suspended during periods of high rainfall;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Timber will be stacked in dry areas, and outside a local 50m watercourse buffer. 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; › Checking and maintenance of roads and culverts will be on-going through the felling operation; › Any diesel or fuel oils stored at the temporary site compound will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity; › Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; 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.		
MM69	Clear Felling of Coniferous Plantation	EIAR Chapter 9	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 minimised and controlled		
Peat, Subsoils and Bedrock					
MM70	Waste Material Generation and Management	EIAR Chapter 8	With the exception of peat and overburden which will be spread adjacent to the excavations of the development infrastructure, no waste materials, either from the site or introduced construction materials will be left on site but will be removed to suitable waste facilities.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM71	Erosion of Exposed Subsoils and Peat	EIAR Chapter 8	Peat removed from the turbine no. 5, 14 and 15 location will be locally placed/spread alongside the excavations for the infrastructural elements.		
MM72	Erosion of Exposed Subsoils and Peat	EIAR Chapter 8	In order to minimise runoff during the construction phase, stripping of peat should not take place during excessively dry weather (to prevent dust generation) or extremely wet periods (to prevent increased silt rich runoff).		
MM73	Erosion of Exposed Subsoils and Peat	EIAR Chapter 8	Bog mats and 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 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.		
MM74	Peat, Subsoil Excavation and Bedrock Excavation		› Placement of turbines and associated infrastructure in areas with shallower peat where possible; › Use of piled foundations in areas of deeper peat and soft mineral soils; › Use of floating roads (where geotechnically acceptable to do so) to reduce peat excavation volumes (i.e. along wind farm access tracks and the link road); › The peat and subsoil which will be removed during the construction of turbine hardstands (will be localised to the turbine locations. The peat will be placed/spread locally alongside the excavations (refer to Figure 7-1 of Appendix 4-2); › Small volumes of peat will be excavated and used for landscaping along proposed access/link roads; › No turbines or related infrastructure will be constructed in any designated sites such as NHAs or SACs;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Construction of settlement ponds will be volume neutral, and all excess material will be used locally to form pond bunds and surrounding landscaping; › Placement of internal cable trenching will also be volume neutral, and all excess material will be used locally as landscaping; › Subsoils will be reinstated back into the cable trench along the proposed grid connection route where possible; and, › Peat/mineral soil excavated along the Grid Connection Route, will only be stored in low mounds (~0.5m high) directly adjacent to the excavated trench, and will be stored for no more than 24 hours before being backfilled where possible. The soil/subsoil will be covered in the event of heavy rainfall which would suspend further construction works along the Grid Connection Route.		
MM75	Erosion of Exposed Subsoils and Peat		› Peat removed from the turbine locations and associated access roads will be used for landscaping or placed/spread locally alongside the excavation. A full Peat and Spoil Management Plan for the Proposed Development is shown as Appendix 4-2. › In order to minimise erosion of mineral subsoils, stripping of peat will not take place during extremely wet periods (to prevent increased silt-rich runoff). Temporary drainage systems will be required to limit runoff impacts during the construction phase. › In forestry areas 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. › Peat and subsoil removed from the cable trench will be used to reinstate the trench where possible or removed to an appropriately licenced facility. Peat and subsoil removed from the proposed		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			substation groundworks will be removed and either used for Wind Farm Site reinstatement/landscaping works or taken to an appropriately licenced facility.		
MM76	Peat Instability	EIAR Chapter 8	› 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 peat movement); › Prevent undercutting of slopes and unsupported excavations; › Maintain a managed robust drainage system; › Prevent placement of loads/overburden on marginal ground; › Set up, maintain and report findings from monitoring systems; › Ensure construction method statements are followed or where agreed modified/ developed; and, › Revise and amend the Geotechnical Risk Register as construction progresses		
MM77	Peat Instability	EIAR Chapter 4, 8	Prior to commencing floating road construction movement monitoring posts will be installed in areas where the peat depth is greater than 4m.		
MM78	Peat Instability	CEMP Section 4	A Geotechnical Risk Register will be maintained throughout the construction phase by the Project Engineer which will provide the means to carry out a geotechnical risk assessment and recommend remedial action.		
Biodiversity					
MM79	Removal of Vegetation	EIAR Chapter 4, 6, 7	The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2018. Any required removal of vegetation will be undertaken following inspection by a suitable qualify ornithologist to ensure no nesting birds are affected.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 10	› In line with best practise, no construction works are permitted 1st of March to the 31st of August inclusive within a 350m radius of lapwing breeding territories. › In line with best practise, no construction works are permitted 1st of March to the 31st of August inclusive within a 500m radius of barn owl breeding site. › No works shall be permitted within the buffer for the given timeframe, until it can be demonstrated that the roost/nest is no longer occupied.		
MM80	Bats	EIAR Chapter 6	› Pre-construction roost surveys will be required to identify and protect any bats potentially occupying roosts in vegetation earmarked for removal. For any trees found to be occupied by roosting bats prior to construction, an exclusion zone will be implemented to prevent disturbance during times of occupancy. Table 20 of the Bat Survey and Impact Assessment Report provided in Appendix 6-2 provides optimal time periods for works at different roost types, and therefore by extension restrictive periods for construction works, during which the exclusion zone for construction work would be applicable. The extent of the exclusion zone can be up to 30m for any notably disruptive works such as pile-driving; however, the mitigation measure should be proportional to the disturbance levels emanating from the construction activity. Pre-construction surveys will inform the application to undertake		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			appropriate mitigation actions as required to ensure the conservation of bats, if found to be utilising roosts within the construction corridor. › The loss of approximately 960m of treeline and 220m of hedgerow will be replaced as part of the Proposed Development. This will take place along the access road to T15. › Treeline lost along the proposed link road will be replaced 'like for like'. › Where treeline is lost in the woodland habitat between T5 and T9 the remaining woodland will be retained. The buffer created around T5 will be maintained throughout the operation of the wind farm in order to maintain a homogenous habitat around the turbine throughout its lifespan.		
MM81	Habitat Fragmentation	EIAR Chapter 6	The welfare of Otters will be ensured primarily through the provision of continued safe access for Otters along the river corridor. Adequate provision for Otters at the River crossing is required to allow the species to retain continued access to their foraging areas. The watercourses will be crossed by a clear span structure and part of the riverbank will be retained to provide dry passage for Otter under the structure.		
MM82	Habitat Fragmentation	EIAR Chapter 6	The Proposed Development has been deliberately designed to minimise loss of bog woodland. Vegetation removal will be conducted in line with the provisions of the Wildlife Act. Tree line that is lost as part of the Proposed Development will be replaced along the proposed access road to T15.		
MM83	Invasive Species	EIAR Chapter 6 CEMP Section 4	› The outline Invasive Species Management Plan will be further developed A following a preconstruction invasive survey. This report will describe the best practice measures to be adhered to during the laying of the cable route in proximity to identified stands of invasive species. Good construction site hygiene will be employed to prevent the introduction and spread of invasive alien plant species (e.g. Himalayan Balsam, Japanese Knotweed etc.) by thoroughly washing vehicles prior to leaving any site.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species › All washing must be undertaken in areas with no potential to result in the spread of invasive species. This process will be detailed in the contractor's method statement. › Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present. › All planting and landscaping associated with the proposed development shall avoid the use on invasive shrubs such as Rhododendron.		
MM84	Invasive Species	EIAR Chapter 4, 6	› All earthworks machinery will be thoroughly pressure-washed prior to arrival on site and prior to their further use elsewhere. › Care will be taken not to disturb or cause the movement of invasive species fragments, either intentionally or accidentally. › Stands of Knotweed will be clearly demarcated by temporary fencing and tracking within them will be strictly avoided. A minimum buffer of seven metres will be applied to avoid disturbance of lateral Knotweed rhizomes. › Where works occur within 7m of a Knotweed stand these will be carried out under the supervision of a suitably qualified ecologist. › Where a Knotweed stand is encountered along the road the grid connection will be laid on the opposite side of the road to avoid excavation of potential Knotweed root material insofar as possible.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Should removal of Knotweed off site be required this will be done so under the supervision of an ecologist in line with NPWS licensing. › The machinery must be thoroughly cleaned down under supervision of an ecologist prior to moving away from the Knotweed contaminated area. › All contractors and staff will be briefed about the presence, identification and significance of Knotweed before commencement of works. › Good construction site hygiene will be employed to prevent the spread of these species with vehicles thoroughly cleaned down prior to leaving any site with the potential to have supported invasive species. All plant and equipment employed on the construction site (e.g., excavator, footwear, etc.) will be thoroughly cleaned down on site to prevent the spread of invasive plant species such as Knotweed and Rhododendron. All clean down must be undertaken in areas with no potential to result in the spread of invasive species. › When working at locations in proximity to natural watercourses, a suitable barrier will be erected between the watercourse and the stand of invasive species. This will assist in preventing the spread of any invasive species into the watercourse during their removal. › Any soils or subsoils contaminated with invasive species will sent to an appropriate licenced facility.		
MM85	Aquatic Species	EIAR Chapter 6	› No watercourse will be interfered with as part of the proposed works. › During periods of heavy precipitation and run-off, works will be halted or working surfaces/pads will be provided to minimise soil disturbance.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Any requirement for temporary fills or stockpiles will be covered with polyethylene sheeting to avoid sediment release associated with heavy rainfall. › Silt fences will be used to prevent siltation of watercourses in or surrounding the study area.		
Noise and Vibration					
MM86	Construction Phase Noise, Noise from Construction Activities	EIAR Chapter 4, 11	Equipment will be sensitively located, taking account of local topography and natural screening. It is proposed that various practices be adopted during construction, including: › managing the hours according to the CEMP [Appendix 4-8 during which site activities likely to create high levels of noise or vibration are permitted; › establishing channels of communication between the contractor/developer, Local Authority and residents; › appointing a site representative responsible for matters relating to noise and vibration; › monitoring typical levels of noise and vibration during critical periods and at sensitive locations; › keeping site access roads even to mitigate the potential for vibration from lorries. › selection of plant with low inherent potential for generation of noise and/ or vibration; › placing of noisy / vibratory plant as far away from sensitive properties as permitted by site constraints, and; › regular maintenance and servicing of plant items.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM87	Construction Phase Noise,	EIAR Chapter 4, 11	The following list of measures will be implemented on site, to ensure compliance with the relevant construction noise criteria: › No plant used on site will be permitted to cause an on-going public nuisance due to noise. › The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. › All vehicles and mechanical plant will be fitted with effective exhaust silencers if required and maintained in good working order for the duration of the contract. › Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. › Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use. › Any plant, such as generators or pumps, which is required to operate close to NSLs outside of general construction hours will be surrounded by an acoustic enclosure or portable screen.		
MM88	Construction Phase Noise,	EIAR Chapter 4, 11	All construction work will be restricted to the specified working hours between 7:00hrs and 19:00hrs Monday to Saturday. Any construction work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.		
MM89	Construction Phase Noise,	EIAR Chapter 4, 11	Plant will be selected taking account of the characteristics of noise emissions from each item. All plant and machinery used on the site shall comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Noise from Construction Activities				
MM90	Construction Phase Noise Control,	EIAR Chapter 4, 11. CEMP Section 4	Training and supervision of drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation.		
MM91	Construction Phase Noise, Noise from Construction Activities	EIAR Chapter 4, 11	All construction operations shall comply with guidelines set out in British Standard documents *'BS 5338: Code of Practice for Noise Control on Construction and Demolition Sites'* and *'BS5228: Part 1: 1997: Noise & Vibration Control on Construction and Open Sites'*.		
MM92	Noise	EIAR Chapter 4, 11	Training and supervision of drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation.		
MM93	Noise	EIAR Chapter 4, 11	Where rock breaking is employed in relation to the proposed borrow pit, the following are examples of measures that will be considered, where necessary, to mitigate noise emissions from these activities: › Fit suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency. › Ensure all leaks in air lines are sealed.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Use a dampened bit to eliminated ringing. › Erect acoustic screen between compressor or generator and noise sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured. › Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation.		
Air Quality/Dust					
MM94	Construction Phase Dust Control	EIAR Chapter 4. CEMP Section 4	Truck wheels will be washed to remove mud and dirt before leaving the site.		
MM95	Construction Phase Dust Control	EIAR Chapter 4. CEMP Section 4	Construction traffic will be restricted to defined routes and a speed limit of 15 kph will be implemented.		
MM96	Construction Phase Dust Control	EIAR Chapter 4. CEMP Section 4	Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions;		
MM97	Construction Phase Air Quality	EIAR Chapter 10	All construction machinery will be maintained in good operational order while on-site, minimising any emissions that are likely to arise.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM98	Dust	EIAR Chapter 10 CEMP Section 4	The roads adjacent the site will be regularly inspected for cleanliness, and cleaned as necessary; Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air.		
MM99	Dust	EIAR Chapter 10	The transport of soils or other material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles where necessary;		
MM100	Greenhouse Gases	EIAR Chapter 10	› All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. › Turbines and construction materials will be transported to the site on specified routes only unless otherwise agreed with the Planning Authority. › Aggregate materials for the construction of the proposed wind farm will be obtained from the proposed borrow pit. This will significantly reduce the number of delivery vehicles accessing the site from significant distances, thereby reducing the amount of emissions associated with vehicle movements.		
MM101	Waste Management	EIAR Chapter 10	The Material Recovery Facility will be local to the Proposed Development site to reduce the amount of emissions associated with waste management vehicle movements. The nearest licensed waste facility to the site is located approximately 22 km south of the Proposed Development.		
Cultural Heritage					
MM102	National Monuments or	EIAR Chapter 13	A buffer zone of 20m should be established around the unnamed bridge to the north-west of the proposed access road to T15 and maintained for the duration of the construction stage of the project.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	recorded monuments				
Landscape and Visual					
MM103	Construction Phase: Visual Impact	EIAR Chapter 12	One main construction compound will be used for the storage of all construction materials.		
MM104	Borrow Pit	EIAR Chapter 12	Following the completion of the construction phase, the borrow pit will be reinstated. the borrow pit will be levelled, covered over with overburden and allowed to re-vegetate naturally. Overburden will also be deposited along the edge of the borrow pit, which will be allowed to re-vegetate and this will reduce visibility of the pit. Safety fencing and signage will be constructed. Following this, the gravel road will be allowed to re-vegetate		
MM105	Borrow Pit	EIAR Chapter 12	Maintain natural screening around the perimeter of proposed borrow pit.		
Material Assets and Traffic					
MM106	Management of Large Deliveries	EIAR Chapter 14	All deliveries comprising abnormally large loads will be made outside the normal peak traffic periods to avoid disruption to work and school related traffic.		
MM107	Construction Phase Traffic and Transport - Mitigation	EIAR Chapter 14. CEMP Section 4	A detailed Traffic Management Plan will be prepared by the appointed contractor and will include details of: › The appointed Traffic Management Co-oordinator › Turbine delivery programme, schedule and times › Procedure for providing information to locals to keep them informed of any upcoming traffic related matters e.g., temporary lane/road closures › Agreements with local authority and An Garda Siochana on delivery phases etc.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Temporary alterations of road junctions › Delivery routes for construction materials › Travel plan for construction workers › Temporary traffic signs › Diversions and road closures Trench and road surface reinstatement		
MM108	Construction Phase Traffic and Transport - Mitigation	EIAR Chapter 14. CEMP Section 4	All traffic management at the required locations will comply the *"Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). A member of construction staff (flagman) will be present at key junctions during peak delivery times.		
MM109	Construction Phase Traffic and Transport - Mitigation	EIAR Chapter 14. CEMP Section 4	The contractor will consult with the roads section of the local authority that the delivery routes traverses and An Garda Siochana during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required		
MM110	Construction Phase Traffic and Transport - Mitigation	EIAR Chapter 14 CEMP Section 4	Phased development will be employed to allow for construction traffic to be managed and to minimise the volume of construction traffic using the road network at any one time.		
MM111	Construction Phase Traffic and Transport - Mitigation	EIAR Chapter 14.	The contractor will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the site and an area for non-work vehicle parking.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 4			
Operational Phase					
MM112	Wastewater Management	EIAR Chapter 4	The removal and disposal of wastewater from the site will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations, 2007.		
MM113	Site Drainage	CEMP Section 4	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. This operational phase drainage system will have been installed during the construction phase in conjunction with the road and hardstanding construction work as described below: › Runoff from individual turbine hardstanding areas will not be discharged into the existing drain network, but discharged locally at each turbine location through settlement ponds and buffered outfalls onto vegetated surfaces; › Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader; › Swales/road side drains will be used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› On steep sections of access road transverse drains ('grips') will be constructed where appropriate in the surface layer of the road to divert any runoff off the road into swales/road side drains; › Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock; › Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, › Settlement ponds will be designed in consideration of the greenfield runoff rate.		
MM114	Site Drainage	EIAR Chapter 9	The proposed onsite substation will be located on the south west of the Wind Farm Site. It is proposed to drain the onsite substation using shallow swales, with a stilling pond at the end of the swale run. The stilling pond will remain in place following the construction period		
MM115	Site Drainage	EIAR Chapter 9	A rainwater harvesting system will be used for toilet flushing at the Substation Control Building in the Wind Farm Site. There will be a very small net loss of water to local streams but this will be imperceptible over the course of a year		
MM116	Site Drainage	EIAR Chapter 9	It is proposed to install a sealed underground holding tank for effluent (wastewater) from the onsite substation building. The tank shall be routinely emptied by a licensed contractor. A level sensor will be installed in the tank which shall be linked to the on-site SCADA system. Should the level of the tank rise to a predetermined 'high 'level a warning shall appear on the overall SCADA system for the Wind Farm Site and automatic notification shall be sent to the facility manager. A formal service agreement will be entered into with a suitably permitted waste contractor, in relation to the servicing and de-sludging of the wastewater holding tank on site. There will be no discharge of wastewater to ground at the Wind Farm Site, and therefore there is no potential to impact groundwater or surface water quality.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM117	Borrow Pit Drainage	CEMP Section 4	Appropriate operational phase drainage will be implemented to attenuate drainage water.		
MM118	Bats	EIAR Chapter 6	In order to reduce the value of the habitat for bat species in the areas surrounding the turbines, a buffer of at least 50m between the tip of the blade and any trees or other tall vegetation that could provide high quality foraging habitat for bat species will be implemented. Full details of this mitigation and how it is calculated is provided in Appendix 6-2 and summarised below: › A three-year monitoring programme is recommended for bats, with monitoring in years 1, 2, and 3 post-construction, and will include several elements, including bat activity surveys and collision monitoring, which incorporates turbine searches and scavenger removal trails.		
MM119	Noise	EIAR Chapter 11	An assessment of the operational noise levels has been undertaken in accordance with best practice guidelines and procedures as outlined in Section 11.3.2.2 in Chapter 11. The findings of the assessment identified that there are two NSLs where potential exceedances are predicted. If confirmed during post-construction monitoring, a curtailment strategy will be implemented to reduce noise levels due to the wind farm to within the criteria at all NSLs.		
MM120	Shadow Flicker	EIAR Chapter 5	Where shadow flicker occurrences are experienced at buildings, a site visit will be undertaken firstly to determine the level of occurrence, existing screening and window orientation. If annoyance is found, suitable mitigation measures such as screening and/or wind turbine control measures including turbine shutdown will be employed to limit the shadow flicker to zero at the affected property.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM121	Fuel Control	EIAR Chapter 8, 9	Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures		
MM122	Air Quality	EIAR Chapter 4	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.		
MM123	Telecoms and other service interference	EIAR Chapter 4	In the event of interference to the transmission or reception of RTÉ Transmission Network (operating as 2rn) or radio waves as a result of the operation of the proposed wind farm, the appropriate measures as set out in the 2rn Protocol Document will be carried out in order to rectify this. This Protocol Document has been prepared by 2rn and signed by the wind farm developers.		
MM124	Telecommunications	EIAR Chapter 14.	Ai Bridges approached Ripplecom with the following mitigation measures for the telecoms link that would potentially be impacted by turbine T15: › A new lattice structure be erected at the Ripplecom end of the link and the link dish at the customer end of the Ripplecom link would be relocated to the corner of the customer building. This would provide a clearance between T15 and the Ripplecom link. › Alternatively, should fibre broadband be installed in the area and be utilised by Ripplecom prior to the commissioning of the Proposed Development, the above mitigation measures would not be required and there would be no interference as the link through the development would no longer be required . These mitigation measures have been accepted by Ripplecom and are further detailed in Appendix 14-3 attached.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM125	Aviation	EIAR Chapter 14	Coole Wind Farm Ltd. will agree an acceptable aviation obstacle warning lighting scheme with the Department of Defence and the Irish Aviation Authority (IAA) ahead of turbine construction and will supply the coordinates and elevations for built turbines to the IAA, as is standard for wind farm developments.		
MM126	Construction Phase: Visual Impact	EIAR Chapter 12	The construction compound will be fully re-instated at the end of the construction phase.		
MM127	Health and Safety	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. 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the site and providing for access for emergency services at all times.		
MM128	Borrow Pit	EIAR Chapter 13	The operational phase of the proposed borrow pit will not impact on the immediate setting of any National Monuments, Recorded Monuments, Protected Structures or NIAH structures/gardens. Maintain natural screening around the perimeter of proposed borrow pit.		
MM129	Substation	EIAR Chapter 13	The substation site may have a slight negative impact on the surrounding archaeological and cultural heritage landscape as it will result in a change to their wider setting. Existing screening will be maintained to alleviate any potential impacts on setting.		
Decommissioning Phase					
MM130	Drainage on Decommissioning	EIAR Chapter 9	Following decommissioning of the wind farm at the end of its life restoration of the hydrological regime will take place by the blocking of all the drains associated with the wind farm development. Some additional drains may also be blocked in order to restore natural drainage conditions of adjacent bog and peat habitat.		
MM131	Decommissioning	EIAR Chapter 4 DP Section 3	The following mitigation measures are proposed to avoid release of hydrocarbons at the site: › Road-going vehicles will be refuelled off site wherever possible; › On-site refuelling will be carried out at designated refuelling areas at various locations throughout the site. Machinery will be refuelled directly by a fuel truck that will come to site as required › Only designated trained and competent operatives will be authorised to refuel plant on site. › Fuel volumes stored on site should be minimised. Any fuel storage areas will be bunded appropriately;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The plant used will be regularly inspected for leaks and fitness for purpose; and, › An emergency plan for the decommissioning phase to deal with accidental spillages will be developed (refer to Section 4) Spill kits will be available to deal with and accidental spillage in and outside the refuelling area. A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase.		
MM132	Decommissioning	EIAR Section 7	A Decommissioning Plan has been prepared (see Appendix 4-11 of the EIAR) The following measures are proposed for the decommissioning phase: › During the decommissioning phase, disturbance limitation measures will be as per the construction phase (see Chapter 7 of the EIAR). › Plant machinery will be turned off when not in use. › All plant and equipment for use will comply with the Construction Plant and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations 2001 (S.I. No. 632 of 2001). A project ecologist will be appointed to oversee the decommissioning phase, with similar duties to those outlined above during the construction phase.		
MM133	Decommissioning	EIAR Chapter 4 DP Section 2	On removal of turbines, soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation and accelerate the resumption of the natural drainage management that will have existed prior to any construction		
MM134	Site rehabilitation during decommissioning	EIAR Chapter 8	In order to reverse or at least reduce some of the potential impacts caused during construction by rehabilitating construction areas such as turbine bases, hardstanding areas and site compound, covering with peatland vegetation/scraw or		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			poorly humified peat to encourage vegetation growth and reduce run-off and sedimentation is proposed.		
MM135	Noise	EIAR Chapter 8	The mitigation measures that will be considered in relation to any decommissioning of the site are the same as those proposed for the construction including: › managing the hours according to the CEMP [Appendix 4-8 during which site activities likely to create high levels of noise or vibration are permitted; › establishing channels of communication between the contractor/developer, Local Authority and residents; › appointing a site representative responsible for matters relating to noise and vibration; › monitoring typical levels of noise and vibration during critical periods and at sensitive locations; › keeping site access roads even to mitigate the potential for vibration from lorries. Furthermore, a variety of practicable noise control measures will be employed. These include: › selection of plant with low inherent potential for generation of noise and/ or vibration; › placing of noisy / vibratory plant as far away from sensitive properties as permitted by site constraints, and; › regular maintenance and servicing of plant items.		
MM136	Traffic	EIAR Chapter 14	In the event that the Proposed Development is decommissioned after the 30 years of operation, a decommissioning plan, including material recycling / disposal and traffic management plan will be prepared for agreement with the local authority.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM137	Ornithology	EIAR Chapter 7	› During the decommissioning phase, disturbance limitation measures will be as per the construction phase. › Plant machinery will be turned off when not in use. › All plant and equipment for use will comply with industry best practise Construction Plant and Equipment Permissible Noise Levels Regulations.		

16.3 EIAR Monitoring Measures

Table 16-2 Monitoring Schedule

Ref. No.	Reference Heading	Reference Location	Monitoring Measure
Pre-Commencement Phase			
MX1	Water Quality and Monitoring	EIAR Chapter 9	An inspection and maintenance plan for the on-site drainage system will be prepared in advance of commencement of any works.
MX2	Water Quality and Monitoring	CEMP Section 5	Turbidity monitors or sondes can be installed where required at locations surrounding the wind farm and will provide continuous readings for turbidity levels in the watercourse.
MX3	Water Quality and Monitoring	CEMP Section 5	Baseline sampling will be completed on at least two occasions and these should coincide with low flow and high flow stream conditions.
MX4	Water Quality and Monitoring	EIAR Chapter 9	Sampling will be completed before, during and after the felling activity. The 'before' sampling should be conducted within 4 weeks of the felling activity, preferably in medium to high water flow conditions.
MX5	Invasive Species	CEMP Section 4	A pre-commencement invasive species survey shall be completed for the site
MX6	Mammal Survey	EIAR Chapter 6	A pre-construction mammal survey will be undertaken to identify any Otter holts or Badger setts within the works areas associated with the proposed development. The survey will be undertaken to ensure that Otter or Badger have not taken up residence within or close to the development footprint
MX7	Ornithology	EIAR Chapter 7	Pre-commencement surveys will be undertaken prior to the initiation of works at the wind farm. The survey will include a thorough walkover survey to a 500m radius of the development footprint and/or all works areas, where access allows
MX8	Archaeological Testing	EIAR Chapter 13	Pre-construction archaeological testing of turbine bases and hardstands proposed for excavation will be carried out. A report will be submitted to the relevant authorities for consideration

Ref. No.	Reference Heading	Reference Location	Monitoring Measure
Construction Phase			
MX9	Water Quality and Monitoring	EIAR Chapter 9	During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs should be undertaken for each primary watercourse, and specifically following heavy rainfall events (*i.e.* weekly, monthly and event based).
MX10	Water Quality and Monitoring	EIAR Chapter 9	An inspection and maintenance plan for the on-site drainage system will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling
MX11	Daily Monitoring	EIAR Chapter 9 CEMP Section 5	Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work should immediately be stopped and a geotechnical assessment undertaken
MX12	Water Quality and Monitoring	CEMP Section 5	The following periodic inspection regime is likely to be proposed: › Daily general visual inspections by Environmental Manager; › Weekly (existing & new drains) inspections by the Environmental Manager and/or the site Construction Manager; › Inspection to include all elements of drainage systems and all monitoring. Inspections required to ensure that drainage systems are operating correctly and to identify any maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter should be noted and corrective action should 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 silt fencing or oil absorbent materials need replacement; › Event based inspections by the Environmental Manager as follows: › >10 mm/hr (*i.e.* high intensity localised rainfall event);

Ref. No.	Reference Heading	Reference Location	Monitoring Measure
			› >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 during construction phase; and, › Quarterly site inspections by the Project Hydrologist after construction for a period of one year following the construction phase. A written record will be maintained or available on-site of all construction phase monitoring undertaken.
MX13	Check Dams	EIAR Chapter 4 CEMP Section 4	Check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.
MX14	Settlement Ponds	EIAR Chapter 4 CEMP Section 5	Settlement ponds will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows. Inspection and maintenance of these of these structures during construction phase is critical to their functioning to stated purpose.
MX15	Culverts	EIAR Chapter 4 CEMP Section 4	All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.
MX16	Drainage Management	EIAR Chapter 4 CEMP Section 4	The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the environmental manager or supervising hydrologist on-site. The environmental manager 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

Ref. No.	Reference Heading	Reference Location	Monitoring Measure
			design is maintained in so far as is possible. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site.
MX17	Plant and Equipment Inspections	EIAR Chapter 7 CEMP Section 4	The plant used should be regularly inspected for fuel leaks, unnecessary noise generation and general fitness for purpose.
MX18	Drainage Inspection	EIAR Chapter 9 CEMP Section 5	Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.
MX19	Water Quality Monitoring	EIAR Chapter 9 CEMP Section 5	During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs should be undertaken for each watercourse (*i.e. at sample points SW1, SW2 & SW3 used in this assessment*) and specifically following heavy rainfall events (*i.e.* weekly, monthly and event based). This will be completed in consultation with the Inland Fisheries Board.
MX20	Wheel wash effectiveness	CEMP Section 4	The effectiveness of the wheel wash will be monitored as part of road cleanliness inspections. The water will be replaced in the wheel wash enclosure as required.
MX21	Archaeological Monitoring	EIAR Chapter 13	Archaeological monitoring of ground works and metal detection of spoil will be carried out during the construction phase. The archaeological monitoring will be undertaken with the benefit of a licence from the Department of Arts, Heritage and Gaeltacht (DAHG). If archaeological features or finds re encountered during site works the archaeologist will report the findings to the relevant authorities to discuss a suitable means of preservation of the features (preservation by record or *in situ* may be required). A report on the monitoring will be submitted to the Local Authority and DAHG

Ref. No.	Reference Heading	Reference Location	Monitoring Measure
			Archaeological monitoring of ground works during construction will also be carried out at the following locations with a report on the results of the monitoring compiled and submitted to the relevant authorities on completion of the project: › If the works extend immediately adjacent to ringfort WM012-088 › Where the works extend past the ecclesiastical site at Abbeyland › Where the works extend past the church and graveyard WM006-061 and WM006-061001. Where the works extend past the NIAH/Protected Structures at Farranistick.
MX22	Archaeological Monitoring	EIAR Chapter 13	The remains of a 19th-20th century stone building are extant adjacent to the eastern end of the proposed link road. The building is not a Protected Structure or listed in the NIAH. It is proposed to carry out: › Pre-construction archaeological building survey of remains accompanied by measured drawings. › Archaeological monitoring of ground works in this area and removal of stone structure if necessary. A report on the monitoring should be compiled on completion of the work and submitted to the relevant authorities. Archaeological monitoring of ground works for proposed junction accommodation works. A report on the monitoring should be compiled and the results submitted to the relevant authorities.
MX23	Archaeological Monitoring	EIAR Chapter 13	Archaeological monitoring of ground works during construction where they extend past the church and graveyard at Mayne. A report on the results of the monitoring shall be compiled and submitted to the relevant authorities on completion of the project.
MX24	Archaeological Monitoring	EIAR Chapter 13	Archaeological monitoring of ground works during construction where they extend past the church and graveyard WM006-061 and WM006-061-001. A report on the results of the monitoring shall be compiled and submitted to the relevant authorities on completion of the project.

Ref. No.	Reference Heading	Reference Location	Monitoring Measure
MX25	Archaeological Monitoring	EIAR Chapter 13	Archaeological monitoring of ground works where the grid connection route extends past the Water mill (WM006-076) and Ecclesiastical site (WM006-059). A report on the results of the monitoring shall be compiled and submitted to the relevant authorities on completion of the project
MX26	Archaeological Monitoring	EIAR Chapter 13	Archaeological monitoring of ground works where the grid connection route extends past the recorded monuments WM012-088 - 090 (ringforts) will be required during construction. A report on the results of the monitoring shall be compiled and submitted to the relevant authorities on completion of the project.
MX27	Archaeological Monitoring	EIAR Chapter 13	Archaeological monitoring of ground works during construction where they extend past the NIAH/Protected Structures at Farranistick. A report on the results of the monitoring shall be compiled and submitted to the relevant authorities on completion of the project.
MX28	Archaeological Monitoring	EIAR Chapter 13	A bridge is denoted on the proposed route on the 2nd ed. OS map at Shrubbywood/Clonva townlands where the public road crosses the River Inny. Archaeological monitoring of ground works during construction where it extends past the bridge. A report on the results of the monitoring shall be compiled and submitted to the relevant authorities on completion of the project.
MX29	Dust Monitoring	EIAR Chapter 10	Dust monitoring will also take place during the construction phase, with dust jars been placed at the same monitoring locations and left in situ for 30 days at a time. It is proposed to carry out this monitoring on a quarterly basis. The dust monitoring locations around the Proposed Development site boundary will be selected with regard to the location of these nearest sensitive receptors
Operational Phase			
MX30	Vantage Point Surveys	EIAR Chapter 7 – Appendix 7-6	Vantage point surveys will be undertaken monthly between January and December during operational years 1, 2, 3, 5, 10 and 15 of the life-time of the wind farm. The methodology for vantage point watches will follow guidelines issued by the SNH (2009) and SNH (2017). The proposed vantage point watches will adhere to a minimum of 36 hours/VP per season as per guidelines issued by SNH. Monthly visits will be undertaken throughout the year.

Ref. No.	Reference Heading	Reference Location	Monitoring Measure
			During each visit, six-hour vantage point watches will be undertaken from each fixed vantage point location that offers an un-interrupted view of the study area .
MX31	Breeding Bird Walkover Surveys	EIAR Chapter 7 – Appendix 7-6	Survey methodology will be similar to methods employed for baseline EIAR surveys which will allow a comparison of data to be made for each monitoring year in years 1, 2, 3, 5, 10 and 15 of the life-time of the wind farm.
MX32	Collision Searches (Bird Casualties)	EIAR Chapter 7 – Appendix 7-6	It is proposed to undertake a minimum of one visit per month during each survey year in years 1, 2, 3, 5, 10 and 15 of the life-time of the wind farm. During each visit, searches will be undertaken at each operating turbine location by a team of two surveyors. A plot measuring 130m x 130m from the centre of each turbine location will be the subject of target searches for bird casualties. Searches will incorporate the use of transects spaced at 10m intervals apart with the observer covering 5m on either side for each transect. Locations and coordinates of transect routes will be confirmed using a portable GPS recording device. Recording sheets will be used to document bird carcasses encountered in the field.
MX33	Reporting	EIAR Chapter 7 – Appendix 7-5	A report summarising the findings of the bird monitoring surveys will be submitted to the Planning Authority at the end of each monitoring year.
MX34	Bats	EIAR Chapter 6	Ongoing monitoring of bat activity will be undertaken for at least three years' post construction of the wind farm. This will provide data and information on the actual recorded impact of the wind turbines on the local bat populations. Details of the proposed monitoring programme are provided in Appendix 6-2 of this EIAR
MX35	Drainage Inspection	EIAR Chapter 4, 9	Monitoring the effectiveness of drainage measures installed during the construction phase will continue to be monitored into the operational phase. Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed.

Ref. No.	Reference Heading	Reference Location	Monitoring Measure
MX36	Water Quality and Monitoring	CEMP Section 5	During the operational phase field testing and laboratory analysis of a range of parameters will continue for six months after construction is complete.
MX37	Drainage Inspection	EIAR Chapter 9	Monitoring the effectiveness of drainage measures installed during the construction phase will continue to be monitored into the operational phase. Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed.
MX38	Operational Phase Noise	EIAR Chapter 11	The following programme of measures would be implemented in the event of an issue of aerodynamic modulation being identified and associated with the site: › A detailed noise survey conducted by an appropriately qualified acoustic consultant will be commissioned in order to confirm the presence or not of the issue, the extent of the issue (i.e. number of locations, wind speeds and environmental conditions in which it is occurring); Based on the findings of this work and where aerodynamic modulation is identified a schedule of measures will be formulated and agreed with the planning authority, which would typically be envisaged to focus on control and regulation of the operation of turbine unit(s) in certain atmospheric and meteorological conditions.
Decommissioning Phase			
MX39	Decommissioning	DP Section 3	The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.
MX40	Decommissioning	DP Section 3	Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of any material proposed for use as part of foundation backfilling.