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## APPENDIX 17.1 MITIGATION MEASURES

### Introduction

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

All mitigation which will be implemented during the various phases of the Project are presented in **Table 17.1a** below. The mitigation measures have been grouped together according to their environmental field/topic and are presented under the following headings:

- Land Use
- Tourism
- Flora and Fauna
- Peat Management
- Site Drainage
- Telecoms and other service interference
- Health and Safety
- Shadow Flicker
- Noise
- Waste
- Cultural Heritage
- Traffic
- Decommissioning

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 2.1** of this EIAR. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

All monitoring measures which will be implemented during the pre-commencement, construction, operational and decommissioning phases of the Project are outlined in **Table 17.1b**. 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 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.

**Table 17.1a: Summary of Mitigation Measures**

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
<b>Pre-Commencement Phase</b>						
MM1	Land Use	Chapter 5: Population and Human Health	5.5.5 Land Use	Prior to the grid connection installation works within public roads, it is proposed that all access points (domestic, business, farm) are considered when finalising the temporary road closures and diversions, to maintain local access as much as possible and avoid impacts on various land uses. Chapter 11: Traffic and Transportation will be referred to for all proposed works and deliveries along the turbine delivery route to avoid undue impact to adjacent land uses.		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.1.3 Protection of Important Mammal Species	The Ecological Clerk of Works for the construction phase will complete a pre-construction to confirm the continued absence of mammal breeding and resting places within 50 m of the construction footprint or identify the presence of newly established breeding/resting places. Based upon the results of these surveys, the ECoW will establish whether or not there is a need at that stage for the implementation of further mitigation measures and the requirement for protected species licences. An example of where such a need could arise is where a badger sett becomes established along or in the immediate vicinity of a hedgerow that will be intersected by the proposed access track.		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.1.5 Protection of Avian Receptors	Pre-construction surveys, completed by suitably experienced ornithologists, will be completed in order to help inform the approach to the construction works associated with the proposed wind farm to confirm the continued absence of the presence/absence of any breeding or roosting sites for sensitive ornithological receptors, namely hen harrier, merlin and Peregrine. Prior to any construction works being undertaken (including enabling works and ground investigations) surveys will be undertaken to identify any breeding/roosting activity associated with these sensitive ornithological receptors. Where such activity		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>by these species is identified the sites will be identified and will be demarcated so as to avoid disturbance to them. The Applicant will appoint a suitably experienced ECoW to oversee the works and help ensure that suitable protection zones are established and adhered to during the works. Species and site-specific buffer zones, following current best practice, will be established, appropriate to the specific circumstances, under the advice of a suitably experienced ornithologist.</p> <p>In addition to the pre-construction surveys, all works areas will be checked by a suitably experienced ecologist/ornithologist or the ECoW for the presence of any nesting birds in advance of works commencing during the main bird breeding season. Should any active nest sites be found in areas where construction works are proposed, the location of the nest will be protected from damage and disturbance.</p>		
MM2		Chapter 12: Landscape and Visual Amenity	12.4 Mitigation Measures	<p>In relation to the WEDG, It is considered that the Proposed Development is in keeping with the siting and design criteria presented in the guidance for the 'Mountain Moorland landscape type, with the following noted:</p> <p>Location: The Proposed Development is located on a broad elevated ridgeline, which is preferred within the guidance, and is located at a sufficient distance from surrounding properties such that they do not visually dominate them. Their elevated location also ensure that they do not contribute to visual clutter.</p> <p>Spatial Extent: The wind farm has a relatively small spatial extent that responds to the scale of this landscape, and the scale of its plateau location.</p> <p>Spacing: The turbines are well-spaced, allowing a high degree of visual permeability between the turbines. Their regular spacing corresponds with the scale of the receiving landscape type.</p> <p>Layout: The clustered linear layout adopted is advocated for this landscape type.</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>Height: The proposed turbines are of a modest height which is considered to be consistent with the moorland landscape which can accommodate a range of heights.</p> <p>Section 6.18 refers to appropriate setback distances for visual amenity purposes. The guidelines outline a mandatory minimum setback distance of "476 meters" or the distance of "4 times the tip height" of the proposed turbines "between the nearest point of the curtilage of any residential property".</p> <p>The proposals have been designed to ensure that the turbines achieve the minimum setback distance of 470m from residential dwellings, and agreements are in place with regard to the four properties located within this.</p>		
MM3	Land Use	Chapter 13: Material Assets and Other Issues	13.4.3 Mitigation Measures	<p>A process of "Mitigation by Avoidance" to avoid or minimise impacts on agricultural land use has been incorporated into the design stage. The construction and operational footprint of the Project has been kept to the minimum necessary to avoid impact on existing land uses and existing tracks have been used where possible.</p> <p>These mitigation measures will allow for the prevention of unnecessary or inappropriate ground works or land use alterations to occur and will avoid unnecessary soil compaction.</p>		
MM4	Land Use	Chapter 13: Material Assets and Other Issues	13.5.4 Mitigation Measures	<p>Existing forestry tracks have been incorporated into the design to minimise the construction of new Site Access Roads and minimise the removal of forested areas. New Site Access Roads have been sensitively designed to minimise impact on forestry. As there are no turbines being built within the forested land, electricity cables installation underground in or alongside Site Access Roads is not required. The construction and decommissioning works will be planned and managed by a Construction and Environmental Management Plan (CEMP)</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				(Appendix 2.1). This provides details on day to day works and methodologies. As part of these works, the public and other stakeholders will be provided with updates on construction activities which will affect access to surrounding lands. This will be communicated to members of the public through a community liaison officer employed for the duration of the construction period.		
MM5	Telecoms and other service interference	Chapter 13: Material Assets and Other Issues	13.6.5 Mitigation Measures	<p>All electrical elements of the Development are designed to ensure compliance with electro-magnetic fields (EMF) standards for human safety. The effects on human health are assessed in Chapter 5: Population and Human Health.</p> <p>Mitigation measures were undertaken in the design phase through mitigation by avoidance i.e., the known routes of the telecommunication links were plotted and a buffer was applied to them, outside of which the proposed turbines were located. Compliance with the EMC Directive 2014/30/EU will mean that the electromagnetic emissions from devices used will not cause interference to other equipment.</p> <p>In the event the Project is granted planning permission a protocol will be signed between 2RN and the Developer.</p>		
MM6	Telecoms and other service interference	Chapter 13: Material Assets and Other Issues	13.7.5 Mitigation Measures	<p>Mitigation by design and avoidance will minimise impacts on existing electricity networks.</p> <ul style="list-style-type: none"> <li>• Prior to construction confirmatory drawings for all existing services will be sought from ESB Networks.</li> <li>• Immediately prior to construction taking place, the area where excavation is planned will be surveyed by CAT scan (sub-surface survey technique to locate any below-ground utilities) and all existing services will be verified. Temporary warning signs will be erected.</li> <li>• The as-built location of the installed ducts will be surveyed and recorded using a total station/GPS before the trench is backfilled to record the exact location of the ducts. The co-ordinates will be plotted on as-built record drawings for the</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>grid connection cable operational phase.</p> <ul style="list-style-type: none"> <li>Clear and visible temporary safety signage will be erected all around the perimeter of the live work area to visibly warn members of the public of the hazards of ongoing construction works.</li> </ul>		
MM7	Telecoms and other service interference	Chapter 13: Material Assets and Other Issues	13.8.5 Mitigation Measures	<p>Although no potential effects were identified, the following mitigation measures proposed by the Irish Aviation Authority (IAA) will be implemented:</p> <ul style="list-style-type: none"> <li>An aeronautical lighting scheme for the Development will be agreed with the IAA and will be installed.</li> <li>As-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location will be provided to the IAA.</li> <li>The IAA will be notified of intention to commence crane operations with at least 30 days prior notification of their erection.</li> </ul>		
MM8	Telecoms and other service interference	Chapter 13: Material Assets and Other Issues	13.9.4 Mitigation Measures	<ul style="list-style-type: none"> <li>Existing tracks have been used where possible and the layout was designed to minimise the length of new track required in order to reduce the requirement for such stone material.</li> <li>The on-site borrow pit will not be used during construction and will be restored. The quarry will therefore be used to provide the stone material required.</li> <li>Local quarries have been identified to reduce impact on transportation (Please see Chapter 11: Traffic and Transportation).</li> <li>The source quarry will be chosen based on stone which is chemically similar to that occurring at the Development. This will reduce hydrogeochemical impacts. (Please see Chapter 7: Soils and Geology)</li> </ul>		
<b>Construction Phase</b>						
MM22	Land Use	Chapter 5: Population and	5.5.5 Land Use	The construction and decommissioning works will be planned and controlled by a Construction and Environmental		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
		Human Health		Management Plan (CEMP). This provides details on day to day works and methodologies. As part of these works, the public and other stakeholders will be provided with updates on construction activities which will affect access to lands. This will be communicated to members of the public through a community liaison officer employed for the duration of the construction period.		
MM23	Tourism	Chapter 5: Population and Human Health	5.5.6 Tourism	The most significant potential for tourism and recreation activity at the Site and surrounding area was identified as trail walking and hiking. In providing for public safety, appropriate signage and safety measures will be put in place and the Site will be closed to the public during construction and decommissioning activities.		
MM24	Health and Safety	Chapter 5: Population and Human Health	5.5.7 Human Health and Safety	<p>All construction staff will be adequately trained in health and safety and will be informed and aware of potential hazards.</p> <p>All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be followed. 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.</p> <p>Safe Pass 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 &amp; Health Management Plan.</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>In relation to COVID-19, up to date Health Service Executive guidance will be consulted regularly in line with Health and Safety Authority recommendations and all reasonable on-site precautions will be taken to reduce the spread of COVID-19 on construction sites, should the virus be prevalent at the time of construction.</p> <p>Once mitigation measures and health and safety measures are followed, the potential for impact on human health on the construction site during construction and decommissioning is expected to be not significant and temporary to short-term.</p> <p>Public safety will be addressed by restricting access to the public in the vicinity of the site works during the construction and decommissioning stage. The construction site and associated recreation trails will be temporarily closed in sections to the public for the 18-24 month construction period as well as the decommissioning period. This measure aims to avoid potential injury to members of the public as a result of construction activities.</p> <p>Where recreational trail sections are temporarily closed to the public during construction and decommissioning, signage will be provided indicating alternative routes for walkers within the main construction site. This aims to avoid potential confusion and disorientation to recreation users as well as maintaining public safety in proximity to the construction site.</p> <p>Appropriate warning signage will be posted at the construction site entrance, directing all visitors to the site manager. Appropriate signage will be provided on public roads</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>approaching site entrances and along haul routes.</p> <p>In relation to the turbine delivery route, extra safety measures will be employed when large loads are being transported, for instance, Garda escort will be requested for turbine delivery and a comprehensive turbine delivery plan will be utilised to avoid potential impact to human safety for road users and pedestrians.</p> <p>For the installation of the grid connection cable in the public road, a traffic management plan has been developed (<b>Appendix 2.1</b>) in discussion with locals who will be directly impacted by the works, and in agreement with the Local Authority. Public consultation will be conducted along the grid cable route to inform local residents ahead of construction and decommissioning works.</p>		
	Site Drainage	Chapter 6: Biodiversity	6.7.1.1.1 Protection of Watercourses, Fisheries & Freshwater Pearl Mussel	The Proposed Development has been designed to ensure that an adequate buffer zone is provided for between this infrastructure and watercourses. In addition, given the presence of the existing access road and hardstand no new watercourse crossings will be required at the wind farm site. The buffer zone implemented between all large-scale infrastructure associated with the Site, such as turbines, turbine hardstands, and access tracks are located at distances of over 50 m from any watercourses, except for where the existing access track crosses minor stream headwaters. In addition, the best practice construction measures that are described below are designed to avoid impacts on areas that are outside the site including watercourses.		
	Site Drainage	Chapter 6: Biodiversity	6.7.1.1.1 Protection of	<ul style="list-style-type: none"> <li>Vehicles and plant used in the construction of the proposed crossing will only be refuelled at the Site's bunded and</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Watercourses, Fisheries & Freshwater Pearl Mussel  Wind Farm Site	designated refuelling area, no refuelling will be permitted within 50 m of any watercourse at the Site <ul style="list-style-type: none"> <li>To mitigate against the potential risk of accidental leaks or spillages from plant and equipment the following measures will be implemented: Multiple spill kits will be maintained on the Site at all times within the cabs of vehicles and placed strategically at environmentally sensitive locations across the Site. Spill kits will be routinely inspected to ensure that they are fully stocked with oil absorbent booms and pads at all times. Oil absorbent booms will be installed downstream of channel crossing work areas within 25 m of the works location prior to the commencement of works.</li> </ul>		
	Site Drainage	Chapter 6: Biodiversity	6.7.1.1.1 Protection of Watercourses, Fisheries & Freshwater Pearl Mussel  Grid Connection Route	The overground electrical cable route has been designed such that all polesets are positioned a minimum distance of 25m from the nearest watercourse, thus avoiding any impacts to watercourse and associated riparian zones. One no. watercourse crossing, a crossing of the Glanareagh Stream will be required along 1 no. section of the underground electrical cable route. The crossings will be via horizontal directional drilling, thus avoiding the need for any instream works for this watercourse crossing.		
	Site Drainage	Chapter 6: Biodiversity	6.7.1.1.1 Protection of Watercourses, Fisheries & Freshwater Pearl Mussel  Protection of Watercourses during Horizontal directional drilling	<ul style="list-style-type: none"> <li>Clearbore, which is not toxic to aquatic organisms and is biodegradable will be the drilling fluid used.</li> <li>Mud mixing will be monitored to suit the ground conditions encountered.</li> <li>The drilling fluids will be constantly monitored, any changes required to the mix will be performed on site by a specialised HDD Contractor upon consultation with the drilling fluid supplier and Environmental Clerk of Works.</li> <li>Mud testing equipment will be available at all times during drilling operations to monitor key mud parameters.</li> <li>All equipment will be carefully checked on a daily basis by</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>the Site Supervisor prior to use to ensure plant and machinery is in good working order with no leaks or potential for spillages.</p> <ul style="list-style-type: none"> <li>• Spill kits, including an appropriate hydrocarbon boom will be available on the site in the event of any unforeseen hydrocarbon spillages and all staff shall be trained in their use.</li> <li>• All plant, materials and wastes will be removed from site following the HDD works.</li> <li>• The launch pit will be reinstated to the original land surface condition and the normal duct trench will continue from this point.</li> <li>• Should any dewatering be required, it will be carried out in accordance with the CEMP provided in Appendix 1.</li> <li>• Test pits and boreholes will not be located directly on, or extend through, the proposed alignment, as these weak points may serve as conduits where inadvertent fluid returns or frac outs could occur. At least a 3m offset will be provided between the boreholes and pipe alignment.</li> <li>• All launch pits and reception pits for horizontal directional drilling under watercourses will be buffered back from watercourses at a minimum distance of 20 m.</li> <li>• All spoil arisings from the launch and reception pit at the proposed horizontal directional drilling crossing will be stored in bunded areas to prevent the runoff of silt-laden runoff from the spoil to watercourses. All spoil material will be reused to reinstate the launch pits and reception pits.</li> <li>• Pumps will be available at the launch and receptor pits. The pumps will be powered by diesel fuel and will be stored in a secure bunded area. The pumps will be used to pump any standing water from the pits during works. A lay flat hose will be positioned within the pit and pooling surface water will be</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>pumped from the pit via the lay flat over adjacent vegetated surfaces. Under no circumstances will the lay flat outfall be directed to an existing drainage ditch or the watercourse being crossed via horizontal directional drilling. The discharge of the surface water to vegetated ground will allow for discharge to ground and will retard overland flows in the direction of the watercourse being crossed.</p> <ul style="list-style-type: none"> <li>• Pump drilling fluid with a higher density into the formation.</li> <li>• Circulate and pump organic lost circulation materials (LCM) into the loss zone to physically seal the fracture. Lost circulation occurs when drilling fluid, flows into one or more geological formations instead of returning to the launch area.</li> <li>• Grout the loss zone; and/or</li> <li>• Launch a packer before the loss zone. A packer is a mechanical device sent down the hole to the area of concern. It is designed for blocking the system for sealing grout to set.</li> <li>• All of the above options will be prepared and made available for application during the HDD works.</li> <li>• All equipment will be carefully checked on a daily basis by the Site Supervisor prior to use to ensure plant and machinery is in good working order with no leaks or potential for spillages. In order to minimise any risk of pollution in the first instance. Spill kits, including an appropriate hydrocarbon boom will be available on the site in the event of any unforeseen hydrocarbon spillages and all staff shall be trained in their use. It is noted that, given the separation distances between the launch pit and reception pit for the crossing under the Glanareagh Stream that the potential for the release of hydrocarbons to the stream will be extremely unlikely.</li> <li>• In addition to the supervision of drilling the project ECoW will</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>be required to supervise the set-up and reinstatement of all launch pits and reception pits at all watercourse crossings to ensure that all measures required to protect water quality and instream habitats are properly implemented.</p> <ul style="list-style-type: none"> <li>• In addition to the horizontal directional drilling method provided under separate cover, a detailed method statement for the crossing of watercourses will be prepared in advance of all crossings and will be submitted to the NPWS and IFI for agreement prior to the commencement of works.</li> <li>• All drilling fluids and spent drill mud will be prepared and returned within a closed drilling train. All spent mud will be discharged from the closed drilling train to an impermeable bunded container and will be removed from site for disposal at an appropriately licenced facility.</li> <li>• All fuels, lubricants and hydraulic fluids for equipment used during horizontal directional drilling will be stored in securely bunded containers and will not be carried to within 10 m of any watercourse.</li> <li>• All measures detailed in the SWMP and CEMP prepared for the project to protect water quality will be implemented during horizontal directional drilling works.</li> <li>• An Emergency Response Plan has been prepared as part of the project's CEMP and all measures detailed therein will be implemented in the event of an emergency.</li> </ul>		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.1.2 Protection of Important Habitats  Wet Heath	In order to ensure the full reinstatement of wet heath habitat along the two sections of the underground electrical cable route, the first step of the electrical cable installation works will be to remove the wet heath vegetation as surface turves. The surface turves to be removed will measure 0.5m x 0.5m and be excavated to a minimum depth of 0.3m or to bedrock level where substrate overburden is shallower than 0.3m. The turves will be		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				set down opposite the excavated location by the excavator. Turves will not be stacked and will be kept moist in the event of prolonged dry weather coinciding with the electrical cable installation works. Once the electrical cable ducting is installation and encased with fill layers to ESB specifications, the electrical cable trench will be backfilled and capped with the turves saved during the initial excavations. The turves will be carefully reinstated by the excavator operator so that they are knitted together.		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.1.2 Protection of Important Habitats  Hedgerows	Short section of hedgerow will be temporarily removed during the installation of the underground electrical cable. A total of 6 no. hedgerow will be severed during the installation of the underground electrical cable. The combined extent of hedgerow to be lost at the 6 location is estimated to be c. 24m. Once the underground electrical cable is installed, replanting will be undertaken to reconnect the 6 no. hedgerows severed during the installation works. Replanting will be undertaken with native willow species comprising <i>Salix aurita</i> and <i>Salix cinerea</i> . Approximately 225m of hedgerow will be temporarily removed at the TDR widening locations no. 1 and 6. Once turbine delivery is completed the hedgerows will be reinstated with native species comprising <i>Salix aurita</i> , <i>Salix cinerea</i> , <i>Crataegus monogyna</i> and <i>Prunus spinosa</i> .		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.1.2 Protection of Important Habitats  Hedgerows	<ul style="list-style-type: none"> <li>The full extent of the infrastructure footprint will be marked out prior to the commencement of works, with an appropriately robust and visible fencing / marker system. Where this meets Annex I habitats, this will also be the full extent of the works corridor, with no machinery access (access will only be allowed on foot and only for the purposes of silt / pollution control if required), storage or other works allowed outside this area.</li> <li>The efficacy and coherence of the marker system (and</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>required remediation) will form an essential part of the Site operations.</p> <ul style="list-style-type: none"> <li>A pre-construction Invasive Species Survey will be conducted during the optimal growing season (May to August immediately prior to works occurring at this site for the Proposed Development) and shall include data on all locations, extents and potential construction impacts in relation to scheduled and non-scheduled Alien Invasive Species (IAS). This survey will be completed along with reporting on the best course of action to be implemented to avoid the spread of such IAS on the Site or further afield. The management of IAS identified as occurring within the Site will be undertaken in accordance with best practice management guidelines as set out in the TII guidelines "The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads" (2010).</li> </ul>		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.1.4 Protection of Bats	In order to avoid the potential for future interactions between the proposed wind farm and local bat populations, all structures associated with the proposed wind farm such as the control building will be built in a manner to ensure no roosting opportunities are present for bats. Also no structured vegetation, in the form of hedgerows, treelines, scrub etc. will be permitted to establish at these locations during the operational phase of the turbines.		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.1.6 Protection of Kerry Slug	In order to avoid the potential for mortality to Kerry Slug the ECoW will complete checks for the presence of Kerry Slug in areas of suitable habitat occurring within the construction footprint of the wind farm. In the event that slugs found to be present, they will be transferred to suitable habitat in landholding away from the construction footprint. Such on-going monitoring of suitable habitat within the construction footprint will continue throughout the construction phase. Such monitoring will be		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				undertaken during periods of wet weather when slugs are most active and feeding on the surface and therefore at greater risk of impacts by movement of machinery. The transfer of Kerry Slugs will be subject to a derogation licence from the NPWS.		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.1.7 Protection of Herpetofauna	The Ecological Clerk of Works for the construction phase will complete a survey of the construction footprint during spring (late February / March / early April) ahead of the proposed works in order to identify any key amphibian breeding areas. This will allow wildlife barriers to be installed where necessary to minimise impacts upon such features where these are likely to be indirectly affected by the works. For the construction of culverts, all activities must adhere to IFI, (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. Section 9 Planning, Design and Construction Issues details on Best Practice guidance for the installation of culverts on watercourses. All measures outlined in the accompanying SWMP will be fully implemented by the contractor and will be agreed to with the planning authority in advance of construction activities. The objective of the SWMP is to prevent pollution to watercourses and adverse impacts to sensitive fauna. The SWMP has provided sufficient detail so that all activities that could potentially lead to negative impacts on water quality have been identified. The SWMP is based upon a detailed understanding of the hydrology, hydrogeology and geology within and surrounding the Proposed Development.		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.2.1 Protection of Watercourses, Fisheries &	An Ecological Clerk of Works ("ECoW") will be employed from the commencement to completion of construction works, including access tracks, On-site Substation and Control Building, Temporary Construction Compound, Turbine Hardstands and		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Freshwater Pearl Mussel	<p>Turbine Foundations and Wind Farm Internal Cabling works at a minimum. Primary roles for the ECoW will include the setting out and monitoring of the working corridor and review of pollution control measures and working practices during the active construction period as well as ad hoc input into site remediation. Method statements outlining the approach to all surface watercourse crossing will be approved in advance with Inland Fisheries Ireland.</p> <p>Disturbance to natural drainage features will be avoided during the construction phase of the Proposed Development. The design of the Proposed Development has allowed for the establishment of a 50 m wide watercourse buffer zone during the construction phase.</p> <p>Uncontaminated surface runoff will be diverted away from construction areas through the installation of interceptor drains up-gradient of construction areas.</p> <p>Drainage waters originating in construction areas will be collected in a closed system and treated prior to controlled, diffuse release. Drainage waters from construction areas will be managed through a series of treatment stages that include swales, check dams and settlement/attenuation ponds along with other pollution control measures such as silt fences and silt mats.</p> <p>A three-stage treatment train will be employed to capture, retain and treat discharges during the construction phase. This treatment train is also proposed for discharges from hard surfaces that will be installed as a result of the Proposed Development.</p> <p>Settlement/attenuation ponds will be used to attenuate and treat runoff. A detailed pre-construction peat stability assessment has considered the appropriate location of settlement/attenuation ponds so that these facilities will not increase the risk of slope</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>failure. These will have permanent open water to minimise the risk of sediment washout. Settlement/attenuation pond side slopes will be constructed at shallow grades such as 1 in 3 side slope. Settlement/attenuation ponds will be designed so that outflows are spread diffusely over a wider area so that increases in run-off can be mitigated. Erosion control and detention ponds will be regularly maintained during the construction phase.</p> <p>Standing water from excavations will not be pumped directly into watercourses. Where dewatering of excavations is required, water will be pumped to the head of a treatment train in order to receive full treatment prior to discharge.</p> <p>Roadside drains will be shallow with moderate gradients to prevent scouring. In steep areas check dams (possibly in conjunction with settlement ponds and / or cross drains) may be necessary to reduce flow rate.</p> <p>Oil fuel will be stored within containment areas and emergency response measures for oil spillage on site will be prepared.</p> <p>Refuelling of plant during construction will be carried out at a designated area, a minimum of 50 m from watercourses. Drip trays and spill kits will be available on site. Maintenance of all plant and machinery will be undertaken off-site. Only emergency break-down maintenance will be carried out on site.</p> <p>Cement will be mixed within containment areas and if Readymix vehicles are used these will be washed in the same area and the water cycled.</p> <p>All vehicles transporting materials to and from the Site will store materials in a contained load so that the potential for emissions or spillage is reduced during journeys and bridge crossing over watercourses. The measures outlined in the UK's Planning Policy Guidance No. 26: Dealing with Spillages on Highways (a Good Practice Guidance notes proposed of the UK EA/SEPA/EHS) will be adhered to in the event of a spillage or</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>accident during the transportation of materials.</p> <p>All construction personnel will be trained in pollution incident control response. An emergency response plan has been prepared as part of the CEMP for the Proposed Development and information outlining response procedures and contingency plans to contain pollution, as set out in the CEMP, will be made available on site.</p> <p>Access tracks and turning areas will be confined to areas of shallow peat where possible and will be constructed on a geotextile layer. These areas will also be kept as level as possible to avoid fast run-off. This can be achieved by following contours where possible.</p> <p>At the proposed temporary storage area, impermeable berms will be put in place surrounding the spoil storage receptor area . The berms will be established in advance of the deposition of spoil material. The berms will be designed to account for a bulking factor of 10% of the spoil material to be disposed in these areas.</p>		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.2.2 Prevention of Spread of Invasive Alien Species	<ul style="list-style-type: none"> <li>• Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g. Himalayan Balsam, Japanese Knotweed etc.) by thoroughly washing vehicles prior to leaving any site.</li> <li>• 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</li> <li>• All washing will 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.</li> <li>• Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>invasive species and where it is confirmed that none are present.</p> <ul style="list-style-type: none"> <li>All planting and landscaping associated with the Development shall avoid the use on invasive shrubs such as Rhododendron.</li> </ul>		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.1.3.1 Protection of important habitats	<p>A site-specific CEMP will be implemented to ensure that potential adverse impacts to upland watercourses flowing through the site are avoided. Minimum buffer zones will be implemented between areas associated with the construction of Turbine Foundations and streams/eroding gullies, except where stream crossings are required.</p> <p>Within the wind farm site operatives, plant and machinery will be restricted to the footprint of the Proposed Development construction boundary and will not be permitted to encroach upon adjacent lands. This will reduce the potential for damage and disturbance to heath, acid grassland and mosaic habitats.</p> <p>For the overground electrical cable poleset installation construction traffic and machinery movement will be confined to specific roads and access routes. Construction vehicles to be used in areas underlain by thin peat substrate will be of low ground bearing pressure.</p> <p>Trampling and the use of machinery on saturated, quaking surfaces has been avoided by positioning polesets outside of such locations. The locations of poles has been configured to minimise the number occurring within wet grassland and wet heath and the use of brash mats will be used if required.</p>		
MM25	Land Use	Chapter 7: Land & Soils	7.5.1 Construction Phase General	<p>The mitigation measures to be employed during the completion of the project to avoid, reduce and minimise the potential impacts on land, soil and geology are set out below. These measures cover the three main components of the project (wind farm, grid and TDR upgrade). Measures specific to each component are provided below.</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<ol style="list-style-type: none"> <li>1. A CEMP has been prepared for the development. This will be updated and finalised prior to remobilising to site to complete construction. The CEMP will reflect the mitigation measures detailed in this EIAR.</li> <li>2. A Construction Manager will be appointed to oversee construction. The Construction Manager will have overall responsibility to ensure the environmental protection measures and commitments given in the CEMP / EIAR are implemented</li> <li>3. The Developer will appoint an Environmental/Ecological clerk of works (ECoW) for the duration of the construction project. The ECoW will have an ecological and environmental management background with practical experience of wind farm construction projects. The ECoW will monitor the environmental aspects of construction (soil storage, stability, day-to-day excavation works, etc.). The ECoW will have the authority to instruct the contractor to implement additional mitigation measures, if deemed appropriate. The ECoW will maintain a written record of all environmental issues on site, including incidents and monitoring results. This file will be made available to the relevant Authorities upon request. The ECoW will be responsible for notifying the relevant Authorities of any environmental incident.</li> <li>4. In addition to the day-to-day monitoring of excavation works by the ECoW, inspections of the excavation works (rock cuts, soil storage, etc) will be carried out by suitably qualified and experienced geotechnical personnel.</li> <li>5. To minimise soil erosion, earthworks will be suspended during extreme weather conditions. An extreme rainfall event will be classified as an event that corresponds to the Met Éireann Orange – Weather Alert for rainfall. The ECoW will monitor the weather forecast to make preparations ahead of</li> </ol>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>adverse weather conditions.</p> <p>Met Eireann Orange – Weather Alert for Rainfall</p> <p>50 mm – 80 mm in 24 hrs</p> <p>40 mm – 60 mm in 12 hrs or less</p> <p>30 mm – 50 mm in 6 hrs or less</p> <p>6. Concrete, concrete products and aggregates needed for the construction will only be sourced from authorised quarries, at which appropriate environmental controls are implemented per planning conditions.</p> <p>7. Rock imported into site will be sourced from a quarry with similar geochemistry to the bedrock on site, i.e., siliceous rocks - limestone quarries will not be used.</p> <p>8. Surface water management infrastructure will be installed as detailed in Chapter 8, which will avoid / reduce soil erosion.</p> <p>9. Hydrocarbons (oils, diesel and chemicals) will be stored and managed in an appropriate manner to ensure no negative impacts on land, soils, and geology. Specific measures will include:</p> <p>a. Toolbox talks on storage and management of hydrocarbon and refuelling of vehicles will be given to delivery drivers in addition to plant operatives.</p> <p>b. Any storage of oils and diesel will be in steel or plastic tanks of good integrity and bunded to 110% of tank capacity. All fuel and hydraulic fluids will be stored in the site COSHH store located in the site compound.</p> <p>c. Refuelling will be at discrete 'fuel stations', to be designated for the purpose of safe fuel storage and fuel transfer to vehicles.</p> <p>d. Refuelling may be carried out directly from delivery vehicles or from bunded fuel bowsers. Refuelling of mobile plant will not take place within 50 m of any sensitive receptor, such as a drinking water supply well or watercourse.</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>e. The plant used during construction will be regularly inspected for leaks and fitness for purpose.</p> <p>f. Fuels, lubricants and hydraulic fluids for equipment used on the construction site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice.</p> <p>g. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and properly disposed of.</p> <p>h. Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling.</p> <p>i. Appropriate spill control equipment, such as oil soakage pads, will be kept in the site plant to deal with any accidental spillage. Spare spill kits will be kept at the construction site compound. Spill kits will be at hand during refuelling of vehicles.</p> <p>j. Only emergency repairs to machinery will be permitted on site. Machinery requiring maintenance will be taken back to a garage or contractor's yard.</p>		
MM26	Land Use	Chapter 7: Land & Soils	7.5.1 Construction Phase General  Wind Farm Construction	The site was originally designed to avoid the risk of slope instability and other potential impacts on soils and geology as far as possible. Avoidance of risk / impact was achieved by using the existing site roads / tracks. Turbine locations and road alignments were changed to avoid deep peat and steep slopes during the assessment process. The construction of the wind farm was subsequently started in 2017 with most of the larger elements of the wind farm completed in 2018. The mitigation measures specific to completion of the wind farm construction to be employed to avoid, reduce and mitigate potential impacts on soils and geology are:		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<ul style="list-style-type: none"> <li>The civil engineering contractor engaged to construct turbine foundations will provide a method statement for all earthworks which will include the measures detailed in the CEMP. This will be reviewed and approved by a suitably qualified and experienced geotechnical engineer or engineering geologist, and hydrologist or drainage engineer.</li> <li>Turbines are located a sufficient distance from the edge of steep slopes to avoid risk of triggering rock slope failure.</li> <li>Soil / rock will not be stockpiled on areas with slopes &gt;5°. Areas to be used for temporary stockpiles will be approved by the project geotechnical personnel.</li> <li>Dewatering of excavations, if required will be to the drainage channels (via silt traps). Dewatering of excavations down slope of excavations in an uncontrolled overland flow fashion will not be permitted as this may lead to erosion of peat and overburden and silting of streams. The excavations for turbine foundations will be shallow (circa 3m, typically), so dewatering is not anticipated.</li> <li>Underground cabling will be placed with the wind farm road carriageway. The excavated material will be reused to backfill the trench. Any surplus material from trenching will be put to beneficial reused on site. Duct installation and trench restoration will follow closely behind excavation.</li> <li>Where backfill around the ducting is sand, clay plugs will be installed at intervals along the length of the cable trenches to eliminate trenches acting as preferential pathways. Clay plugs will be more frequent on steeper sections of the cabling routes.</li> </ul>		
MM27	Land Use	Chapter 7: Land & Soils	7.5.1 Construction Phase General	The mitigation measures specific to the Grid Connection to be employed to avoid, reduce and mitigate potential impacts on soils and geology are:		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Grid Connection	<ul style="list-style-type: none"> <li>• Pre-construction ground investigation for the trenching along six sections of the route will include:                             <ul style="list-style-type: none"> <li>○ Prior to mobilising to site for ground investigation works, the sequencing and route between locations will be designed to minimise trafficking. Egress routes for machinery will follow ingress routes where feasible.</li> <li>○ A wide-track excavator will be used to minimise compaction of vegetation and rutting of soils along the route where wet soft ground occurs.</li> <li>○ The material excavated from trial pits (and cuttings from boreholes) will be replaced back into the excavation/borehole in reverse sequence. Trial pits/boreholes will be restored immediately after completion once all the necessary data and samples are collected. The surface vegetative layer will be placed right-way-up to restore the works area to original ground condition to avoid soil erosion.</li> <li>○ Absorbent pads/spill kits will be kept in the machines to immediately clean any spills or leaks.</li> </ul> </li> <li>• Mitigation by avoidance was employed for the section of the Grid Connection route and its design. Most of the Grid Connection will be by OHL with installation of poles having minimal impact on soils and geology. The underground sections are mostly (approximately 2,157 m of the 3,180 m of underground) in public roads or verges. The remaining sections (1,023 m) are in areas underlain by shallow peat or farmland underlain by tills. As such, stability issues do not arise.</li> <li>• Trench boxes will be used if necessary to support and stabilise jointing bay excavations to prevent sidewall collapse.</li> <li>• Water ponding in trenches will be removed to reduce porewater pressure, the buildup of which could increase risk of sidewall instability. Appropriate dewatering of</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>trenches, which doesn't result in soil erosion or impact surface water quality, will be undertaken.</p> <ul style="list-style-type: none"> <li>• Prior to mobilising to site for accessing pole locations, the sequencing and route between locations will be designed to minimise trafficking. This will be informed by the experience gained during the construction and removal [UPDATE] of the OHL previously. Existing forestry roads and farm tracks will be used as far as possible to minimise trafficking on lands. Egress routes for machinery will follow ingress routes where feasible.</li> <li>• Road pavement excavated from sections of the grid route within the roadway will be loaded directly into trailers and transported to a suitably authorised waste facility. Road subgrade material, subsoils and rock will be loaded directly into trailers and transported to the wind farm site if uncontaminated and a beneficial use is identified. Otherwise, it will be taken to a suitably authorised waste facility. Soils excavated in the off-road sections will be placed on the high side of the excavation and reused as backfill and restoration of the ground surface. This will include soils excavated for pole installation. Any excavated material to be taken to a suitably authorised waste facility will be done by a contractor with a waste collection permit. The ECoW will document each load taken off site and will confirm its delivery to a suitably authorised waste facility using a docket system. The ECoW will also confirm delivery with periodic audits of the destination facility, including following haulage vehicles.</li> <li>• Where backfill around the ducting is sand, clay plugs will be installed at intervals along the length of the cable trenches to eliminate trenches acting as preferential pathways. Clay plugs will be more frequent on steeper sections of the cabling routes.</li> <li>• Bog mats will be used to support vehicles on soft ground, reducing soil erosion and avoiding the formation of rutted areas, in which surface water ponding can</li> </ul>		

Commented [EC1]: As above

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				occur.		
	Site drainage	Chapter 8: Hydrology and Hydrogeology	8.5.1 Construction Phase  General	<ol style="list-style-type: none"> <li>1. A CEMP has been prepared for the development. This will be updated and finalised prior to remobilising to site to complete construction. The CEMP will reflect the mitigation measures detailed in this EIAR.</li> <li>2. A Construction Manager will be appointed to oversee construction. The Construction Manager will have overall responsibility to ensure the environmental protection measures and commitments given in the CEMP / EIAR are implemented</li> <li>3. The developer will appoint an Environmental / Ecological Clerk of Works (ECoW) for the duration of the construction project. The ECoW will have an ecological and environmental management background with practical experience of wind farm construction projects. The ECoW will monitor the environmental aspects of construction (water quality, performance of surface water management infrastructure, etc.). The ECoW will have the authority to instruct the contractor to implement additional mitigation measures, if deemed appropriate. The ECoW will maintain a written record of all environmental issues on site, including incidents, corrective actions and monitoring results. This file will be made available to the relevant Authorities upon request. The ECoW will be responsible for notifying the relevant Authorities of any environmental incident.</li> <li>4. To minimise soil erosion, earthworks will be suspended during extreme weather conditions. An extreme rainfall event will be classified as an event that corresponds to the Met Éireann Orange – Weather Alert for rainfall. The ECoW will monitor the weather forecast to make preparations ahead of adverse weather conditions. Met Eireann Orange – Weather Alert for Rainfall 50 mm – 80 mm in 24 hrs 40 mm – 60 mm in 12 hrs or less 30 mm – 50 mm in 6 hrs or less</li> </ol>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>5. Following mobilisation to site, surface water management infrastructure will be the first works carried out. Additional controls will be installed as needed as construction progresses and/or as identified during site inspections of surface water management infrastructure. Measures to be employed for all elements of the project include:</p> <p>a. Clean surface water runoff will be diverted around earthworks area to minimise the volume of silted water generated. To achieve this, shallow cut-off drains / barriers will be installed.</p> <p>b. Check dams will be installed along the alignment of drains to slow flows and remove silt. These will be constructed using clean stone and geotextile spanning across the drainage channel. Alternatively, straw bales and / or sandbags will be used, which may be more efficient for works along the Grid Connection.</p> <p>c. The public roads serving the project site will be kept clean of mud and debris so that silt is not washed to downstream watercourses. If mud or debris is tracked onto the public roads from vehicles leaving the work areas, the road will be swept.</p> <p>6. The release of cement to water courses will be prohibited. Concrete pours will occur in contained areas using shuttering. Rinsing down of concrete trucks will be done at a dedicated location on site – adjacent to the temporary construction compound, or at a suitable alternative location, a minimum distance of 50 m from any watercourse. The rinse down area will consist of a settlement pond (3m wide, 4m long and 1.2m deep – minimum dimensions), lined with terram and stone filter. This will have the capacity to hold enough water for the rinse down of 70 trucks using 150 litres per truck. Water will be able to percolate through the stone filter and terram while removing cement fines. This settlement pond will not receive surface water runoff so capacity to receive rinse down water is always available. Discharge from the rinse down pond will be permitted once the pH neutralises, as confirmed by the ECoW. Signage</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>will be erected at each concrete pour location directing drivers to the rinse down area. This rinse down area will be removed at the end of the construction phase.</p> <p>7. Hydrocarbons (oils, diesel and chemicals) will be stored and managed in an appropriate manner to ensure no negative impacts on land, soils, and geology. Specific measures will include:</p> <ul style="list-style-type: none"> <li>a. Toolbox talks on storage and management of hydrocarbon and refuelling of vehicles will be given to delivery drivers in addition to plant operatives.</li> <li>b. Any storage of oils and diesel will be in steel or plastic tanks of good integrity and bunded to 110% of tank capacity. All fuel and hydraulic fluids will be stored in the site COSHH store located in the site compound.</li> <li>c. Refuelling will be at discrete 'fuel stations', to be designated for the purpose of safe fuel storage and fuel transfer to vehicles.</li> <li>d. Refuelling may be carried out directly from delivery vehicles or from bunded fuel bowsers. Refuelling of mobile plant will not take place within 50 m of any sensitive receptor, such as a drinking water supply well or watercourse.</li> <li>e. The plant used during construction will be regularly inspected for leaks and fitness for purpose.</li> <li>f. Fuels, lubricants and hydraulic fluids for equipment used on the construction site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice.</li> <li>g. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and properly disposed of.</li> <li>h. Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling.</li> <li>i. Appropriate spill control equipment, such as oil soakage pads, will be kept in the site plant to deal with any</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>accidental spillage. Spare spill kits will be kept at the construction site compound. Spill kits will be at hand during refuelling of vehicles.</p> <p>j. Only emergency repairs to machinery will be permitted on site. Machinery requiring maintenance will be taken back to a garage or contractor's yard.</p>		
	Site drainage	Chapter 8: Hydrology and Hydrogeology	8.5.1 Construction Phase Wind Farm Construction	<ol style="list-style-type: none"> <li>Existing access roads and hardstands will be used with minor modifications to facilitate the larger turbines.</li> <li>The proposed turbine locations are located at permitted turbine locations at which foundations have been partially excavated.</li> <li>These turbines have been positioned at a minimum distance of 50 m from the streams draining the site.</li> <li>Enlargement of hardstand areas and stripping of vegetation will be kept to a minimum. This will reduce areas of soil exposed to erosion.</li> <li>Restoration of redundant areas will be carried out as soon as practical in the construction programme.</li> <li>Stockpiled soils will be kept a minimum distance of 50 m from any watercourse. Silt fences will be placed downgradient of stockpiles to treat runoff.</li> <li>If required, dewatering of foundations will be to temporary silt traps / settlement ponds. Flow from the silt traps will be diffuse. The water would travel overland, and any silt would be settled before reaching existing drains. As noted in Chapter 7, dewatering of foundation excavations is not envisaged.</li> <li>The roads and hardstand areas will be constructed with aggregate – there will not be a hard-paved surface. This will reduce runoff volumes in practice.</li> </ol>		
	Site drainage	Chapter 8: Hydrology and Hydrogeology	8.5.1 Construction Phase Grid Connection	<ol style="list-style-type: none"> <li>A minimum setback of 25 m will be used for the installation of poles in the vicinity of EPA-designated streams.</li> <li>Surface water management infrastructure required along each section of the Grid Connection will be installed prior to commencement of works in that area.</li> </ol>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>3. Existing farm and forestry tracks will be used as far as possible to access pole locations. Wide-track machines and / or bog mats will be used on peat where ground conditions are soft. This will avoid rutting.</p> <p>4. Works on stream crossings will be carried out in dry weather as far as practical when low flows occur in the streams / drains. In-stream works are not envisaged, but if needed, will be avoided between 01 October and 30 June as per IFI guidelines. The IFI will be consulted for crossings wider than 600 mm. Stream crossing design will have regard to the IFI's guidance documents for road construction<sup>20</sup>.</p> <p>5. The trenching for the Grid Connection will be done in short sections minimising the amount of disturbed ground and soil exposed to runoff. Each section of trench opened will be completed (ducting installed and backfilled) by the end of each working day.</p> <p>6. The section of trenching to be completed each day will be inspected and surface water protection measures put in place prior to excavation works commencing. This will include placement of sandbags to protect existing roadside drains, placement of sandbags to direct runoff from the works area, erecting silt fencing where appropriate, locating culverts to be crossed that day, etc. Any roadside drainage affected by the trenching will be reinstated on an ongoing basis.</p> <p>7. Underground sections passing through wetland habitats will be restored with the turves removed prior to excavating the trench to ensure that there is no loss of wetland habitat.</p> <p>8. It is noted that other areas of wetland habitat along the Grid Connection route have been avoided by the placement of underground sections in less sensitive habitats, including at Ballylickey substation (wet willow woodland habitat avoided), between pole P18 and the public road (wet grassland habitat avoided), and between poles P101 and P102 (wet grassland habitat avoided).</p> <p>9. Surplus excavated inert material will be loaded directly into</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>trucks and taken for reuse on site (this material will be clean aggregate). Tarmac from the public road will be taken off site to an authorised / licenced facility. Where the material encountered is suitable for reuse as backfill, it will be placed on the upgradient side of the trench so that any rainfall runoff (carrying silt) will be into the trench.</p> <p>10. Concrete truck rinse down will not be carried out along the grid route. This will be done at the batching plant or at a dedicated location on site for concrete chute rinse down.</p> <p>11. In the unlikely event that trenches need to be dewatered, pumped water will not be discharged directly to the environment. Due to the extremely high value of the receiving surface water environment, water will not be pumped from trenches to the roadside drains. The water will be treated prior to release, and this will be achieved using either filter / sediment bags, Silt-buster or vacuum tanker. The filter / sediment bag provides a robust, mobile and versatile solution for treating silty water. If a vacuum tanker is used, the water will be taken to the wind farm site and discharged into an on-site settlement pond. The water will be released into a drain leading to the pond at a rate that doesn't exceed the design parameters of the pond, to ensure the water is sufficiently treated to remove silt.</p>		
	Site drainage	Chapter 8: Hydrology and Hydrogeology	8.5.1 Construction Phase  Surface Water Management Infrastructure	<p>1. To reduce the volume of water to be treated during construction and to reduce the erosion potential of exposed peat and soils, clean surface water runoff will be diverted around earthworks areas. This will be done with the use of diversion barriers / channels. Diversion channels are shallow interceptor drains, while barriers can be plastic (HDPE or LDPE material approximately 0.3m high that is inserted vertically (50 to 100mm) into the peat/ground surface to divert overland flows), or sandbags.</p> <p>2. Silt fences will be erected on the downslope side of any earthworks areas to intercept any overland flows that could potentially be carrying silt / fines. These are constructed with geotextile embedded in the peat and supported with</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>wooden pegs</p> <p>3. Check dams will be installed in roadside drains (particularly in the wind farm) at frequent intervals. These will be constructed using geotextile supported by two wooden pegs, sandwiched by clean washed filter gravel</p> <p>4. Where dewatering of trenches is required for the underground cabling, filter / sediment bags (or similar) will be used to treat water prior to discharge to the environment. Filter / sediment bags will be placed in a vegetated area, so treated water flows overland, providing further treatment, to watercourses or drains.</p> <p>5. Use of settlement ponds at the turbine locations, as appropriate. Water pumped from the foundation excavation or runoff from the works area will, where necessary, be directed to a settlement pond to remove silt and fines. The flow from the settlement ponds will be diffuse overland flow.</p>		
	Site drainage	Chapter 8: Hydrology and Hydrogeology	8.5.2 Site Specific Water and Sediment Management  Turbine T1	<p>The existing culvert will be upgraded so that runoff doesn't flow across the road surface, with trafficking resulting in silt-laden runoff. The clean water will be piped under the road and into the existing swale / overland flow arrangement.</p> <p>A cut off trench will be installed along the south-eastern and southern perimeter of the crane area. Water will be directed to a small settlement pond with diffuse discharge via a level spreader to the blanket bog at the southwest corner of the crane area. This will be used to treat water from the excavation if dewatering is required.</p> <p>A silt fence will be erected to the west and downgradient of the excavation and soil stockpiling associated with the foundation and crane area enlargement works.</p>		
	Site drainage	Chapter 8: Hydrology and Hydrogeology	8.5.2 Site Specific Water and Sediment Management	<p>A silt fence will be erected to the east and downgradient of the excavation and soil stockpiling associated with the foundation enlargement works.</p> <p>A check dam will be installed at the northeast corner of the</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Turbine T2	hardstand where surface water runoff exits this location. A settlement pond will be located downgradient from the turbine location. It will discharge via a level spreader to a vegetative buffer with sheet flow. The sheet flow will travel >50m before reaching any watercourse.		
	Site drainage	Chapter 8: Hydrology and Hydrogeology	8.5.2 Site Specific Water and Sediment Management  Turbine T3	A cut off trench along the western perimeter of the hardstand. This will send clean runoff water to the south onto the blanket bog. A settlement pond on the east side of the turbine location to collect flows from the turbine excavation location. It will discharge via a level spreader to vegetative buffer with sheet flow, with flows directed to the roadside drain on the northern side of the access road.		
MM28	Health and Safety	Chapter 9: Air and Climate	9.2.9.1 Construction Phase Mitigation	<ul style="list-style-type: none"> <li>The main potential impact during the construction phase of the Project will be from dust nuisance at sensitive receptors close to the Site. Good practice site procedures will be followed by the appointed contractor to prevent dirt and dust being transported onto the local road network. Good practice site control measures will comprise the following:</li> <li>Site Access Roads will be upgraded and built in the initial construction phases. These roads will be finished with graded aggregate which compacts, preventing dust.</li> <li>Approach roads and construction areas will be cleaned on a regular basis to prevent build-up of mud and prevent it from migrating around the Site and onto the public road network.</li> <li>Wheel wash facilities will be provided near the Site entrance to prevent mud/dirt being transferred from the site to the public road network.</li> <li>Public roads along the construction haul route will be inspected and cleaned daily. In the unlikely event that dirt/mud is identified on public roads, the roads will be cleaned. The wheel wash facility will be investigated, and the problem fixed to prevent this from happening again.</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<ul style="list-style-type: none"> <li>• During periods of dry and windy weather, there is potential for dust to become friable and cause nuisance to nearby residences and users of the local road network. This requires wetting material and ensuring water is supplied at the correct levels for the duration of the work activity. The weather will be monitored so that the need for damping down activities can be predicted. Water bowsers will be available to spray work areas (wind turbine area and grid connection route) and haul roads to suppress dust migration from the Site.</li> <li>• Vehicles delivering materials to the site will be covered appropriately when transporting materials that could result in dust, e.g., crushed rock or sand.</li> <li>• Exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the Contractor by ensuring that emissions from vehicles are minimised through regular servicing of machinery.</li> <li>• All machinery when not in use will be turned off.</li> <li>• Ready-mix concrete will be delivered to the Site and no batching of concrete will take place on the Site. Only washing out of chutes will take place on site and this will be undertaken at a designated concrete washout facility at the contractor's compound. The concrete wash water will be disposed of at a licensed facility as outlined in the Construction Environment Management Plan (CEMP) – Management Plan 5 Waste Management Plan (Appendix 2.1)</li> <li>• Speed restrictions of 15 km/h on access roads will be implemented to reduce the likelihood of dust becoming airborne. Consideration will be given to how on-site speed limits are policed by the Contractor and referred to in the</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>toolbox talks.</p> <ul style="list-style-type: none"> <li>Stockpiling of materials will be carried out in such a way as to minimise their exposure to wind. Stockpiles will be covered with geotextiles layering and damping down will be carried out when weather conditions require it.</li> <li>Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable.</li> <li>An independent, qualified Geotechnical Engineer will be contracted for the detailed design stage of the project and geotechnical services and will be retained throughout the construction phase, including monitoring and supervision of construction activities on a regular basis. The methodology statement will be signed off by a suitably qualified Geotechnical Engineer.</li> <li>A complaints procedure will be implemented on site where complaints will be reported, logged and appropriate action taken.</li> </ul>		
	Noise	Chapter 10: Noise and Vibration	9.13.1 Construction Noise Mitigation	General guidance for controlling construction noise through the use of good practice given in BS 5228 will be followed. During construction of the Development, operations shall be limited to working times specified, except where delivery of large transport loads such as turbines where it may be necessary to transport outside of daytime hours.		
MM29	Traffic	Chapter 11: Traffic and Transport	11.6.1 Construction Phase	<p>The potential effects of the construction of the Project have been identified as being negligible to minor, but temporary in nature. The following mitigation measures are proposed:</p> <ul style="list-style-type: none"> <li>A Traffic Management Plan (TMP) has been developed (see Management Plan 7 attached to the CEMP) and Appendix 11.1. Prior to construction and once the Contractor's have confirmed their suppliers, the TMP will be updated in consultation with Cork County Council, and</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>An Garda Síochána as necessary to take account of any conditions attached to a grant of permission. All drivers will be made aware of the location and presence of sensitive receptors at an induction session prior to construction activities taking place and will be made aware of the speed limits of the various roads on the route which are contained in the TMP and on the traffic arrangements for entering and exiting the site. This is to ensure compliance with speed limits, and traffic management arrangements.</p> <ul style="list-style-type: none"> <li>• All significant traffic likely to be generated by Derreenacrinnig Wind Farm will be during the construction of the Project and will be temporary in nature. It is envisaged that the construction period for the wind farm will span a 21-month period with the underground cable being installed over a concurrent 12-month period. The construction-phase Traffic Management Plan will mitigate these impacts. A number of mitigation measures are embedded within the design: <ul style="list-style-type: none"> <li>o The design is such as to minimise the extent of the new build requirement by using existing internal tracks, thereby minimising materials requirements.</li> <li>o Designing the cable for installation in pre-laid ducts, rather than directly installing the cable in the ground. The latter would require the entire trench from joint bay to joint bay to be fully open for cable laying.</li> </ul> </li> <li>• There will be special transporter vehicles with rear wheel steering used in delivery of wind turbine components to ensure safe transportation and manoeuvrability on the roads. Extendable transporter vehicles will be retracted on return journeys.</li> <li>• Prior to the delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>consult with An Garda Síochána and Cork County Council Roads Departments to discuss the requirement for a Garda escort.</p> <ul style="list-style-type: none"> <li>• The Developer will confirm the intended timescale for abnormal deliveries and every effort will be made to avoid peak times such as school drop off times, church services, sporting events, peak traffic times where it is considered this may lead to unnecessary disruption.</li> <li>• Abnormal loads are likely to travel at night and outside the normal construction times as may be required by An Garda Síochána. Due to the relatively modest distance between Ringaskiddy Port and the Site of c.80 km, the journey is achievable within a 2-3 hour timeframe. Accordingly, locations for resting will not be required. Local residents along the affected route will be notified of the timescale for abnormal load deliveries.</li> <li>• The Developer will lodge a bond with Cork County Council prior to commencement of construction in the amount to be agreed with the respective Council for the possible repair/upkeep of the local roads. At the end of the construction period, any further defects will be remedied to the satisfaction of Cork County Council and Transport Infrastructure Ireland.</li> <li>• Wheel cleaning equipment will be used at the exit from the Site to prevent any mud and/or stones being transferred from Site to the public road network. All drivers will be required to see that their vehicle is free from dirt and stones prior to departure from the construction Site.</li> <li>• The Site entry point will also be appropriately signed. Access to the wind farm construction Site will be controlled by on Site personnel and all visitors will be asked to sign in and out of the Site by security / Site personnel on entering</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>and exiting the Site. All Site visitors will undergo a Site induction covering Health and Safety issues at the Contractor's temporary compound and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite.</p> <ul style="list-style-type: none"> <li>• Any dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices to minimise the creation of dust. Where conditions exist for dust to become friable, techniques such as damping down of the potentially affected areas will be employed.</li> <li>• To reduce dust emissions, vehicle containers/loads of crushed stone will be covered during both entrance and egress to the Site.</li> <li>• A survey of the turbine component haul route will be undertaken prior to commencement to identify if any new overhead lines or broadband lines will need to be raised along the route to allow abnormal loads such as tower sections and nacelles to be delivered.</li> <li>• During the construction phase, clear construction warning signs will be placed on the local roads as necessary, which will advise road users of the presence of a construction Site and of the likelihood of vehicles entering and exiting the Site or road construction areas. This will help improve road safety.</li> <li>• Works on public roads on the turbine delivery haul road and grid connection will be strictly in accordance with "Guidance for the Control and Management of Traffic at Road Works – 2nd Edition 2010" as well as "Traffic Signs Manual 2010-Chapter 8- Temporary Traffic Measures and Signs at Roadworks".</li> <li>• All vehicles using or while in operation at the wind farm site</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>shall either have roof mounted flashing beacons or will use their hazard lights.</p> <ul style="list-style-type: none"> <li>A speed limit of 25 km/h shall apply to all vehicles within the wind farm site.</li> </ul>		
MM30	Land Use	Chapter 12: Landscape and Visual	12.4 Mitigation Measures	<p>All construction activities will follow best practice methods to reduce environmental impacts upon the environment, as outlined in the Construction and Environmental Management Plan (CEMP) which will manage the environmental commitments of the Project through the construction phase, and will be continued through to the commissioning, operation and final decommissioning phases. It is noted that an Environmental Manager Ecological Clerk of Works (ECoW) with appropriate experience will be appointed for the duration of the construction phase so that the CEMP is effectively implemented.</p> <p>The construction methodology has considered the minimisation of landscape disturbance. Temporary works required in relation to the turbine delivery route and 20 kV overhead line (OHL) along the Grid Connection route will require the installation of load bearing surfaces, cable trenches (in-road, and off-road), and the localised disturbance of grass and vegetation.</p> <p>All areas damaged during construction will be reinstated to their original condition, with the exception of the long-term infrastructure required for the proposed wind farm. Replacement of trees and hedgerows will be undertaken in accordance with approved landscaping plans, with landscape works undertaken in accordance with best practice. The following standards are widely adopted as representing best practice in landscape operations:</p> <ul style="list-style-type: none"> <li>BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces). BS 5837:2012 – Trees</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>in Relation to design, demolition and construction.</p> <ul style="list-style-type: none"> <li>• BS 8545 Trees: from nursery to independence in the landscape - Recommendations.</li> <li>• BS 3936 - Part 1: Nursery stock specification for trees and shrubs.</li> </ul>		
MM31	Waste	Chapter 13: Material Assets and Other Issues	13.10.7 Mitigation Measures - Waste	<p><b>Concrete</b></p> <p>During the construction phase:</p> <ul style="list-style-type: none"> <li>• Precast concrete will be used wherever possible i.e., formed offsite. Elements of the Development where precast concrete will be used have been identified and are indicated in the CEMP. Elements of the Development where the use of precast concrete will be used include structural elements of watercourse crossings (single span / closed culverts) as well as Cable Joint Bays. Elements of the Development where the use of precast concrete is not possible include turbine foundations and joint bay pit excavations. Where the use of precast concrete is not possible the following mitigation measures will apply.</li> <li>• The acquisition, transport and use of any cement or concrete on site will be planned fully in advance and supervised at all times.</li> <li>• Vehicles transporting such material will be relatively clean upon arrival on site, that is; vehicles will be washed/rinsed removing cementitious material leaving the source location of the material. There will be no excess cementitious material on vehicles which could be deposited on trackways or anywhere else on site. To this end, vehicles will undergo a visual inspection prior to being permitted to drive onto the proposed site or progress beyond the contractor's yard. Vehicles will also be in good working order.</li> <li>• Where shuttering is required to be installed in order to contain the concrete during pouring, it will be installed to a</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>high standard with minimal potential for leaks. Additional measures will be taken to ensure minimal potential of leaking. These measures are the use of plastic sheeting and the use sealing products at joints.</p> <ul style="list-style-type: none"> <li>Concrete will be poured during meteorological dry periods/seasons. This will reduce the potential for surface water run off being significantly affected by freshly poured concrete. This works will be limited to dry meteorological conditions i.e. avoid foreseen sustained rainfall (any foreseen rainfall event longer than 4-hour duration) and/or any foreseen intense rainfall event (&gt;3mm/hour, yellow on Met Éireann rain forecast maps), and do not proceed during any yellow (or worse) rainfall warning issued by Met Éireann. This also will avoid such conditions while concrete is curing, in so far as practical.</li> <li>Ground crew will have a spill kit readily available, and any spillages or deposits will be cleaned/removed as soon as possible and disposed of appropriately.</li> <li>Pouring of concrete into standing water within excavations will be avoided. Excavations will be prepared before pouring of concrete by pumping standing water out of excavations to the buffered surface water discharge systems in place.</li> <li>Temporary storage of cement bound sand (if required) will be on hardstand areas only where there is no direct drainage to surface waters and where the area has been bunded e.g., using sand-bags and geotextile sheeting or silt fencing to contain any solids in run-off.</li> <li>No surplus concrete will be stored or deposited anywhere on site. Such material will be returned to the source location or disposed of off-site appropriately.</li> </ul>		
MM32	Waste	Chapter 13: Material Assets	13.10.7 Mitigation Measures -	<p><b>Chemicals, Fuels and Oils</b></p> <p>All storage containers of over 200 litres will have a secondary</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
		and Other Issues	Waste	<p>containment of 110% capacity to ensure that any leaking oil is contained and does not enter the aquatic environment.</p> <p>A Chemical and Waste Inventory will be kept. This inventory will include:</p> <ul style="list-style-type: none"> <li>List of all substances stored on-site (volume and description)</li> <li>Procedures and location details for storage of all materials listed</li> <li>Waste disposal records, including copies of all Waste Transfer Notes detailing disposal routes and waste carriers used</li> <li>Any tap or valve permanently fixed to the mobile unit through which oil can be discharged to the open or when delivered through a flexible pipe which is fitted permanently to the mobile unit, will be fitted with a lock and locked shut when not in use</li> <li>Sight gauges will be fitted with a valve or tap, which will be shut when not in use Sight gauge tubes, if used will be well supported and fitted with a valve</li> <li>Mobile units must have secondary containment when in use/out on site</li> </ul> <p>Under the EU Directive 2008/68/EC/55/EC all such dangerous substances will be conveyed in a container that complies with the ADR . As such the manufacturer of each bowser will provide certification to contractors that the following:</p> <ul style="list-style-type: none"> <li>A leak-proof test certificate</li> <li>A copy of the IBC approval certificate</li> <li>An identification plate attached to the container</li> </ul> <p>Where mobile bowsers are used on site, guidelines will be followed so that:</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<ul style="list-style-type: none"> <li>Any flexible pipe, tap or valve will be fitted with a lock where it leaves the container and be locked shut when not in use;</li> <li>Flexible delivery pipes will be fitted with manually operated pumps or a valve at the delivery end that closes automatically when not in use. Where possible, a nozzle designed to dispense oil will be used;</li> <li>The pump or valve will have a lock and be locked shut when not in use.</li> </ul> <p>For loads in excess of 1000 litres (220 gallons), the bowser vehicle driver will have undergone training and hold a special license.</p>		
MM33	Waste	Chapter 13: Material Assets and Other Issues	13.10.7 Mitigation Measures - Waste	<p><b>Refuelling</b></p> <p>During construction/decommissioning, where possible all refuelling on site will be within the temporary compound within the re-fuelling area. Only essential refuelling (e.g., cranes) will be carried out, outside of this area, but not within 65 m of any watercourse. In such cases a non-permeable High-density Polyethylene (HDPE) membrane will be provided beneath connection points to catch any residual oil during filling and disconnection. This membrane will be inspected and if there is any sign of oil contamination, it will be removed from site by a specialist licensed waste contractor. All vehicles will be well maintained and free from oil or hydraulic fuel leaks.</p> <p>An Emergency Response Plan (ERP) (Management Plan No. 1) has been prepared and is contained in the CEMP (Appendix 2.1) and contains measures for dealing with an accidental spillage of chemicals, fuels, or other lubricants shall be prepared prior to works commencing and communicated to all operatives. The ERP will be further developed by the appointed contractor.</p>		
MM34	Waste	Chapter 13:	13.10.7	<b>Packaging</b>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
		Material Assets and Other Issues	Mitigation Measures - Waste	In accordance with the waste hierarchy, packaging will be returned to the originator ahead of re-use or recycling. Where this is not possible, waste will be separated as appropriate and safely stored on site appropriately in anticipation of recycling.		
MM35	Waste	Chapter 13: Material Assets and Other Issues	13.10.7 Mitigation Measures - Waste	<b>Metals</b> Waste metals from concrete reinforcing during construction and removal of metals during decommissioning etc. will have commercial value and will be re-used or recycled with the appropriate licensed waste contractor.		
MM36	Cultural Heritage	Chapter 14: Cultural Heritage	14.5.1 Construction Phase	Archaeological monitoring of ground works within previously undisturbed areas along the grid route connection and turbine delivery route work areas will be carried out during the construction phase. In the event that any archaeological features are identified during monitoring they will be recorded and then securely cordoned off while the National Monuments Service are consulted to determine further appropriate mitigation measures, which may include preservation in situ (by avoidance) or preservation by record (by archaeological excavation).		
MM37	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	3. Incident & Hazard Reporting	A blank Environmental Incident Report Form for reporting environmental incidents or hazards for the site is attached in Section 6.9. A blank Site Environmental Audit Form is attached in Section 6.10 to record audit results. The details recorded in these forms will be regularly reviewed and will form part of the response plan procedural review.		
MM38	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency	4. Waste Disposal After Environmental Incidences	If spill kits etc. are used in the event of a pollution incident, operatives need to carefully dispose of used equipment by carefully placing them in a sealed bag or container. They should then be removed from site by a licensed waste contractor as per the Waste Management Plan. Contaminated soil also needs to		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
		Response Plan		be disposed of as hazardous waste by a permit holder. This is also further detailed in the Waste Management Plan of this CEMP.		
MM39	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	5. Site Induction And Toolbox Talks	It is imperative that all contractors, sub-contractors and staff on site are fully familiar with this emergency response plan and it will be detailed regularly in Toolbox Talks. During these talks, they will also receive regular reminders of the importance of the local environment and of the necessary environmental controls that are in place on site.		
MM40	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	6.1.1 Spillages/Leaks/Contai nment Failure	<ol style="list-style-type: none"> <li>1. Identify the source of the spillage and cut off source, if possible, e.g., by closing valve, righting container etc.</li> <li>2. Work on site will cease and all operatives will assist in placing spill mats on the affected area. Site Manager/ Main Contact must be notified.</li> <li>3. Identify where spillage may go. If spillage is near a watercourse (drainage/ditch/ river) divert spillage away from the watercourse through the use of absorbent materials from the spill kit.</li> <li>4. Notify all parties in the order listed in Sections 6.4 and 6.5. Notification should be made by one member of staff whilst remainder of staff present deal with the spill/incident.</li> <li>5. Dig up all contaminated ground as soon as possible/immediately. All contaminated materials should be placed in sealed polythene bags/containers and disposed of appropriately by an appropriate licensed waste contractor.</li> <li>6. Complete required record of incident and response into reporting system</li> </ol>		
MM41	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency	6.1.2 Contamination of Watercourse  Suspended Solids	<ol style="list-style-type: none"> <li>7. If watercourse is at risk of contamination from suspended solids from a slope failure the Site Manager/ Main Contact must be notified and the following actions must be implemented: <ol style="list-style-type: none"> <li>a) Place straw bales wrapped in geotextile or sand/gravel bags</li> </ol> </li> </ol>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
		Response Plan		<p>with geotextile curtains immediately in the watercourse(s) at regular intervals downstream from the incident. These sand/straw bags and bales will be removed and replaced with stone filters once water quality is stabilised.</p> <p>b) Stone check dams faced with a layer of geotextile will be constructed at critical points along the watercourse.</p> <p>c) Small sumps will be formed intermittently between the check dams to reduce the amount of suspended solids contained in the water.</p>		
MM42	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	6.1.2 Contamination of Watercourse  Oil Spill in Watercourse	<p>8. If spill has reached the watercourse the Site Manager/ Main Contact must be notified and the following actions must be implemented:</p> <p>a) Place flexible absorbent booms across watercourse, ahead of the contamination within a quiet stretch of water.</p> <p>b) Place absorbent cushions in the water immediately upstream of these booms as well as downstream of the booms.</p> <p>c) Remove and replace saturated absorbent material as required. Please ensure removed cushions are placed in sealed polythene bags/containers and disposed of by the principal waste contractor.</p>		
MM43	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	6.1.3 Land Slide	<p>9. Please see EIAR Figure 8.6 a and b Mapped Landslide Susceptibility for further detail of flow routes and storage locations for excavated materials to be re-used for reinstatement works. Where the unlikely event that the onset or actual detachment of peat (e.g., cracking, surface rippling) occurs:</p> <p>a) All activities in the area will cease and all available resources will be diverted to assist in the required mitigation procedures.</p> <p>b) The Site Manager/ Main Contact must be notified</p> <p>c) All relevant authorities will be notified if a peat slide event occurs on site and this Emergency Response Plan (ERP) followed.</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>d) Where peat slides do not represent a risk to a watercourse and have stopped moving, they will be stabilised using rock infill, if required. The failed area and surrounding area will then be assessed by the engineering staff and a stabilisation procedure implemented. The area will be monitored, as appropriate, until movements have stopped.</p> <p>e) Where possible, check barrages (comprises the placement of rock fill across a watercourse which allows the passage of water but will prevent peat debris from passing through) will be constructed on land using rock fill to prevent a peat slide reaching any watercourse.</p> <p>f) If peat reaches a watercourse a check barrage will need to be constructed across the watercourse preventing the peat from moving downstream. The check barrage will allow water to flow through it, but the peat will be trapped.</p> <p>g) The size of the check barrage will depend on the scale of the peat slide to be contained and the geometry of the watercourse at the location of the barrage.</p> <p>h) All measures to contain the peat slide must be approved by the Cork County Council or Inland Fisheries Ireland (IFI).</p>		
MM44	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	6.2 Communication Plan	A Communication Plan (to be followed in the event of an incident) will be provided by the Contactor, in liaison with relevant stakeholders and will be included in the updated ERP prior to commencement of site development works.		
<b>Operational Phase</b>						
	Health and Safety	Chapter 5: Population and Human Health	5.5.7.2 Operation	For operation and maintenance staff working at the proposed wind farm, appropriate site safety measures will be utilised during the operational phase by all permitted employees. All personnel undertaking works in or around the turbines will be fully trained and will use appropriate Personal Protective		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>Equipment (PPE) to prevent injury.</p> <p>Equipment within high voltage substations presents a potential hazard to health and safety. The proposed substation will be enclosed by palisade fencing and equipped with intruder and fire alarms in line with ESB and EirGrid standards.</p> <p>All electrical elements of the proposed development are designed to ensure compliance with electro-magnetic fields (EMF) standards for human safety.</p> <p>All on-site electrical connections are carried by underground cable and will be marked out above ground where they extend beyond the track or hardstanding surface. Details of cables installed in the public road will be available from ESBN.</p> <p>Lightning conductors will be installed on each turbine as all structures standing tall in the sky require this protection. Turbines specifically require this to prevent power surges to electrical components. Turbines will be fitted with ice detection systems which will stop the turbine from rotating if ice is forming on a turbine blade. This aims to prevent ice throw.</p> <p>Rigorous statutory and engineering safety checks imposed on the turbines during design, construction, commissioning and operation will ensure the risk posed to humans is negligible. 24-hour remote monitoring and fault notifications are included as standard in the Turbine Operations and Maintenance Contracts. A Supervisory Control and Data Acquisition ("SCADA") system will monitor the Development's performance. If a fault occurs, then a message is automatically sent to the operations personnel preventing emergency situations.</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>In addition to scheduled maintenance, the maintenance contracts will allow for call out of local engineers to resolve any issues as soon as they are picked up on the remote monitoring system.</p> <p>Access to the turbines inner structure will be locked at all times and only accessed by licenced employees for maintenance.</p> <p>In line with the Health Service Executive's Emergency Planning recommendations, any incident which may occur at the site which requires emergency services, incident information will be provided in the 'ETHANE' format:</p> <ul style="list-style-type: none"> <li>• Exact location</li> <li>• Type of incident</li> <li>• Hazards Access and egress</li> <li>• Number of casualties (if any) and condition</li> <li>• Emergency services present and required</li> </ul> <p>The design of the Development has considered the susceptibility to natural disasters. The proposed site drainage will mitigate against any potential flooding risk due to run off with the use of Sustainable Drainage Systems (SuDS). Construction drainage will be left in-situ for the lifespan of the project through to decommissioning.</p> <p>The Contractor's fire plans are reviewed and updated on a regular basis. A nominated competent person shall carry out checks and routine maintenance work to ensure the reliability and safe operation of firefighting equipment and installed systems such as fire alarms and emergency lighting. A record of the work carried out on such equipment and systems will be kept on site at all times.</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>Detection systems and turbine control software will be installed on all turbines to (i.e. permit remote shutdown as necessary) prevent shadow flicker on nearby receptors.</p> <p>The Wind Farm system shall include a system over-ride switch that can be operated at any time, to facilitate manual shutdown in case of an emergency.</p> <p>To ensure the proposed wind farm is compliant with noise limits, some of the turbines may need to be operated in noise reduced modes of operation to protect residential amenity. The wind farm system shall include a kill switch that can be operated at any time with an overriding manual shutdown system in case of an emergency .</p>		
	Flora and Fauna	Chapter 6: Biodiversity	6.7.2.1.1 Protection of Watercourses	<ul style="list-style-type: none"> <li>• Re-seeding / re-vegetation of all areas of bare ground or the placement of Geo-jute (or similar) matting will take place as practically possible at the start of the operational phase to prevent run-off.</li> <li>• Silt traps erected during the construction phase within roadside and artificial drainage will be replaced with stone check dams for the lifetime of the project. These stone check dams will only be placed within artificial drainage systems such as roadside drains and not natural streams or ditches.</li> <li>• A full review of construction stage temporary drainage will be undertaken by the Developer (in conjunction with the Project Hydrologist/ Site Engineer and the Project Ecologist) following the completion of construction, and drainage removed or appropriately blocked where this will not interfere with infrastructure.</li> <li>• The Temporary Construction Compound / office must house all chemicals within a secure bunded COSSH store for the operational phase of the project.</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
	Flora and Fauna	Chapter 6: Biodiversity	6.7.2.1.2 Protection of Bats	Turbines will operate in a manner which restricts the rotation of the blades as far as is practicably possible below the manufacturer's specified cut-in speed (SNH 2021). This is usually achieved by feathering the blades during low wind speeds; the angle of the blades is rotated to present the slimmest profile possible towards the wind, ensuring they do not rotate or 'idle' when not generating power.		
	Noise	Chapter 9: Noise and vibration	9.13.3 Operational Noise Mitigation	<p>The Development has been designed to comply with best practice, the Wind Energy Development Guidelines 2006, recent October 2023 ABP noise limits and the existing noise limits granted for the site by ABP for the previous 7 turbines.</p> <p>All 3 turbines will have as standard TES fitted as best practice to reduce noise levels, so no additional mitigation is required.</p> <p>A warranty will be provided from the manufacturer of the turbine selected for the Proposed Development in order to ensure that the turbine selected does not require a tonal noise correction. Low frequency noise emissions from the turbines will be below the level of audibility with the more significant low frequency being generated by river/stream flowing down the mountain side.</p>		
MM79	Land Use	Chapter 7: Land & Soils	7.5.2 Operational Phase	<p>The mitigation measures for the operation phase of the wind farm, Grid Connection and TDR upgrade are:</p> <ol style="list-style-type: none"> <li>1. A geotechnical engineer will inspect the earthworks within 6 months of the commissioning the wind farm to ensure there are no stability issues – peat or rock cuts. An ecologist will inspect the restored / landscaped areas of the site to ensure vegetation is established. Remedial works (additional planting or seeding) will be carried out as required.</li> <li>2. Aggregate used for road maintenance will be sourced from an authorised quarry with similar geochemistry to the</li> </ol>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>bedrock on site; limestone quarries will not be used.</p> <p>3. If repairs are required to the underground sections of the Grid Connection, the cables will be accessed at the two jointing bays either side of the fault. The material excavated would be reused to backfill and to restore those excavations. Soils will be protected from erosion with silt fences or covered.</p> <p>4. If repairs are needed to the OHL sections of the Grid Connection, similar mitigation will be used to those employed during its construction.</p>		
	Flora and Fauna	Chapter 8: Hydrology and Hydrogeology	8.5.3 Operational Phase	<p>To mimic as close as possible greenfield runoff rates and volumes, permeable finishes on roads and hardstands have been used. Break-out points have been provided along the length of the roadways to send water onto the hillside to its natural drainage pathway and over-the-edge is also used; water is not delivered to drains / streams from long sections of roads.</p> <p>Vegetation has been allowed develop in the roadside drains. This slows flows and reduces erosion potential.</p> <p>Site drainage will be inspected and maintained during the lifetime of the wind farm. Culverts will be cleared of debris, so blockages do not occur. These tasks will be included in the contract for the wind farm operator.</p> <p>Rainfall concentrated at the turbine towers will be collected and discharged to a level spreader downhill from the turbine.</p> <p>Clay plugs will be installed along the length of the cable trenches to eliminate these acting as preferential pathways. Clay plugs will be installed at greater frequency on steeper gradients.</p> <p>Storage of diesel for the backup generator, if used, will be in a</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				self-bunded tank.		
MM80	Traffic	Chapter 11: Traffic and Transport	11.6.2 Operational Phase	<p>Effects during operation have been assessed as being imperceptible. However, it is still important that any effect is minimised as far as is possible. Therefore, the following measures are recommended:</p> <ul style="list-style-type: none"> <li>• All vehicles using the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights.</li> <li>• A speed limit of 25 km/h shall apply to all vehicles within the wind farm site.</li> <li>• Locational signage shall be maintained throughout the operational period.</li> <li>• Road surfaces shall be inspected on a quarterly basis and will be repaired within one month of the inspection.</li> </ul>		
MM81	Waste	Chapter 13: Material Assets and Other Issues	13.10.7 Mitigation Measures - Waste	<p><b>Staff Facilities</b> Provision for separation of waste streams will be provided so that e.g., paper, and cardboard waste and bottles may be recycled. This waste will be appropriately stored to prevent exposure to wind, rain, and wildlife.</p> <p><b>Sewage</b> It is proposed to install a rainwater harvesting system as the source of water for toilet facilities for the operational phase. Wastewater from the staff welfare facilities in the control building will be collected in a sealed storage tank, fitted with a high-level alarm. This is a device installed in a fuel storage tank that is capable of sounding an alarm, during a filling operation, when the liquid level nears the top of the tank.</p>		
MM82	Shadow Flicker	Chapter 15: Shadow Flicker	15.2.9.3 Operational Phase	<p>Shadow flicker control systems, consisting of light sensors and specialised software, will be installed on each of the wind turbines. The control system will calculate, in real-time:</p> <ul style="list-style-type: none"> <li>• Whether shadow flicker has the potential to effect nearby sensitive receptors, based on pre-programmed co-ordinates</li> </ul>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>for the sensitive receptors and turbines;</p> <ul style="list-style-type: none"> <li>• Wind speed (can affect how fast the turbine will turn and how quickly the flicker will occur);</li> <li>• Wind direction; and</li> <li>• The intensity of the sunlight.</li> </ul> <p>When the control system detects that the sunlight is strong enough to cast a shadow, and the shadow falls on a sensitive receptor or receptors, then the turbine will automatically shut down; and will restart when the potential for shadow flicker ceases at the effected receptors. Such systems are common in many wind farm developments and the technology has been well established. A case study in Scotland found that the use of turbine shut-down control modules for turbines which were causing shadow flicker at nearby offices was successful .</p> <p>The proposed method of mitigation will be used to eliminate all shadow flicker effects resulting in zero shadow flicker, allowing for approximately 60 seconds for the rotor to come to a stop. This will eliminate the potential for shadow flicker to affect any of the sensitive receptors within the Study Area. Appendix 15.1 contains all calculated potential shadow flicker periods for each turbine. The relevant data will be input into the turbine control software. In the event that complaints of shadow flicker are received by the Developer / site operator or by Cork County Council, the Developer will conduct an investigation and the complaints frequency, duration and time of complaints will be considered and specialist modelling software will be used to confirm the occurrence(s). Should the complaint persist, a shadow flicker survey involving the collection of light data will also be carried out at the receptor in which the complaint was made. Further refinement of the blade shadow control system</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				will be conducted to eliminate the shadow flicker occurrence. This could result in the shutting off turbines at specific times of day.		
<b>Decommissioning Phase</b>						
MM91	Decommissioning	Chapter 7: Land and Soils	7.5.3 Decommissioning	<p>Mitigation measures employed during decommissioning activities will be similar to those used during construction. On decommissioning of the wind farm, cranes will be used to disassemble and remove the turbines. The foundations will be covered over with soil and peat and allowed to re-vegetate naturally. Leaving the foundation in place (rather than breaking out the concrete) is considered the most environmental benign approach. The Wind Energy Ireland (WEI) states that when decommissioning a wind farm 'the concrete bases could be removed, but it may be better to leave them under the ground, as this causes less disturbance'.</p> <p>The roads will be left in place and used to access the farmland and forestry of the site. The on-site substation is also likely to be left in place and become part of the National grid. Otherwise, it would be removed, and the site restored to peatlands.</p>		
MM92	Decommissioning	Chapter 9: Air and Climate	9.2.9.3 Decommissioning Phase Mitigation	Mitigation measures during the decommissioning phase will be similar to those employed during the construction phase as outlined above.		
	Decommissioning	Chapter 10: Noise and Vibration	9.13.1 Construction Noise Mitigation	During decommissioning noise levels are likely to be no more than predicted in Table 9.10 as similar plant will be utilised. Any legislation, guidance or best practice relevant at the time of decommissioning will be complied with. All construction is a temporary day time activity.		
MM93	Decommissioning	Chapter 11:	11.6.3	As the turbine blades can be cut into manageable lengths on		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
		Traffic and Transport	Decommissioning Phase	<p>decommissioning, there are no requirements to adjust street furniture on the turbine supply haul route for decommissioning.</p> <p>The wind turbines proposed as part of the proposed Development are expected to have a lifespan of up to 35 years . Following the end of their useful life, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site may be decommissioned fully, with the exception of the electricity substation.</p> <p>Upon decommissioning (4 - 6 months) of the proposed wind farm, the wind turbines will be disassembled in reverse order to how they were erected. All above ground turbine components will be separated, cut and removed off-site for recycling. Turbine foundations will remain in place underground and allowed to revegetate or reseeded as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in potentially significant environment nuisances such as noise, dust and/or vibration. The site roadways will be in use for additional purposes to the operation of the wind farm (e.g. recreational use) by the time the decommissioning of the project arises and therefore the site roads will remain in situ for future use. .</p> <p>The 20kV substation and grid connection, when completed, will be handed over to ESB Networks as the Distribution System Operator and thus it will not be removed.</p> <p>The traffic management of the decommissioning phase will be informed by the road conditions at the time of decommissioning. It is not possible to predict the changes to the public road</p>		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				<p>infrastructure and policies in the next 30-40 years. It is envisaged that a Traffic Management Plan will be developed for the decommissioning phase.</p> <p>Nevertheless, the following traffic management measures are likely to be required:</p> <ul style="list-style-type: none"> <li>• Signage will be erected at the site entrance</li> <li>• Construction traffic associated with decommissioning will be scheduled so as to avoid school drop off and collection times.</li> <li>• All vehicles using or while in operation at the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights.</li> <li>• A speed limit of 25 km/h shall apply to all vehicles within the wind farm site.</li> </ul>		
MM94	Land Use	Chapter 12: Landscape and Visual Amenity	12.4 Mitigation Measures	Upon decommissioning, the turbines, and all underground electrical and communications cabling will be removed. Other elements will be retained in situ to serve ongoing forestry and agriculture activity.		

**Table 17.1b: Monitoring Schedule**

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
<b>Pre-Construction Phase</b>						
MX1	Flora and Fauna	Chapter 6: Biodiversity	<ul style="list-style-type: none"> <li>• Otter surveys along the Derreenacrinnig East Stream and the un-named stream draining the proposed wind farm site to the north. Surveys to be completed will pay particular attention to identifying the presence/absence of otter holts/couches within 150 m of the proposed wind farm infrastructure. In the event that otter holts or couches identified within 150 m of the Proposed Development the status of the breeding/resting place will be confirmed. Where the holt/couch is identified as a breeding site, then, in the absence of a derogation licence, no works will be permitted to proceed within a 150 m radius of the breeding place, whilst it is still actively used as a breeding site. In the event that a non-breeding active holt or couch is identified within 50 m of the Proposed Development, then, in the absence of a derogation licence, no works will be permitted to proceed within a 50 m radius of the non-breeding but active holt or couch.</li> </ul>			ECoW
MX2	Flora and Fauna	Chapter 6: Biodiversity	<ul style="list-style-type: none"> <li>• Non-native invasive plant species surveys: An up-to-date confirmatory non-native invasive plant species survey of the Site and adjacent areas will be completed during the growing season immediately prior to the commencement of construction works.</li> <li>• The ECoW will ensure that best practice construction methods and mitigation measures detailed in this EIAR and accompanying planning documentation including the CEMP and NIS are implemented in full.</li> <li>• The ECoW will be responsible for ensuring that the construction phase contractor is aware of key biodiversity receptors. The ECoW will inspect the construction works throughout the construction phase and will pay particular attention to the implementation of all biodiversity related</li> </ul>			ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>mitigation measures.</p> <ul style="list-style-type: none"> <li>The ECoW will provide monitoring inspection reports during the construction phase and will also provide a close-out report following the completion of the contract construction works.</li> <li>Where necessary the ECoW will liaise with relevant authorities such as Cork County Council, the IFI and the NPWS with respect to construction phase activities that relate to biodiversity.</li> <li>As part of the ECoW terms of appointment, the ECoW will be vested with the authority to stop works where activities have been identified on site that are not in accordance with the mitigation measures outlined in this EIAR, the NIS and/or the CEMP prepared for the planning application for the proposed development.</li> </ul>			
MX3	Flora and Fauna	Chapter 6: Biodiversity	<p>A detailed breeding bird monitoring will be implemented at least 12 months prior to the start of construction works. The monitoring plan would detail survey methods, and the reporting mechanism, for each focal species. The surveys would be completed by suitably experienced ornithologists. The surveys will commence (as a minimum) in the breeding season prior to works commencing and for at least the first fifteen years of wind farm operation (i.e., annually for the first three years, then fifth, seventh, tenth and fifteen years). At which point the need for further monitoring would be reviewed. The surveys would include the flight survey area which comprises the three proposed turbines and a 500m surrounding buffer area.</p> <p>The monitoring will comprise:</p> <p>Vantage point surveys as per SNH (2017) from the two vantage points used for the baseline surveys.</p> <p>Breeding bird survey following methods used in the baseline survey to be repeated yearly between early April to early July</p>			suitably experienced ornithologists

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>during each operation phase monitoring year</p> <p>Collision fatality searches which will involve the search of a standard polygon area around each of the 3 no. turbines. At the start of each survey, data recorded will include meteorological and ground cover information. The locations of any carcasses found will be recorded by GPS and will be photographed in-situ. The state of each carcass will be recorded on a corpse record card, using the following categories (after Johnson 2003):</p> <ul style="list-style-type: none"> <li>• Intact - a carcass that is completely intact, is not badly decomposed, and shows no sign of being fed upon by a predator or scavenger</li> <li>• Scavenged - an entire carcass which shows signs of being fed upon by a predator or scavenger, or a portion(s) of a carcass in one location such as wings, legs, skeletal remains or pieces of skin</li> <li>• Feather Spot - ten or more feathers at one location indicating predation or scavenging. If only feathers are found, 10 or more total feathers or two or more primaries must be discovered to consider the observation a casualty. Searcher efficiency and predation tests will be carried out at the commencement of the programme in order to calibrate the results to account for the search dog's ability to find bird corpses and to also account for scavenging of corpses by animals. The collision searches will be carried out on a monthly basis in years 1, 2, 3, 5, 7, 10, 15 of the operational wind farm.</li> </ul>			
<b>Construction Phase</b>						
MX4	Site Drainage	Chapter 6: Biodiversity	Continuous monitoring of drilling fluid/mud pressure will be undertaken by the drill technician during all drilling. The drill technician in turn will be supervised by the drill supervisor and all horizontal directional drilling will be monitored by the project			ECoW/Drill technician/Drill supervisor

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Ecological Clerk of Works (ECoW). The continuous monitoring will ensure that in the event of a change in pressure due to a blockage, the technician will be immediately alerted to this change and will cease drilling operations. This will prevent drill fluid/mud from breaking out through an alternative path of least resistance and will prevent such materials from breaking out to the river. The avoidance of a breakout depends primarily on the experience of the drilling personnel and reliable, accurate drilling records interpreted in relation to the geotechnical information available. The drilling personnel will be suitably qualified and experienced to complete the works. Boreholes will be completed at all HDD locations as part of the Site Investigations works to be completed during the detailed design phase. Trends during the pilot drilling will be monitored and tracked so as to maximise the chances of accurately establishing a point where the formation is causing drilling fluid losses. The volume of drilling mud entering and returning from the bore will be constantly monitored by the drill operating staff. Staff will be especially vigilant for any loss of volume of drill mud returns, which would indicate the escape of drilling mud from the bore.			
MX5	Flora and Fauna	Chapter 6: Biodiversity	All watercourses draining the Site will be examined on a repeated scheduled timeframe (i.e. daily/weekly/fortnightly etc.) as deemed appropriate by the Contractor, Planning Authority, NPWS and Inland Fisheries Ireland. A log will be kept of these examinations and a water sampling protocol to monitor key water quality parameters will be established in agreement with the NPWS and Inland Fisheries Ireland. The monitoring protocol will be devised so that sediment release (should it occur) from the Site is detected at an early stage. Sediment release to the above watercourses from the site will be restricted to <25mg/l as per the Salmonid Water Regulations.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX6	Site Drainage	Chapter 8: Hydrology and Hydrogeology	The ECoW will undertake weekly inspections at all outfalls from the construction works.	Weekly		ECoW
MX7	Site Drainage	Chapter 8: Hydrology and Hydrogeology	The ECoW will be responsible for monitoring water chemistry at the agreed monitoring points in the streams draining the site, as shown on Figures 8.3 and 8.4. Table 8.13 summaries the surface water quality monitoring programme. All samples collected will be input to a database and compared to baseline monitoring data. In the event of levels being identified which are outside of the baseline or above applicable guideline or legislative values an investigation will be undertaken.			ECoW
MX8	Site Drainage	Chapter 8: Hydrology and Hydrogeology	Turbidity monitoring will be carried out on the streams draining the site. The emission limit value will be set at a turbidity value equivalent to 20mg/l, TSS; established based on sampling and analysis as described above. An investigation will be carried out in the event of an exceedance occurring. It should be noted that turbidity fluctuates naturally with the stage of the stream, higher values occurring during high flow events, so alerts may not necessarily be attributed to on-site works.			
MX9	Cultural heritage	Chapter 14: Cultural Heritage	There are a number of obligatory processes to be undertaken as part of archaeological licence applications which will allow for monitoring of the successful implementation of the archaeological mitigation measures detailed in Section 14.5.1. These include the submission of method statements detailing the proposed strategy for all site investigations for the approval of the National Monuments Service as part of the licence application. A report will be compiled on all archaeological site investigations to comply with the licensing process which will clearly present the results in written, drawn and photographic formats and copies will be submitted to the National			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Monuments Service, the Planning Authority and the National Museum of Ireland.			
MX10	Site Drainage	Appendix 2.1 CEMP Management Plan 2 Water Quality Management Plan	<p>3.1.6 Baseline monitoring undertaken at the Development as part of this study will be repeated periodically i.e., before, during and after construction phase, to measure any deviations from baseline hydrochemistry that occur at the Site, including discharge rates and along watercourses. Specifically, a construction period and post construction monitoring programme for the Derreenacrinnig West site will include the following:</p> <ul style="list-style-type: none"> <li>• During the construction phase, daily inspection of silt traps, buffered outfalls and drainage channels and daily measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations on the Site (locations close to active working zones). Monitoring of same during times when excavations are being dewatered (likely high in solids) will be done in real time. In this regard, physiochemical properties will be monitored in real time by means of alarmed telemetry e.g., telemetric monitoring at baseline sampling locations and alarm thresholds established in line with water quality reference concentrations/limits which will be set using relevant instruments for example, Surface Water Quality Regulations, &lt;25 mg/ L Total Suspended Solids (TSS).</li> <li>• Continuous Monitoring will be carried out as part of Active Management of construction water management and treatment (Appendix 9.6). These monitoring systems will travel with the active construction areas / remain with the Active Management infrastructure. The purpose of this is to recycle water if quality is unfavourable and adjust the dewatering and treatment train accordingly until discharge</li> </ul>			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>quality is observed to be acceptable. A small degree of tolerance above reference concentrations is acceptable at this location but only if the discharge from the Active Management train discharges to another Passive Management system or to a non-sensitive vegetated area. If discharging within sensitive areas or buffer zones, the quality of discharge from the Active Management train will be in line with prescribed reference limits (e.g., 25 mg/L TSS)</p> <ul style="list-style-type: none"> <li>• Continuous Monitoring at downstream Baseline SW Monitoring Locations (Figure 9.7b) will be carried out using telemetry during the construction phase. Triggering of the threshold at these locations will trigger emergency response and escalation of measures including immediate full site inspection to ascertain to the potential unknown source (bearing in mind that the quality of managed runoff at the site will be known by means of live telemetry and handheld meters). Continuous monitoring at Baseline SW Monitoring Locations will continue into the operational phase until stable conditions are observed e.g., stable conditions in line with baseline conditions for 6 months.</li> <li>• Post construction: inspection of silt traps, buffered outfalls and drainage channels, measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations at the Site will be carried out at a reasonable frequency (weekly initially gradually reduced based on observed stability of conditions), and will also be scheduled following extreme metrological events (EIAR Chapter 9: Hydrology and Hydrogeology). During the operational phase of the project the stilling ponds and buffered outfalls will be periodically inspected e.g., weekly during maintenance visits to the Site initially and gradually</li> </ul>			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>reduced based on observed stability of conditions.</p> <ul style="list-style-type: none"> <li>• During the construction phase of the project, the Development areas will be monitored daily for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system so that it does not become blocked, eroded or damaged during the construction process. This monitoring will continue at a reasonable frequency (weekly initially gradually reduced based on observed stability of conditions) during the operational phase of the Development, however it is envisaged that any potential issues in this regard will be identified and rectified during the construction phase.</li> <li>• During the construction phase of the Project, the Development areas and adjacent receiving drainage systems will be monitored daily for evidence of erosion and other adverse impacts to natural drainage channels and existing degraded areas whereby soils/peat are exposed and prone to enhanced degradation. This monitoring will continue at a reasonable frequency during the operational phase of the Project; however, it is envisaged that any potential issues in this regard will be identified and rectified during the construction phase.</li> <li>• During both the construction and operational phases of the project watercourse crossings will be monitored frequently (daily during construction and intermittently during operational phase i.e., weekly / monthly inspections initially and reduced gradually in line with observed stability and confidence in longer term data obtained. The water course crossings will be monitored in terms of structural integrity and in terms of their impact on</li> </ul>			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>respective watercourses.</p> <ul style="list-style-type: none"> <li>Site water runoff quality at all surface water monitoring locations will be monitored on a continuous basis during the construction phase of the Project. Monitoring will continue into the operational phase until such time that the Site and water quality have stabilised (stable conditions in line with baseline conditions for e.g., eight (8 No.) consecutive quarterly monitoring events). This monitoring will be carried out at the downstream surface water baseline sampling location (EIAR Appendix 9.6)</li> <li>Continuous monitoring systems will be in place, particularly in principal surface water features draining the site. For example, remote sensing, or telemetric monitoring sensors (turbidity) will be employed in this regard.</li> <li>At construction areas requiring drilling (HDD) and/or significant excavations (launch pits, cable joint bays), and in the management of general excavations, arisings will be managed carefully with a view to containing and treating all drained water and runoff which will likely be laden with suspended solids. Active continuous monitoring will be required at these locations in line with the conceptual model presented in EIAR Appendix 9.6 – Tile 8. The monitoring location will be at the outfall or discharge point of the treatment train at any respective location. Continuous monitoring will include telemetry.</li> <li>Continuous Monitoring Locations or Telemetric Monitoring Stations (TMS) will use probes to monitor the following parameters: <ul style="list-style-type: none"> <li>Electrical Conductivity</li> <li>Turbidity (Data obtained can be equated to estimated Total Suspended Solids (TSS) through calibration)</li> </ul> </li> </ul>			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> <li>- pH</li> <li>- Temperature</li> <li>- Capacity for additional probes.</li> <li>• TMSs will be self-powered and will be comprised of the following components at a minimum:               <ul style="list-style-type: none"> <li>- Remote Telemetry Unit (RTU) – Modem / data hub and transmission.</li> <li>- Solar panel</li> <li>- Sensor – pH</li> <li>- Sensor – Turbidity</li> <li>- Sensor – Electrical Conductivity</li> <li>- Sensor Cleaning Device (SCD)(Turbidity probe)</li> <li>- Power Management Unit (PMU)</li> <li>- Power Bank (PB)</li> <li>- Website – presenting data trends over time.</li> <li>- Metal stand / frame and protective fencing.</li> <li>- The TMS will have capacity for additional parameters.</li> </ul> </li> <li>• Telemetric continuous monitoring sampling frequency is generally set at one data point per 15 minutes, however considering the intensive nature of the proposed works, particularly drilling activities, if possible, it is recommended that sampling frequency is set at 5 minutes or less with a view to escalating responses to potential discharge quality issues in good time. Data is transmitted to a project website which will display data trends over time. Access to the website can be gained and shared via a website link.</li> <li>• Telemetric Monitoring Systems will be used a key part of Active Management of runoff and construction water at the site, as presented in EIAR Appendix 9.6 – Tiles no. 7 to 9.</li> <li>• A handheld turbidity meter will be available and used to accurately measure the quality of water discharging from the site at any particular location. The meter will be</li> </ul>			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>maintained and calibrated frequently (per the particular unit's calibration requirements / user manual) and will also be used to check and calibrate remote sensors if they are employed. Quality thresholds have been established for the purposes of escalating water quality issues as they arise.</p> <ul style="list-style-type: none"> <li>• Rainfall will be monitored (one (1 No.) rainfall gauge required). This unit will be connected with and displayed with other site water quality telemetry data via the telemetry website.</li> <li>• Surface water runoff control infrastructure will be checked and maintained on an ongoing basis, and stilling ponds and check dams will be maintained (de-sludge / settle solids removed) on an ongoing basis, particularly during the construction phase of the Development. It is important to minimise the agitation of solids during these works, otherwise it will likely lead to an acute significant loading of suspended solids in the drainage network. This can be achieved by temporarily reducing or blocking inking flow and vacuum extracting settled solids or sludge. Where the drainage feature possesses relatively significant flow rates, isolating and over pumping is the best course of action.</li> <li>• Regular checking and maintenance of pollution control measures are required (in line with frequencies outlined above), with an immediate plan for repair or backup if any breaches of design occur. In the event that established infrastructure and measures are failing to reduce suspended solids to an acceptable level, construction works will cease until remediation or upgrading works are completed.</li> </ul>			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX11	Site Drainage	Appendix 2.1 CEMP Management Plan 2	<p>Monitoring will be carried out at each significant construction location (HDD and any excavation &gt;2.0 m) and at significant environmental receptors including the following Environmental Monitoring Locations:</p> <ul style="list-style-type: none"> <li>Upstream and downstream of surface water crossings on mapped rivers.</li> <li>Operational wells within groundwater buffer zones associated with significant construction locations (namely SW Crossings).</li> <li>Groundwater abstraction points within buffer zones (mapped wells, source protection areas, and/or associated Regionally Important Karst Aquifer).</li> </ul> <p>Monitoring proposed will be specified relative to the particular activity and associated risk at respective locations.</p>			
MX12	Site Drainage	Appendix 2.1 CEMP Management Plan 2	<p>Similar to Wind Farm Site baseline monitoring, baseline surface water samples will be obtained at upstream and downstream sampling locations at each significant construction location over mapped rivers. Baseline surface water samples will be obtained at accessible locations such as existing bridges on public roads. Where upstream access is poor, the upstream baseline sampling location will be directly/immediately upstream of the construction location (e.g., existing bridge / culvert).</p>			
MX13	Site Drainage	Appendix 2.1 CEMP Management Plan 3	<ul style="list-style-type: none"> <li>Surface water runoff control infrastructure will be checked daily and maintained on a monthly basis or as required.</li> <li>Settlement-Attenuation ponds and check dams will be checked daily and maintained (desludged/settle solids removed) on a monthly basis or as required, particularly during the construction phase of the Development. The agitation of solids will be kept to a minimum during these</li> </ul>			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>works.</p> <ul style="list-style-type: none"> <li>The discharge from ponds located upstream of a freshwater pearl catchment and their discharge will be continuously monitored for turbidity. Turbidity can be measured in the field and will indicate if the suspended solids discharge limit of &lt;25 mg/L is being achieved. Where the discharge exceeds this limit, the discharge will be diverted to a silt buster prior to discharge to ensure the suspended solids concentration is &lt;25 mg/L.</li> <li>During the construction phase, daily visual inspections will be carried out on all ponds and their discharge. Monthly grab samples will be taken from all ponds and sent to a laboratory to analyse the suspended solids content.</li> </ul> <p>The monitoring requirements for local surface water bodies upstream and downstream of the Site during the construction phase are outlined in EIAR Appendix 2.1 Construction Environmental Management Plan, Management Plan 2: Water Quality Management Plan.</p>			
<b>Operational Phase</b>						
MX14	Flora and Fauna	Chapter 6: Biodiversity  6.8.1.2 Bats	<p>Post-constructions surveys will be undertaken for the first three years of operation to confirm if blanket curtailment restrictions can be amended in line with post-construction activity levels. The post construction surveys will be used to update the current curtailment regime (blanket curtailment) designed around the values for the key weather parameters and other factors that are known to influence collision risk. This will include all of the following:</p> <ul style="list-style-type: none"> <li>Wind speed in m/s (measured at nacelle height)</li> <li>Time after sunset</li> <li>Month of the year</li> <li>Temperature (°C)</li> </ul>			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• Precipitation (mm/hr)			
<b>Decommissioning Phase</b>						
MX15	Chapter 7: Land and Soils	7.5.4 Monitoring	Monitoring of the works will be carried out by the ECoW, project engineer and geotechnical engineer. This will involve visual inspection of the works for soil storage, restoration of parts of the site, etc. Inspections and testing of roads and crange areas will be carried out prior to mobilising the cranes to site for turbine installation. This is to ensure that they can accommodate the design loadings. Formation levels for the turbine foundation will also be inspected, tested and certified prior to constructing the turbine foundations. Rock cuts will be inspected to ensure no slope stability issues arise. Remedial measures, if required, will be implemented as appropriate.	As required	As required	ECoW, project engineer and geotechnical engineer