
Appendix 18.1: Summary of Mitigation Measures

All mitigation and monitoring measures relating to the 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 18.1** below. This provides an easy to audit list that can be reviewed and reported on during the project phases. The monitoring schedule for the Development is presented in **Table 18.2** below. 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. Subject to planning permission being granted, **Table 18.1** serves as a reporting template for site compliance audits. It can be further developed, in consultation with the relevant statutory agencies and Mayo County Council, prior to the project start and during the course of the project phases.

Table 18.1: Summary of Significant Effects and Associated Mitigation Measures

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Pre-Construction Phase					
Flora & Fauna	Chapter 6: Biodiversity	6.5.1	Within the Wind Farm Site all turbine locations and associated infrastructure have a buffer zone of at least 50 m from natural streams, with a 10 m buffer to significant drains. No works will take place within these buffer zones except for the watercourse crossings on the access track network. Implementation of such buffer zones will result in the avoidance of sensitive hydrological features. Direct discharges to surface waters of dewatered loads will not be permitted under any circumstances. This in turn will avoid or reduce the potential for adverse effects on downstream designated sites. It is noted that an Ecological Clerk of Works (ECoW) with experience in overseeing wind farm construction projects will be appointed by the Contractor for the duration of the construction phase to ensure that the CEMP is effectively implemented and that all planning conditions relating to biodiversity are complied with. An Environmental Manager will be appointed by the Developer to oversee the environmental management of the project, advise on the environmental issues and ensure compliance by the Contractor.		
Flora & Fauna	Chapter 6: Biodiversity	6.5.4	Whilst no signs of badger presence were found within a 100 m distance of the work areas during the baseline surveys, badger		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			does occur in the wider area and distribution of local populations can change over time. Should more than 36 months have elapsed since the baseline surveys in 2022-23, a pre-construction confirmatory survey will be undertaken in accordance with NRA Guidance (2006). This will focus on the areas of the site where works will take place (to a distance of approximately 100 m). Should an active sett be located within a 50 m distance of the works area, mitigation would be necessary to ensure that the sett is closed prior to the commencement of any works onsite. This procedure would be carried out in strict accordance with relevant legislation.		
Flora & Fauna	Chapter 6: Biodiversity	6.5.5	The common frog is widespread within the Wind Farm Site occurring in drains, fields which are permanently wet, bog and in the ponds within the abandoned quarry at Castlelackan Demesne. Areas where construction works are due to commence during the period February to August will be checked by the ECoW for the presence of frog spawn, tadpoles and adult frogs. If present, these will be removed under licence from NPWS and transferred to suitable ponds, drains or wetlands in the vicinity and away from the construction footprint. The ponds within the abandoned quarry at Castlelackan Demesne have some potential to support the smooth newt though aquatic vegetation is notably sparse. Prior to the commencement of construction works within the quarry, a survey for the smooth newt		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			will take place within the ponds. Should newts be recorded in ponds that could be affected by the works, these will be removed to one of the other ponds onsite, under licence.		
Earthworks	Chapter 9: Hydrology and Hydrogeology	9.5.1.1	The key mitigation measure during the construction phase is the avoidance of sensitive hydrological features, by application of suitable buffer zones (i.e. 50 m to main watercourses, and 10 m to main drains). Where possible all of the key Proposed Development areas (turbines, hardstands, construction compounds etc.) have been located significantly away from the delineated 50 m watercourse buffer zones. Where works are proposed within the buffer zone <i>i.e.</i> at watercourse crossings additional mitigation measures will be proposed and are detailed below. The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operate effectively. The proposed buffer zone will: • Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment. • Avoid excavations within close proximity to surface watercourses.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Avoid the entry of suspended sediment from earthworks into watercourses. - Avoid the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone.		
Land Use	Chapter 13: Material assets and Other Issues	13.5.4	Existing forestry tracks have been incorporated into the design to minimise the construction of new Site Access Tracks and minimise the removal of forested areas. New Site Access Tracks have been sensitively designed to minimise effect on forestry. Electricity cables will be installed underground in or alongside Site Access Tracks to avoid and minimise negative effect. The construction and decommissioning works will be planned and managed by a Construction and Environmental Management Plan (CEMP) (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.		
Electricity Networks	Chapter 13: Material assets and Other Issues	13.7.6	Confirmatory drawings for all existing services will be sought upon consultation with ESB Networks.		

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			- 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. - 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 Grid Connection cable operational phase. - 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.		
Air Navigation	Chapter 13: Material assets and Other Issues	13.8.5	An aeronautical lighting scheme for the Proposed Development will be agreed and installed in consultation with IAA, IAC and Department of Defence. The following data will be supplied to the IAA airspace team and Department of Defence: An aeronautical lighting scheme for the Development will be agreed with the IAA and will be installed		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- As-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location will be provided to the IAA. - The IAA will be notified of intention to commence crane operations with at least 30 days prior notification of their erection. Additionally, IAC will be kept informed on any progress relating to the Proposed Development, as IAC requirements are separate to IAA requirements. IAC have requested that all turbines will be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit light at the near Infra- Red (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.. Both IAA and IAC will be consulted to agree all lighting specification at least 30 days prior notification of the erection of the turbines.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Quarry	Chapter 13: Material assets and Other Issues	13.9.4	- Existing tracks have been used where possible, and the layout was designed to minimise the length of new Site Access Track required in order to reduce the requirement for such stone material. - Local quarries have been identified to reduce effects on transportation (Chapter 17: Traffic and Transportation). - The source quarry will be chosen based on stone which is chemically similar to that occurring at the Proposed Development. This will reduce hydrogeochemical effects (Chapter 8: Soils and Geology).		
Construction Phase					
Health & Safety	Chapter 5 Population and Human Health	5.5.7.2	The construction, operation and decommissioning of the Proposed Development shall be managed in accordance with the Safety, Health and Welfare at Work Act 2005 (as amended), the Safety, Health and Welfare at Work (General Application) Regulations 2007 (as amended), and the Safety Health and Welfare at Work (Construction) Regulations 2013 (as amended). As required under the Safety, Health and Welfare at Work (Construction) Regulations 2013, the Developer shall appoint a Project Supervisor for the Design Process (PSDP) and a Project Supervisor for the Construction Stage (PSCS). The PSDP shall compile a Preliminary Safety and Health Plan (PSHP), which		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			details general information about the Project and envisaged health and safety risks. The PSHP shall be made available to the PSCS. The PSCS shall develop a Construction Stage Health and Safety Plan (CSHSP) which incorporates the information contained in the PSHP and details how safety and health will be managed during the construction of the Project. A CEMP and accompanying management plans have been developed and are contained in Appendix 2.1. The PSCS will further develop those documents during the pre-construction stage of the Project, to take account of planning conditions and in consultation with Mayo County Council, for implementation during the construction stage: • Construction and Environmental Management Plan (updated from the CEMP in Appendix 2.1) • Emergency Response Plan • Detailed Traffic Management Plan <u>Accidents to Infrastructure</u> The PSDP shall see that the General Principles of Prevention, outlined under the safety design advice provided by the Health and Safety Authority (HSA) are taken into account for all designs relating to the Proposed Development.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2	<i>Restricted access to bog</i>		

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			At the commencement of works, the required work footprint on the bog will be identified and the area will be marked by a rope fence (using wooden poles) and with appropriate signage. No construction activities will be allowed outside of the agreed work area for the duration of the construction period. The ECoW will inspect the site regularly whilst works are on-going. Excavated peat and subsoil will be removed to the approved deposition area, with no storage of peat or any other materials on the adjoining bog area. The rope fences will remain in place until the works at this location are fully complete. <i>Re-vegetation of bare surfaces at work area</i> An ecological objective is to minimise the area of exposed peat surface and to encourage rapid re-vegetation of the disturbed bog surface at wind turbine AT15 location. This will be achieved by the removal of the vegetated bog surface within the work footprint, the storage of this material, and subsequent re-use around the turbine and hardstand margins. First, a suitable local area will be identified where the removed material can be stored for the duration of the works – it is noted that such areas will not be on other vegetated bog surfaces but rather grassland habitat. Also, it is important that the selected		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			storage areas will not be prone to disturbance for the duration of the required storage period. The approach to 'save' the surface vegetated material will be as follows: the surface will be cut-out as sods or 'turves' to a depth of approximately 20-30 cm using a dumper/digger with a bucket. Care will be taken to keep the turves as intact as possible and the vegetated side upwards. The turves will be loaded to a trailer and transported to the pre-identified storage area. The turves will be off-loaded from the trailer and placed side by side and vegetation side upwards. They will be placed in single layers, <i>i.e.</i> not piled on top of each other. Should storage of the above materials be for prolonged periods (months), the stored turves and peat piles will need to be watered during dry spells. When ready for placement at the finished turbine/hardstand, the turves will be lifted with a dumper and bucket and taken to the destination. Here they will be off-loaded and placed side by side on the disturbed bog surface with vegetation side up. The turves will be bedded in with the bucket of a dumper so that they form a continuous layer without gaps between them. This approach will provide almost immediate cover of the bare surfaces. All of the above processes will be monitored by the ECoW.		
Otter	Chapter 6 Biodiversity	6.5.3	The mitigation proposed to maintain water quality in the aquatic zones (as detailed in the Aquatic Ecology Assessment		

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			Appendix 6.3 and in Chapter 9: Hydrology and Hydrogeology and summarised in the CEMP) will ensure that the food supplies for otters within local watercourses are not affected by contaminants generated by the Proposed Development.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.6.1.2	Retention of Trees and Replacement Planting Trees and treelines along approach roads and Site Access Tracks will be retained unless felling is unavoidable. Retained trees will be protected from root damage by an exclusion zone of at least 7 metres or equivalent to canopy height. Such protected trees will be fenced off by adequate temporary fencing prior to other works commencing. A replanting programme will mitigate for the loss of hedgerows, treelines and mature trees which serve as commuting corridors and possibly roosts for bats (see details in Section 6.5.2.1).		
Flora & Fauna	Chapter 6 Biodiversity	6.5.6.1.3	Turbine AT10 has a thick southern hedge bordering a stream to the south within the 88 m buffer. Instead of felling these areas, curtailment will be implemented, offering an alternative protection to bat species.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.6.1.4	Turbine AT16 has a number of trees and scrubby woodland of good quality within the 94 m buffer. Instead of felling these areas,		

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			curtailment will be implemented, offering an alternative protection to bat species.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.6.1.5	Turbine AT18 is located within an abandoned quarry that contains scrub around its border and within the quarry itself. Instead of felling a buffer around the turbine, additional curtailment measures will be implemented to offset potential effects on bats and monitoring will be conducted post construction to maintain this quarry as a wildlife diversity area.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.6.1.6	In general, artificial light creates a barrier to bats so lighting should be avoided where possible. Construction operations within the Wind Farm Site will take place during the hours of daylight where possible to minimise disturbances to faunal species at night. Some works along the GCR and Wind Farm Site may occur at night but the Environmental Manager/ECOW shall limit night-time works to sections of the route / site which avoid sensitive features (e.g., mature treelines). Where lighting is required, directional lighting, <i>i.e.</i> lighting which only shines on work areas and not nearby countryside, will be used to prevent overspill. This will be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only.		

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Flora and Fauna	Chapter 7: Ornithology	7.7.1.1	Apart from the required ground to facilitate the siting of AT18 turbine within the quarry, the Plan area comprises the entire of an abandoned quarry at Castlelackan Demesne, which is within the north-eastern sector of the Wind Farm development area. In addition to blanket bog, the site includes tall willow scrub, ponds and various recolonising habitats since the quarrying activities. While a sector of the quarry will be used for peat and soil deposition derived from the Wind Farm construction works, these areas will later be incorporated into the Plan area as meadow grassland and native woodland. Overall, it is anticipated that over time the biodiversity value of the site will increase substantially for habitats and associated flora and fauna species, including bird species. It is noted that species such as hen harrier, kestrel and snipe were recorded within the Plan area during the baseline surveys. The loss (both temporary and permanent) of hedgerows, scrub and broadleaved woodland will be off-set by a detailed planting scheme which will provide suitable habitat for bird species associated with these habitats.		
Flora and Fauna	Chapter 7: Ornithology	7.7.1.2	The present assessment has identified the potential for significant disturbance effects on four breeding species of conservation importance as a result of the construction works. These species are sparrowhawk, buzzard, kestrel and snipe		

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			(and as noted, merlin is included on a precautionary basis). Best available evidence has been reviewed, and it is suggested that these species could be disturbed by works, including tree felling, up to the following distances: Sparrowhawk 200 m Buzzard 200 m Merlin 500 m Kestrel 200 m Snipe 400 m Should any of these species be recorded breeding within the given distances of the works area (as established through confirmatory surveys before and/or during construction), a buffer zone (using above distances) will be established around the expected location of the nest (location identified as far as is possible without causing disturbance to the bird) and all works will be restricted within the zone until it can be demonstrated by an ornithologist that the species has completed the breeding cycle in the identified area. Any restricted area that is required to be set up will be marked clearly using hazard tape fencing and all site staff will be alerted through toolbox talks. The above mitigation, as needed, which will apply from March to August (inclusive), will ensure that the works will not have significant adverse effects on the identified species of		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			conservation importance recorded during the baseline surveys or in pre-construction surveys.		
Flora and Fauna	Chapter 7: Ornithology	7.7.1.3	A range of passerine bird species breed within the Wind Farm Site, including the Red-listed meadow pipit and the Amber-listed skylark and willow warbler. In compliance with Section 40 of the Wildlife Acts 1976 to 2022 as amended, all vegetation required to be cleared to facilitate any works associated with the Project, including hedge trimming and tree pruning along the TDR, will be done outside of the restricted period from 1st March to 30th August. Should it be necessary to remove vegetation during the breeding season, for instance where bramble and ephemeral plant species have become established on ground cleared earlier, this will be surveyed by an ornithologist up to 10 days before any clearance. Should an active nest be located, the area will be restricted from works by a distance where it is considered that the works would not cause disturbance or abandonment of the nest. Such distances, which will vary according to species and local topography, will be determined by the ornithologist. The restriction will be maintained until it is established that any young birds present have fledged.		

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			Should an instance arise where the placement of a restriction would have significant implications for the time frame of the Proposed Development, and where no alternative mitigation is available to prevent disturbance to the nest, the ornithologist will evaluate the situation in the context of the conservation status of the species and the stage of breeding, i.e. nest with eggs, nest with young chicks, nest with large young near fledging stage, and will advise on the best approach in the context of the Wildlife Acts. In such cases, the local representative of NPWS will be consulted.		
Subsoil and Bedrock removal	Chapter 8: Soil and Geology	8.5.2.1.2	Best practice will be applied during construction which will minimise the amount of soil and rock excavation. All works will be managed and carried out in accordance with the Construction Environmental Management Plan (CEMP), which will be updated by the civil engineering contractor and agreed prior to any works commencing onsite. The majority of the excavated peat and mineral soil spoil will be placed in the designated spoil storage area at Lacken Hill. Localised areas of landscaping will be sealed and levelled using the back of an excavator bucket to prevent erosion. The spoil repository will be restored to match the local environment when filling operations are complete.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Subsoil and Bedrock removal	Chapter 8: Soil and Geology	8.5.2.1.3	The disturbance of soil, subsoil and bedrock is an unavoidable effect of the Proposed Development, but every effort will be made to ensure that the amount of earth materials excavated is kept to a minimum in order to limit the effect on the geological aspects of the site. The management of geological materials is a critical component of controlling dust and sediment and erosion control.		
Subsoil and Bedrock removal	Chapter 8: Soil and Geology	8.5.2.1.4	Bedrock will be re-used for construction of Site Access Tracks wherever possible. The bedrock will comprise predominantly granite and quartzite which, when crushed and graded, should provide a good sub-base for Site Access Track construction. Peat, overburden, and rock will be reused where possible onsite to reinstate excavated areas where appropriate. Where possible, the upper vegetative layer will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the landscaped peat. These measures will prevent the erosion of peat in the short and long term.		
Subsoil and Bedrock removal	Chapter 8: Soil and Geology	8.5.2.1.5	On completion of the construction stage, any areas not required for operation will be reinstated. This may include the TCC, turning areas and materials storage areas. Granular material will be removed as required and reinstated with peat or other soils in		

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			keeping with the adjacent soils. Drainage measures will be reinstated as required in order to minimise future erosion of the soils.		
Storage and stockpiles	Chapter 8: Soil and Geology	8.5.2.2.2	Whenever possible, soil and rock will be re-used on the Wind Farm Site immediately, thereby reducing the need for double handling, which will also reduce the requirements to stockpile soils. Generally excavated rock will be used immediately for Site Access Track construction. Excess Topsoil, peat and non-reuseable mineral soil will be transported to the long-term storage at one of the 19 no. designated storage areas. Whenever possible stockpiles will be avoided. Stockpiles of rock on peat soils will be avoided to prevent instability. Peat will only be stockpiled temporarily to a maximum height of 2 m in areas of thin or absent peat and only in areas of shallow ground slopes, which have been assessed for stability by a suitably experienced geotechnical engineer. In the case of the 3 no. spoil repositories at Lacken Hill, a "cell" arrangement with perimeter berms constructed out of crushed rock will be employed to locally confine spoil at heights of up to 3m. The precise design of the spoil repositories will be developed further at construction stage when the benefit of further ground investigation will aid final design and restoration landscaping.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Vehicular movements	Chapter 8: Soil and Geology	8.5.2.3	Vehicular movements will be restricted to the footprint of the Proposed Development, particularly with respect to the newly constructed Site Access Tracks. This implies that machinery must be kept on tracks and will not move onto areas that are not permitted for the Proposed Development. Vehicular traffic onsite is reduced through the re-use of excavated material onsite which will reduce the need to source material from external quarries.		
Vehicular movements	Chapter 8: Soil and Geology	8.5.2.3.1	Excavation volumes have been reduced during the design phase by avoiding areas of deep peat, shallow bedrock and by avoiding excessive cut and fill during construction. This will result in reduced excavation volumes and therefore reduced site traffic. Best practice will be applied during construction which will minimise double handling, again reducing the Site traffic. All works will be managed and carried out in accordance with the Construction Environmental Management Plan (CEMP), which will be updated by the civil engineering contractor and agreed prior to any Site works commencing. Excavated peat will only be moved short distances from the point of extraction and will be used locally for landscaping, thus again reducing the onsite traffic. Excavated rock (and any glacial till) will be used for access track construction as close to the source of extraction as possible.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Ground Stability	Chapter 8: Soil and Geology	8.5.2.4.1	Careful design of the wind farm has reduced the amount of construction required in areas of deep peat, high slopes and other areas of potential ground instability. Additionally, the following mitigation measures will also be applied as recommended in the PLHRA (included as Appendix 8.1): • Avoidance of floating roads in areas where ground slopes exceed 5 degrees to the horizontal. • Avoidance of stockpiling on the peat • Avoidance of peat berms in areas of potential instability (highlighted by elevated hazard rankings), where ground slopes exceed 5 degrees to the horizontal • Additional engineered drainage in areas of construction • Avoidance of drains discharging onto areas of weak or deep peat or areas of elevated hazard ranking • Avoidance of blasting within 1km of areas highlighted by elevated hazard rankings As noted in the PLHRA, vehicular access to any areas of deep peat (>1.0 m) during construction will be restricted to low ground pressure vehicles, with all construction vehicles travelling on existing access tracks whenever possible. Best practice will be applied during construction which will minimise the risk of ground instability. All works will be managed and carried out in accordance with the Construction Environmental Management Plan (CEMP), which will be updated		

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			by the civil engineering contractor and agreed prior to any site works commencing. A Geotechnical Clerk of Works will be employed during the construction phase in order to continuously monitor areas of peat, in particular areas of deep peat and the areas of potential instability highlighted in the PLHRA. Ongoing physical stability checks and calculations will be undertaken in order to verify that safety standards are being met.		
Soil Contamination	Chapter 8: Soil and Geology	8.5.2.5.1	A fuel management plan will be prepared (and included in the CEMP) which will incorporate the following elements: • Mobile bowsters, tanks and drums will be stored in secure, impermeable storage area, away from drains and open water; • Fuel containers will be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores; • Ancillary equipment such as hoses, pipes will be contained within the bund; • Taps, nozzles or valves will be fitted with a lock system; • Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage; • Only designated trained operators will be authorised to refuel plant onsite.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Material and Waste Management	Chapter 8: Soil and Geology	8.5.2.6	All materials used onsite, and wastes generated onsite will be reduced by good site practice and attention to the CEMP. A policy of reduce, re-use and recycle will apply. All waste will be segregated and re-used where possible or removed from site for recycling. Any waste which is not recyclable or compostable will be properly disposed of landfill. Whenever possible, excavated materials will be re-used close to the area of excavation. Careful design will result in minimal excess soil and rock.		
Earthworks	Chapter 9: Hydrology and Hydrogeology	9.5.1.1	<u>Source controls:</u> • Interceptor drains, vee-drains, diversion drains, erosion and velocity control measures such as the use of sand bags, oyster bags filled with gravel, filter fabrics and other similar/equivalent or appropriate systems. • Small working areas, covering temporary stockpiles, weathering off of side-cast peat/spoil, cessation of works in certain areas or other similar/equivalent or appropriate measures. <u>In-Line controls:</u> • Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps, sediment traps, pumping		

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			systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems. <u>Treatment systems:</u> - Temporary sumps and attenuation ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as "Siltbuster", and/or other similar/equivalent or appropriate systems. It should be noted that the existing network of forestry drains present in some areas will be integrated and enhanced as required and used within the Proposed Developments drainage system. The integration of the existing forestry drainage network and the proposed wind farm network is relatively simple. The key elements are the upgrading and improvements to water treatment elements, such as in-line controls and treatment systems, including silt traps, settlement ponds and buffered outfalls. The main elements of interaction with existing drains will be as follows: - Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the		

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			proposed wind farm drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion. • Temporary silt traps will be placed in the existing drains downstream of construction works, and these will be diverted into proposed interceptor drains, or culverted under/across the works area. • During the operational phase of the Wind Farm, runoff from individual Turbine Hardstanding areas will be not discharged directly into the existing drainage network but discharged locally at each turbine location through field drains, main drains, and existing settlement ponds. • Buffered outfalls which will be numerous over the site will promote percolation of drainage waters across the bog surface and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site. • Velocity and silt control measures such as check dams, sandbags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. • Existing culverts will be lengthened where necessary to facilitate access road widening.		

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			Pre-Commencement Temporary Drainage Works: Prior to the commencement of road upgrades (or new road/hardstand or turbine base installs) the following key temporary drainage measures will be installed: • All existing dry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps. • Clean water diversion drains will be installed upgradient of the works areas. • Check dams/silt fence arrangements (silt traps) will be placed in all existing forestry drains that have surface water flows and also along existing forestry roadside drains. • A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone. Silt Fences: Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to the existing drainage network of sand and gravel-sized sediment, released from the excavation of mineral sub-soils of glacial and glacio-fluvial origin and entrained in surface water runoff. Inspection and maintenance of these structures during the construction phase are critical to their functioning to stated		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			purpose. They will remain in place throughout the entire construction phase. Silt Bags: Silt bags will be used where small to medium volumes of water need to be pumped from excavations (e.g. the proposed underpass locations). As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Settlement Ponds: The Proposed Development's footprint will be divided into drainage catchments (based on topography, outfall locations, catchment size) and stormwater runoff rates based on the 200-year return period rainfall event will be calculated for each catchment. These flows will then be used to design settlement ponds for each drainage catchment. The settlement ponds will either be designed for 4.1 hr or 24 hr retention times used to settle out medium silt (0.01 mm) and fine silt (0.004 mm) respectively (EPA, 2006). Settlement ponds along Site Access Tracks and at Turbine Hardstands will have 4.1 hr retention as there is additional in-line drainage controls proposed along Site Access Tracks and at hardstands. Level Spreaders and Vegetation Filters: The purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. Level spreaders are not intended to be a primary treatment component for development surface water		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			runoff. They are not stand alone but occur as part of a treatment train of systems that will reduce the velocity of runoff prior to be released at the level spreader. In the absence of level spreaders, the potential for ground erosion is significantly greater than not using them. Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. In fact, vegetation filters are ultimately a positive consequence of not discharging directly into watercourses which is one of the mitigation components of the drainage philosophy. This makes use of the natural vegetation of the Wind Farm Site to provide a polishing filter for the wind farm drainage prior to reaching the downstream watercourses. Again, vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not stand alone but are intended as part of a treatment train of water quality improvement/control systems (i.e. source controls >check dams > silt traps > settlement ponds > level spreaders > silt fences> vegetation filters). Water Treatment Train: If the discharge water from construction areas fails to be of a high quality, then a filtration treatment system (such as a 'Siltbuster' or similar equivalent treatment train (sequence of water treatment processes)) will be used to filter and treat all surface discharge water collected in the dirty		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			water drainage system. This will apply to all of the construction phase. Pre-emptive Site Drainage Management: The works programme for the construction stage of the Proposed Development will also take account of weather forecasts and predicted rainfall in particular. Large excavations and movements of peat/subsoil or peat stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. The following forecasting systems are available and will be used on a daily/weekly basis, as required, to allow site staff to direct proposed and planned construction activities: • General Forecasts: Available on a national, regional and county level from the Met Éireann website (www.met.ie). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates. • MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale. • 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Rainfall Radar Images: Images covering the entire country are freely available from the Met Éireann website (www.met.ie). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive. - Consultancy Service: Met Éireann provide a 24-hour telephone consultancy service. The forecaster will provide an interpretation of weather data and give the best available forecast for the area of interest. Using the safe threshold rainfall values will allow planned works to be safely executed (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event. Earthworks will be suspended if forecasting suggests any of the following is likely to occur: >10 mm/hr (i.e. high intensity local rainfall events). >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, >half monthly average rainfall in any 7 days. Prior to earthworks being suspended the following further control measures will be completed: - All open peat/spoil excavations will be secured and sealed.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Temporary or emergency drainage will be created to prevent back-up of surface runoff. - Working during heavy rainfall and for up to 24 hours after heavy events will not be allowed to ensure drainage systems are not overloaded. Management of Runoff from Peat/Subsoil Storage Areas: Excavated material can be used onsite in several ways. Suitable excavation material can be used onsite for reprofiling and landscaping or it can be permanently repositioned onsite in the proposed 19 no. spoil deposition areas. During the initial placement of subsoil, silt fences, straw bales and biodegradable matting will be used to control surface water runoff from the spoil deposition areas. Drainage from the spoil deposition areas will ultimately be routed to an oversized swale and a number of stilling ponds and a 'Siltbuster' with appropriate storage and settlement designed for a 1 in 200 year return period before being discharged to the onsite watercourses. Soil/subsoil deposition areas will be sealed with a digger bucket and vegetated as soon possible to reduce sediment entrainment in runoff. Once re-vegetated and stabilised soil/subsoil deposition areas will no longer be a potential source of silt laden runoff.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Timing of Site Construction Works: Construction of the site drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works. Proposed Drainage and Water Quality Monitoring: An inspection and maintenance plan for the onsite drainage system will be prepared in advance of the commencement of any works and will be included in the CEMP. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Any excess build-up of silt levels at dams, the settlement ponds, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. During the construction phase field testing (visual, supplemented with pH, electrical conductivity, temperature, dissolved oxygen and turbidity monitoring), sampling and laboratory analysis of a		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			range of parameters with relevant regulatory limits and EQSs will be undertaken for each primary watercourse, and specifically following heavy rainfall events (i.e. weekly, monthly and event-based). Allowance for Climate Change: Climate Change rainfall projections are typically for a mid-century (2050) timeline. The projected effects of climate change on rainfall are therefore modelled towards the end of the life cycle of the Proposed Development, as the turbines have a life span of ~35 years. It is likely that the long-term effects of climate change on rainfall patterns will not be observed during the lifetime of the proposed wind farm. As outlined in the above sections we have designed settlement ponds for a 1 in 200 year return flow. This approach is conservative given that the project will likely be built over a much shorter period (12-18 months), and therefore this in-built redundancy in the drainage design more than accounts for any potential short term climate change rainfall effects. Additional Measures for Works within Buffer Zone: In addition to the above mitigation measures, where works are proposed within the delineated 50 m hydrological buffer zone the following additional mitigation measures will be implemented:		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Double row silt fences will be emplaced immediately down-gradient of the construction areas.		
Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.1.2	Management of surface water and groundwater seepages and subsequent treatment prior to discharge into the drainage network will be undertaken as follows: - Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place. - If required, pumping of excavation inflows will prevent build-up of water in the excavation. - The interceptor drainage will be discharged to the Wind Farm Site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters. - The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit. - There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur. - Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available onsite for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed.		
Potential release of Hydrocarbons	Chapter 9: Hydrology and Hydrogeology	9.5.1.3	- All plant will be inspected and certified to ensure they are leak free and in good working order prior to use onsite. - Vehicles will be refuelled offsite where possible. - Onsite re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double axel custom-built refuelling trailer or truck will be re-filled offsite and will be towed/driven around the site to where machinery is located. The 4 x 4 jeep/fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			drip trays and fuel absorbent mats will be used during all refuelling operations. - Fuel storage onsite will be minimised. Any fuels will be stores on the Temporary Construction Compound and will be bunded to at least 100 % of the capacity of the largest tank. - The electrical control building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to ground or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor. - The plant used will be regularly inspected for leaks and fitness for purpose. - Only designated competent personnel will refuel plant and machinery. - An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan. Spill kits will be available to deal with accidental spillages.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Potential release of Cement based products	Chapter 9: Hydrology and Hydrogeology	9.5.1.4	- No batching of wet-cement products will occur onsite. Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place. - Where possible pre-cast elements for culverts and concrete works will be used. - Where concrete is delivered onsite, only the chute will be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. A dedicated bund area will be created to cater for concrete wash-out and this will be located in the Temporary Construction Compound. - The contractor will use weather forecasting to plan dry days for pouring concrete. - The contractor will ensure pour site is free of standing water and plastic covers will be ready in case of a sudden rainfall event.		
Groundwater and Surface Water Contamination from Wastewater Disposal	Chapter 9: Hydrology and Hydrogeology	9.5.1.5	During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site construction compounds, maintained by the providing contractor, and removed from the site on completion of the construction works.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Water supply for the site office and other sanitation will be brought to site and removed after use by a licensed contractor to be discharged at a suitable offsite treatment location, likely to be Killala or Ballycastle Waste Water Treatment Plants. - No water or wastewater will be sourced on the Site, nor discharged to the site.		
Potential Surface Water Quality Effects from Clear Felling	Chapter 9: Hydrology and Hydrogeology	9.5.1.6	All felling operations will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and DAFM guidance documents, including the specific guidelines listed below, to ensure that felling, planting and other forestry operations result in minimal potential negative effects to the receiving environment. - Forestry Standards Manual (Forest Service, 2015) - Environmental Requirements for Afforestation (Forest Service, 2016a) - Land Types for Afforestation (Forest Service, 2016b) - Forest Protection Guidelines (Forest Service, 2002) - Forest Operations and Water Protection Guidelines (Coillte, 2013) - Forestry and Water Quality Guidelines (Forest Service, 2000b)		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Forestry and the Landscape Guidelines (Forest Service, 2000c) • Forestry and Archaeology Guidelines (Forest Service, 2000d) • Forest Biodiversity Guidelines (Forest Service, 2000e) • Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018) • Coillte Planting Guideline SOP • A Guide to Forest Tree Species Selection and Silviculture in Ireland (Horgan et al., 2003) • Management Guidelines for Ireland's Native Woodlands. Jointly published by the National Parks & Wildlife Service (Cross and Collins, 2017) • Native Woodland Scheme Framework (Forest Service, 2018) • Code of Best Forest Practice (Forest Service, 2000) Mitigation by Avoidance: There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document "Forestry and Water Quality Guidelines" are shown in Error! Reference source not found..		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			With gentle to moderate slopes existing across much of the forested areas of the Wind Farm Site, a 10m setback will be established along aquatic zones. Furthermore, a 5m setback will be established along all relevant watercourses and water hotspots. The setback distance from sensitive hydrological features means that adequate room is maintained for the proposed mitigation measures (discussed below) to be properly installed and operate effectively. The buffer/setback zone will: • Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment. • Avoid peat/soil disturbance and compaction within close proximity to surface watercourses. • Avoid the entry of suspended sediment from works into watercourses. • Avoid the entry of suspended sediment from the drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure				Audit Result	Action Required
			Average slope leading to the aquatic zone		Buffer zone width on either side of aquatic zone	Buffer zone width for highly erodible soils		
			Moderate	0-15 %	10 m	15 m		
			Steep	15-30 %	15 m	20 m		
			Very Steep	>30 %	20 m	25 m		
			In addition to the application of buffer/setback zones, the following supplementary mitigation measures will be employed during felling works: Mitigation by Design: Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows: - Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines. - Suitably qualified personnel will operate all machinery. - Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use existing					

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			watercourse crossing points. Where possible, existing drains will not be disturbed during felling works. • These machines will traverse the site along specified off-road routes (referred to as racks). • The location of racks will be chosen to avoid wet and potentially sensitive areas. • Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall. • Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement, preventing sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on-site during construction. - Double silt fencing will also be put down slope of felling areas which are located in close proximity to natural watercourses and/or relevant watercourses. - Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. - Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites. - Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff. - Refuelling or maintenance of machinery will not occur within 50 m of an aquatic zone or within 20 m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required. - Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			<u>Silt Traps:</u> Silt traps will be strategically placed down-gradient of felling areas within forestry drains. The main purpose of the silt traps is to slow water flow, increase residence time, and allow settling of silt in a controlled manner. <u>Pre-emptive Site Drainage Management:</u> The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Works will be suspended if forecasting suggests any of the following is likely to occur: • >10 mm/hr (i.e. high intensity local rainfall events). • >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, • >half monthly average rainfall in any 7 days. <u>Drain Inspection and Maintenance:</u> The following items shall be carried out during inspection pre-felling and after: • Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines. • Inspection of all areas reported as having unusual ground conditions. • Inspection of main drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches shall be		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			identified. Ideally the pre-felling inspection shall be carried out during rainfall. - Following tree felling all main drains shall be inspected to ensure that they are functioning. - Extraction tracks near drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground. - Culverts on drains exiting the Site will be unblocked. - All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.		
Morphological Changes to Surface Watercourses (Wind Farm Site)	Chapter 9: Hydrology and Hydrogeology	9.5.1.7	Mitigation measures for the upgrade of the existing crossings and the new proposed crossing are detailed below: - The crossing upgrades and the new proposed watercourse crossing will be via a bottomless or clear span culverts and the existing banks will remain undisturbed as much as possible. - No instream excavation works are proposed and therefore there will be no direct effect on the stream at the proposed crossing location.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Any guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland will be incorporated into the design of the proposed crossings. - As a further precaution near stream construction work will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", that is, May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates and the risk of entrainment of suspended sediment in runoff. - During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area. There will be no batching or storage of cement allowed on-site. All new road river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent.		
Water quality	Chapter 9: Hydrology and Hydrogeology	9.5.1.10	Measures employed to prevent overdosing and potential chemical carryover:		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- The Siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding agents so overdosing does not occur. - Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system. - Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment. - Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover. - Use of biodegradable chemical agents can be used at very sensitive sites (i.e. adjacent to SACs).		
Potential Surface Water Quality Effects along Grid Connection	Chapter 9: Hydrology and Hydrogeology	9.5.1.11	<u>Silt Fences/Roadside Drain Blocking:</u> Silt fences will be placed down-gradient of the proposed cable route during construction work. Silt fences are effective at removing larger particle sized solids. This will act to prevent entry to water courses of sand and gravel sized sediment released from excavation of mineral sub-soils of glacial and glacio-fluvial origin and entrained in surface water runoff. Inspection and maintenance of these structures during the construction phase		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be placed down-gradient of all construction areas inside the hydrological buffer zones. Any road side drains will be temporarily blocked using sand bags in the area where trenching works is taking place. <u>Surplus Excavated Spoil:</u> Excavated spoil emanating from the trenches, where appropriate (i.e. when trenching within private tracks or the public road verge) will be used to backfill the trenches. Any excess will be disposed at an appropriate licenced facility. All excavated material emanating from trenches within the public road will be disposed at an appropriate licenced facility. <u>Timing of Site Construction Works:</u> Excavation of cable trench will not be undertaken during periods of high rainfall. This will minimise the risk of entrainment of suspended sediment in surface water runoff and transport via this pathway to surface watercourses.		
Potential Surface Water Quality Effects During Directional Drilling	Chapter 9: Hydrology and Hydrogeology	9.5.1.12	Although no in-stream works are proposed, the drilling works will only be done over a dry period between July and September (as required by IFI for in-stream works) to avoid the salmon spawning season and to have more favourable (drier) ground conditions.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- The crossing works area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance. - There will be no storage of material / equipment or overnight parking of machinery inside the 15 m buffer zone. - Before any ground works are undertaken, double silt fencing will be placed upslope of the watercourse channel along the 15m buffer zone boundary. - Additional silt fencing or straw bales (pinned down firmly with stakes) will be placed across any natural surface depressions / channels that slope towards the watercourse. - Silt fencing will be embedded into the local soils to ensure all site water is captured and filtered. - The area around the bentonite batching, pumping and recycling plant will be bunded using terram (as it will clog) and sandbags in order to contain any spillages. - Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area. - Spills of drilling fluid will be clean up immediately and stored in an adequately sized skip before been taken offsite. - If rainfall events occur during the works, there will be a requirement to collect and treat small volumes of surface water from areas of disturbed ground (i.e. soil and subsoil exposures created during site preparation works).		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- This will be completed using a shallow swale and sump down slope of the disturbed ground; and water will be pumped to a proposed percolation area at least 50 m from the watercourse. - The discharge of water onto vegetated ground at the percolation area will be via a silt bag which will filter any remaining sediment from the pumped water. The entire percolation area will be enclosed by a perimeter of double silt fencing. - Any sediment laden water from the works area will not be discharged directly to a watercourse or drain. - Works shall not take place during periods of heavy rainfall and will be scaled back or suspended if heavy rain is forecasted. - Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase. All necessary preventative measures will be implemented to ensure no entrained sediment, or deleterious matter is discharged to the watercourse. - If high levels of silt or other contamination is noted in the pumped water or the treatment systems, all construction works will be stopped. No works will recommence until the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			issue is resolved and the cause of the elevated source is remedied. - On completion of the works, the ground surface disturbed during the site preparation works and at the entry and exit pits will be carefully reinstated and re-seeded at the soonest opportunity to prevent soil erosion. - The silt fencing upslope of the river will be left in place and maintained until the disturbed ground has re-vegetated. - There will be no batching or storage of cement allowed at the watercourse crossing. - There will be no refuelling allowed within 100m of the watercourse crossing. - All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing. <u>Fracture Blow-out (Frac-out) Prevention and Contingency Plan:</u> - The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e., Clear Bore Drilling Fluid or similar will be used). - The area around the drilling fluid batching, pumping and recycling plants will be bunded using terram and/or sandbags to contain any potential spillage. - One or more lines of silt fencing will be placed between the works area and the adjacent river.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Spills of drilling fluid will be cleaned up immediately and transported off-site for disposal at a licensed facility. - Adequately sized skips will be used where temporary storage of arisings are required. - The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse. - This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur then drilling will be immediately stopped. - Any frac-out material will be contained and removed off-site. - The drilling location will be reviewed, before re-commencing with a higher viscosity drilling fluid mix. - If the risk of further frac-out is high, a new drilling alignment will be sought at the crossing location.		
GHG's	Chapter 10: Air Quality and Climate	10.3.7.1	Mitigation measures for reduction of GHGs are: - All machinery when not in use will be turned off. - 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.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Use of local quarries, materials suppliers and waste facilities will be used, as outlined in Chapter 17: Traffic and Transport, minimising travel distances. - A robust Traffic Management Plan (Appendix 2.1, CEMP, Management Plan No. 7) has been developed, utilising the most direct routes where possible. This plan will be updated to reflect project needs.		
Waste	Chapter 13: Material Assess and Other issues	13.10.7	Staff Facilities 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. Sewage 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.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Concrete During the construction phase: - Precast concrete will be used wherever possible i.e., formed offsite. Elements of the Proposed Development where precast concrete will be used have been identified and are indicated in the CEMP. Elements of the Proposed 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 Proposed 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. - The acquisition, transport and use of any cement or concrete onsite will be planned fully in advance and supervised at all times. - Vehicles transporting such material will be relatively clean upon arrival onsite, 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 onsite. To this end, vehicles will undergo a visual inspection prior to being permitted to		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			drive onto the proposed site or progress beyond the contractor's yard. Vehicles will also be in good working order. - Any shuttering installed to contain the concrete during pouring will be installed to a high standard with minimal potential for leaks. Additional measures will be taken to ensure this, for example the use of plastic sheeting or other sealing products at joints. - Concrete will be poured during metrological dry periods/seasons. This will reduce the potential for surface water run off being significantly affected by freshly poured concrete. This will require limiting these works 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 (>3 mm/hour, yellow on Met Eireann rain forecast maps), and do not proceed during any yellow (or worse) rainfall warning issued by Met Eireann. This also will avoid such conditions while concrete is curing, in so far as practical. - 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. - Pouring of concrete into standing water within excavations will be avoided. Excavations will be prepared before		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			pouring of concrete by pumping standing water out of excavations to the buffered surface water discharge systems in place. • 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. • No surplus concrete will be stored or deposited anywhere onsite. Such material will be returned to the source location or disposed of off-site appropriately. A concrete washings area can be seen on Planning Drawing 6289-PL-400 and Planning Drawing 6289-PL-401. Upon implementation of the above mitigation measures, the effects of the construction of the Proposed Development are considered to be not significant. <i>Chemicals, Fuels and Oils</i> All storage containers of over 200 litres will have a secondary containment of 110 % capacity to ensure that any leaking oil is contained and does not enter the aquatic environment.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			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. A Chemical and Waste Inventory will be kept. This inventory will include: • List of all substances stored onsite (volume and description) • Procedures and location details for storage of all materials listed • Waste disposal records, including copies of all Waste Transfer Notes detailing disposal routes and waste carriers used • 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 • 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		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Mobile units must have secondary containment when in use/out onsite Under the EU Directive 2008/68//55/EC all such dangerous substances will be conveyed in a container that compiles with the Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)¹. As such the manufacturer of each bowser will provide certification to contractors that the following: - A leak-proof test certificate - A copy of the Intermediate Bulk Container (IBC) approval certificate - An identification plate attached to the container Where mobile bowsters are used onsite, guidelines will be followed so that: - 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; - 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 is used;		

¹ ADR, 2023 (European Agreement Concerning the International Carriage of Dangerous Goods by Road) Available at: <https://unece.org/transport/standards/transport/dangerous-goods/adr-2023-agreement-concerning-international-carriage> [Accessed: 18/09/2025]

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			The pump or valve will have a lock and be locked shut when not in use. For loads in excess of 1000 litres (220 gallons), the bowser vehicle driver will have undergone training and hold a special license. Refuelling During construction/decommissioning, where possible all refueling onsite will be within the Temporary Site Compounds within the re-fueling area (See Drawing 6289-PL-400 and Drawing 6289-PL-401). Only essential refueling (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. Refuelling will take place via a mobile double skinned fuel bowser. The bowser will be a double axel refueling trailer which will be towed to the refueling locations by a 4x4 vehicle. The 4x4 will carry a drip tray, spill kit and absorbent mats in case		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			of any accidental spillages. Only designated competent personnel will refuel plant and machinery on the Wind Farm Site. Packaging 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. Metals Waste metals from concrete reinforcing etc. will have a commercial value and therefore there is an additional economic incentive for the appropriate re-use or recycling with the appropriate licensed waste contractor.		
Cultural Heritage	Chapter 14: Cultural heritage	14.5.1	Ground works during the construction phase will be subject to archaeological monitoring by a suitably qualified archaeologist under licence by the National Monuments Service. This will also include a systematic advance programme of archaeological field-walking surveys within Proposed Development areas in forestry plantations following tree felling to confirm the conditions predicted in this assessment, i.e., that they contain no visible surface traces of potential unrecorded archaeological or architectural heritage sites.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			In the event that any sub-surface archaeological features are identified during archaeological monitoring they will be securely cordoned off, cleaned and recorded <i>in situ</i>. The National Monuments Service will then be notified and consulted to determine further appropriate mitigation measures, which may include preservation <i>in situ</i> (by avoidance) or preservation by record (archaeological excavation). There are three undesignated vernacular structures located within the Wind Farm Site and one of these, in Leacarrowntemple townland, will be directly impacted during the construction phase. The remains of this structure will be subject to a written, drawn and built heritage survey prior to removal (preservation by record).		
Traffic	Chapter 17: Traffic and Transport	17.7.1	A Traffic Management Plan (TMP) has been developed (see Management Plan 7 attached to the CEMP). Prior to construction and once the Contractors have confirmed their suppliers, the TMP will be updated in consultation with Mayo County Council and An Garda Síochána as necessary. HGV trips will be scheduled to avoid times when drop offs and pick-ups generally take place at schools. All drivers will be made		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			aware of the location and presence of schools and other 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. This is to ensure compliance with speed limits and school drop off and pick-up zones. • All significant traffic likely to be generated by the Proposed Development will be during the construction of the Proposed Development and will be temporary in nature. It is envisaged that the construction period for the Proposed Development 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 effects. • Use special transporter vehicles with rear wheel steering in delivery of wind turbine components to ensure safe transportation and manoeuvrability on the roads. Extendable transporter vehicles will be retracted on return journeys. • Prior to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An Garda Síochána and Mayo County		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Council Roads Departments to discuss the requirement for a Garda escort. - The Developer will confirm the intended timescale for 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. - 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 distance between Killybegs Port, Galway Port and Foynes Port and the Proposed Development site, the journey is achievable within a 4 - 6 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. - The Developer will lodge a bond with Mayo County Council prior to commencement of construction in the amount to be agreed with the Council for the possible repair/upkeep of the roads. During the construction period, these roads will be inspected weekly by the Developer's Resident Engineer and the Contractor will be instructed to repair any defects within the following two weeks. At the end of the construction period, any		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			further defects will be remedied to the satisfaction of Mayo County Council. • Wheel cleaning equipment will be used at the exit to the Proposed Development 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 sites. • The sites' entry points will also be appropriately signed. Access to the Proposed Development site will be controlled by onsite personnel and all visitors will be asked to sign in and out of the site by security / site personnel on entering and exiting the site. All site visitors will undergo a site induction covering Health and Safety issues at the Wind Farm Site TCC and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite. • In addition, 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.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- To reduce dust emissions, vehicles transporting crushed stone will be covered during both entrance and egress to the site. - A survey of the TDR will be undertaken prior to commencement to identify if any new overhead lines or broadband lines will need to be lifted along the route to allow abnormal loads such as tower sections and nacelles to be delivered. - During the construction phase, clear construction warning signs will be placed on the R314, L-5177-0,5176-0, L-1107-99, L-1110-87, L-1110-117 and L-1111-0 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. - Works on public roads on the TDR and GCR 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". - Road Closures will be obtained for Grid Connection works on narrow public roads with passing bays available. A number of options are available in some areas for diverting traffic that will allow flexibility during		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			construction. For the works within the L-31143, L-1114, R314, L-5177, L-5176, L-1107, L-1111, L-1116 and the L-5147, passing bays can be utilised if necessary. While traffic diversions are in place, local access will be maintained at all times. All access points (domestic, business, farm) will be considered when finalising the proposed road closures and diversions. Additional measures such as local road widening, traffic shuttle systems and 'Stop-Go' systems will also be considered subject to agreement with Mayo County Council. Road closures will be scheduled in consultation with local residents, and the Contractor shall endeavour to avoid times of high agricultural activity e.g. silage cutting. - The widening/straightening of the TDR on the R315, L51732, L5179, R314, L31143, L51791, L5179-23, L51731, L31142, L5187, L5187-47 and the L21147 is proposed to be completed in advance of road closures. - Road Closures on the R314, L-5177-0,5176-0, L-1107-99, L-1110-87, L-1110-117 and L-1111-0 will be required during construction. Each road will be closed as required and for as short a time possible. Only one road will be closed at a time so as not to disrupt local traffic i.e. one road will close and the other left open to detour vehicles within the local road network.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Road Opening Licences will be obtained for the Grid Connection trench and chambers within public roads as well as for the widening of public roads. - All vehicles using or while in operation at the Proposed Development Site shall either have roof mounted flashing beacons or will use their hazard lights. - A speed limit of 25 km/h shall apply to all vehicles within the Proposed Development site. - Provide a footpath adjacent to the upgraded carriageway where works are being undertaken. This footpath should provide a safe method of permitting pedestrians to access the pre-existing carriageway at the terminations of the works. - Ensure all visibility envelopes are kept clear of high vegetation. - Provide visibility splays set back a suitable distance from the yield line. - Provide signage opposite each entry arm. - Provide a uniform radius from the roundabout entry to the exit. - Reinstate any speed limit signs removed by the works. - Redesign this arm or roadside treatment to enable road users to differentiate this private access from the public ones.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Biodiversity	Appendix 2.1 CEMP	3.2	A suitable Ecological Clerk of Works (ECoW) with experience in overseeing wind farm construction projects will be appointed by the Contractor for the duration of the construction phase to ensure that the CEMP is effectively implemented and that all planning conditions relating to biodiversity are complied with. An Environmental Manager will be appointed by the Developer to oversee the environmental management of the project, advise on the environmental issues and ensure compliance by the Contractor. The appointed ECoW will deliver a toolbox talk to all contractors, including sub-contractors, prior to construction starting on ecologically sensitive features within or in close proximity to the works area. The duties of the ECoW will be to monitor the efficacy of mitigation measures implemented by the contractors and to report on the application and success of these measures. In the event of pollution occurring or the potential to occur, the ECoW will have a 'Stop Works' authority to ensure measures to stop a pollution event are implemented immediately. An Ecological Clerk of Works (ECoW) will be employed by the Contractor for the duration of the construction phase and will ensure that all mitigation measures relating to ecology described in		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			this report and contained within the planning permission are implemented. All mitigation measures have been developed in the context of national and international legislative guidance for the protection and management of flora, habitats of conservation importance, fauna and aquatic ecological interest. Guidelines to be adhered to in the delivery of the CEMP and method statements are as follows: • EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022). • European Commission (2017) Environmental Impact Assessment of Projects. Guidance on the preparation of the Environmental Impact Assessment Report. (Directive 2011/92/EU as amended). • NRA (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes. • CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Fossitt (2000). A Guide to Habitats in Ireland. Heritage Council, Kilkenny. • Smith et al. (2011). Best Practice Guidance for Habitat Survey and Mapping in Ireland. • Bats and onshore wind turbines: Survey, Assessment and Mitigations. Scottish Natural Heritage January, 2019. • Bats and onshore wind turbines - Survey, Assessment and Mitigation. Scottish Natural Heritage. August 2021 • Bat Conservation Ireland Guidelines for consideration of bats in wind farm projects - Revision 2014 • BTHK (2018). Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals. Pelagic Publishing, Exeter UK. • CIEEM (2021). Bat Mitigation Guidelines. A guide to impact assessment, mitigation and compensation for developments affecting bats. Beta version 1.0. • Collins, J. (Editor) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). Bat Conservation Trust, London • Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Environment, Heritage and Local Government, Dublin, Ireland. Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.		
Biodiversity	Appendix 2.1 CEMP	3.2.1	Within the Wind Farm Site all turbine locations and associated infrastructure have a buffer zone of at least 50 m from natural streams, with a 10 m buffer to significant drains. No works will take place within these buffer zones except for the watercourse crossings on the access track network. Implementation of such buffer zones will result in the avoidance of sensitive hydrological features. Direct discharges to surface waters of dewatered loads will not be permitted under any circumstances. This in turn will avoid or reduce the potential for adverse effects on downstream designated sites.		
Biodiversity	Appendix 2.1 CEMP	3.2.2.1	Taking into account the value of local hedgerows and that the new plantings will take up to 10 years to equal in structure and diversity the hedges removed, a greater area will be replanted than is removed. A figure of 50 % above the loss is considered appropriate, which results in a length of 2,438 m to be replanted.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			A strip of 3 m width will be allowed for staggered planting (see below) and fencing as required. The area required for the replacement planting of permanent hedging is therefore 7,314 m² or 0.73 ha. the Turbine Delivery Route will require the removal of 2,735 m of hedging from along roads to facilitate road widening. While this will be replanted along the extended road edge when works are complete, the temporary loss is significant as there will be an interval of up to ten years before the replanted hedging attains similar value to what will be removed. Due to the ecological value of hedgerows, additional mitigation is required for this temporary loss and it is considered appropriate that 50% of this figure, <i>i.e.</i> 1,368 m, is replanted elsewhere as permanent hedging to offset this temporary adverse effect. Using a 3 m planting strip width, this amounts to 4,104 m² or 0.41 ha. From above, the amount of new planting required to offset the permanent and temporary loss of hedgerows is 3,806 m or 11,418 m² (1.14 ha). Additional losses of scrub, mostly willow and gorse, will be lost to create bat buffers at wind turbines AT11 and AT15, which is estimated at 0.29 ha.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			An ecologist will advise on the exact design and details for the new plantings. To maximise the biodiversity potential, the plantings will connect with ecological features such as existing hedgerows and treelines. The plantings will comprise both linear strips and broader stands of woodland. The following guidance will be adhered to for hedge planting: - As soon as a date is agreed for the commencement of construction, the first step in the schedule will be the planting of the new hedgerows/woodland strips within the appropriate season. The earlier planting is carried out the better, as this will allow time for these features to establish prior to the loss of existing features. - Plantings will consist of native Irish species from Irish genetic stock (certified Irish). Hedgerow species which have a fairly widespread presence in the area, and which are useful biodiversity species, include hawthorn, blackthorn, grey willow (<i>Salix cinerea</i> subsp. <i>oleifolia</i>), hazel, holly, rowan (<i>Sorbus aucuparia</i>), alder (<i>Alnus glutinosa</i>), guelder rose (<i>Viburnum opulus</i>) and spindle (<i>Euonymus europaeus</i>). Formerly ash would be used as a principal tree standard but is not being planted due to ash dieback disease. Instead, sessile oak (<i>Quercus petraea</i>) is a suitable species.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- Hedgerows will be planted in a double staggered row within strips of 3 m width. Spacing will be 20-30 cm apart using 60-90 cm high 'whips'. The dominant species will be hawthorn, blackthorn, grey willow and hazel (20-50 % each), with holly, rowan, alder, spindle and guelder rose as supporting species (less than 10 % each). Alder and willow would be particularly useful if along watercourses. - Tall trees will be planted at approximately 30 m intervals and will consist mainly of sessile oak, though species such as alder can be allowed to grow tall. - The planted strip will be fenced off from livestock (where required). Trees planted as standards will be individually fenced to protect from deer. - Fertiliser application will not be permitted. - The control of competing vegetation is critical for the establishment and growth of young trees. Inadequate vegetation management will result in mortality, loss of growth and vigour and the need for further inputs during the establishment process. - Any plants that fail will be replaced on an annual basis for the first five years since start of planting programme.		
Biodiversity	Appendix 2.1 CEMP	3.2.2.2	Restricted access to bog At the commencement of works, the required work footprint on the bog will be identified and the area will be marked by a rope		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			fence (using wooden poles) and with appropriate signage. No construction activities will be allowed outside of the agreed work area for the duration of the construction period. The ECoW will inspect the site regularly whilst works are on-going. Excavated peat and subsoil will be removed to the approved deposition area, with no storage of peat or any other materials on the adjoining bog area. The rope fences will remain in place until the works at this location are fully complete. Re-vegetation of bare surfaces at work area An ecological objective is to minimise the area of exposed peat surface and to encourage rapid re-vegetation of the disturbed bog surface at wind turbine AT15 location. This will be achieved by the removal of the vegetated bog surface within the work footprint, the storage of this material, and subsequent re-use around the turbine and hardstand margins. First, a suitable local area will be identified where the removed material can be stored for the duration of the works – it is noted that such areas will not be on other vegetated bog surfaces but rather grassland habitat. Also, it is important that the selected storage areas will not be prone to disturbance for the duration of the required storage period.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			The approach to 'save' the surface vegetated material will be as follows: the surface will be cut-out as sods or 'turves' to a depth of approximately 20-30 cm using a dumper/digger with a bucket. Care will be taken to keep the turves as intact as possible and the vegetated side upwards. The turves will be loaded to a trailer and transported to the pre-identified storage area. The turves will be off-loaded from the trailer and placed side by side and vegetation side upwards. They will be placed in single layers, <i>i.e.</i> not piled on top of each other. Should storage of the above materials be for prolonged periods (months), the stored turves and peat piles will need to be watered during dry spells. When ready for placement at the finished turbine/hardstand, the turves will be lifted with a dumper and bucket and taken to the destination. Here they will be off-loaded and placed side by side on the disturbed bog surface with vegetation side up. The turves will be bedded in with the bucket of a dumper so that they form a continuous layer without gaps between them. This approach will provide almost immediate cover of the bare surfaces. All of the above processes will be monitored by the ECoW.		
Aquatic ecology	Appendix 2.1 CEMP	3.3.1	All Site Access Tracks will be designed to minimise excavation on the site and reduce the risk of sediment runoff. A sealed silt		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			fence must be placed at both sides of points where rivers or streams are crossed and to a minimum of 10m upstream and downstream of each crossing at both sides of the road. Swales for turbine bases and hard standings must be constructed. All infrastructures must have a setback distance of 50m away from all streams within the site except for the watercourse crossings. If Site Access Tracks cross watercourses they will be constructed as clear span bridges or precast concrete culverts. No instream wet concrete operations or construction will be permitted, and installation of any instream elements should be completed in dry conditions. There are also 15 stream crossings proposed within the Windfarm Site. Where Site Access Tracks pass close to watercourses, silt fencing should be used to protect the streams. Stream crossings will be constructed during low flow conditions and within a 5-day weather window. How this will take place will be detailed in the SWMP. A silt fence will be placed downstream of all works and regularly maintained. Materials used to install culverts and stream crossings should be ore-cast. Spoil heaps from the excavations for the turbine bases and trenches (where cables are to be buried) will be covered with geotextile and surrounded by silt fences to filter sediment from		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			the surface water run-off from excavated material. Any berms will be covered with a geo-textile matting to avoid sediment runoff; berms will be surrounded by silt fencing until vegetation has been established in the following growing season. If cables will be installed in trenches, they will be located underneath and directly adjacent to access tracks as far as possible. Trenches will be excavated during dry periods where possible in short sections and left open for minimal periods to avoid acting as a conduit for surface water flows. Clay bunds will be constructed within any cable trenches at intervals. The final version of the SWMP should be distributed for consultation, detailing the required measures for the Contractor to implement in the event of a 'worst case' scenario on the site. Timing of the proposed instream works will also take account of the fisheries constraints within the study area, where no works will be undertaken in the instream environment during the salmonid close season (October–June annually), which also avoids the lamprey spawning season. Secure concrete washout areas will be designated onsite (Figure 3.4 and Figure 3.5)		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Standing water in the excavations at the turbine bases will contain an increased concentration of suspended solids. The excavations will be pumped into temporary settlement basins as necessary which should be lined, and which should drain into existing or proposed drainage channels onsite. The settlement basins will be constructed in advance of any excavations for the turbine bases. Any diesel or fuel oils stored onsite will be bunded to 110% of the capacity of the storage tank. Such facilities will not be located near any drain or watercourse. Design and installation of fuel tanks will be in accordance with best practice guidelines. Refuelling of plant during construction will be carried out in an appropriately designed designated area, away from watercourses. Drip trays and spill kits will be kept available onsite. Appropriate containment facilities will be provided to ensure that any spills from the vehicle are contained and removed offsite. Appropriate preventative measures will be implemented to ensure that non-native aquatic/riparian species are not introduced into the Site. These measures should follow as relevant the manual 'The Management of Noxious Weeds and		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Non-Native Invasive Plant Species on National Roads' by NRA (2010).		
Major Accident	Appendix 2.1 CEMP	3.4.4.2	Fences and other physical barriers (i.e. concrete blocks) should be onsite and available in sufficient quantities to be used in the event of ground instability. A plan should be made to prevent or divert any landslide away from protected areas (NHA, SPA, SAC). Where the onset or actual detachment of peat (e.g., cracking, surface rippling) occurs: • All activities in the area will cease and all available resources will be diverted to assist in the required mitigation procedures. • The Site Manager/ Main Contact must be notified • All relevant authorities will be notified if a peat slide event occurs onsite and this Emergency Response Plan (ERP) followed. • 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. • Where possible, check barrages (comprises the placement of rock fill across a watercourse which allows the passage of		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			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. • 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. • 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. • All measures to contain the peat slide must be approved by the Mayo County Council or Inland Fisheries Ireland (IFI).		
Major Accident	Appendix 2.1 CEMP	3.4.5.2	Procedures and contingency plans will be set up to deal with an emergency accidents or spills. In particular an emergency spill kit with oil boom and absorbers will be kept onsite in the event of an accidental spill. All site operatives will be trained in its use. Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the vicinity of works. Additionally, emergency responses, including methodologies, are specified in the Management Plan 1: Emergency Response Plan.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Air and Climate	Appendix 2.1 CEMP	3.6	- Site Access Tracks will be upgraded and built in the initial construction phases. These tracks will be finished with graded aggregate which compacts, preventing dust - 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. - Wheel wash facilities will be provided at 6 no. locations throughout the Wind Farm Site to prevent mud/dirt being transferred from the Wind Farm Site to the public road network. Wheel wash 1 will be located at the Temporary Construction Compound (site entrance 2) to the south of the Wind Farm Site. Wheel wash 2 will be located at site entrance 1. Wheel wash 3 will be located at site entrance 3. Wheel wash 4 will be located at site entrance 5. Wheel wash 5 will be located at the Temporary Construction Compound (site entrance 11) to the north of the Wind Farm Site. Wheel wash six will be located at site entrance 14 (spoil deposition area). - The wheel wash facilities will be located outside the 50 m watercourse buffer zone (see Appendix 2.1, CEMP Sections 3.5 and 3.12). - Public roads along the Construction Haul Route will be inspected and cleaned daily when required. In the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			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. - During periods of dry and windy weather, there is potential for dust to become friable and cause disturbance 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 bowsters will be available to spray work areas (Turbine Hardstand areas and GCR) and Construction Haul Route roads to suppress dust migration from the Wind Farm Site. - Vehicles delivering materials to the Wind Farm Site will be covered appropriately when transporting materials that could result in dust, e.g., crushed rock or sand. - Exhaust emissions from vehicles operating within the Wind Farm 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.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- All machinery, when not in use, will be turned off. - Ready-mix concrete will be delivered to the Wind Farm Site and no batching of concrete will take place onsite. Only washing out of chutes will take place onsite and this will be undertaken at a designated concrete washout facility at the contractor's Temporary Construction Compound. The concrete wash water will be disposed of at a license facility outlined in the Construction Environment Management Plan (CEMP) – Management Plan 5 Waste Management Plan (Appendix 2.1). - Speed restrictions of 15 km/h on Site Access Tracks will be implemented to reduce the likelihood of dust becoming airborne. Consideration will be given to how onsite speed limits are policed by the Contractor and referred to in the toolbox talks. - 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. - Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable. - An independent, qualified Geotechnical Engineer will be contracted for the detailed design stage of the Proposed Development and geotechnical services and will be		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			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. A complaints procedure will be implemented on the Wind Farm Site where complaints will be reported, logged and appropriate action taken.		
Water Quality	Management Plan 2 Water Quality	4.5	Suspended solid pollution will be avoided by use of a bottomless bridge culvert. Where a Bottomless Bridge Culvert is installed, its construction will follow IFI (2016) for works in or adjacent to watercourses. Mitigation will include protection of the riparian bank structure, minimisation of sedimentation to the watercourse by use of silt fencing, sandbags or other sediment reducing measures, and minimisation of instream activity. The following mitigation is proposed and is in line with IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, in particular Section 6 – River and Stream Permanent Crossing Structures.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Air quality	Management plan 6 decommissioning plan	3.3	Proposed measures, which are the same as those proposed for the construction phase, to control dust include: - Any Site Access Tracks with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions. - The designated public roads outside the site and along the main transport routes to the Wind Farm Site will be inspected daily by the Site Manager for cleanliness and cleaned if deposits are found. - Material handling systems and material storage areas influenced by convenience and ease of handling, and peat slippage safety. - Water misting or sprays will be used in dry and windy if particularly dusty activities are necessary during dry or windy periods. - The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles. - Daily inspection of the site to examine dust measures and their effectiveness. - When in dry and/or windy weather and dirt is visible on the roads, sections of the haul route		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			will be swept using a truck mounted vacuum sweeper.		
Noise	Management plan 6 decommissioning plan	3.4	Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts. Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All plant and equipment to be used onsite will be modern equipment and will comply with the S.I. No. 359/1996 - European Communities (Construction Plant and Equipment) (Permissible Noise Levels) (Amendment) Regulations. Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers. All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works. Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. Machines, which are used intermittently, will be shut down during those periods when they are not in use.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Training will be provided by the Site Manager to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation. Local areas of the haul route will be condition monitored and maintained, if necessary.		
Drainage	NIS	3.4.1.2	Surface water management measures will be put in place concurrently during the development of the various infrastructure. The measures entail the following key elements which are described in detail within the Surface Water Management Plan of the CEMP (Management Plan 3). Open Constructed drains for development run-off collection and treatment; Collection Drains for upslope “clean” water collection and dispersion; Filtration Check Dams to reduce velocities along sections of road which run perpendicular to contours; Settlement Ponds, Settlement Lagoons and Buffered Outfalls to control and store development runoff to encourage settlement prior to discharge at Greenfield runoff rates. There will be no direct site run-off to watercourses during the construction phase with all outflows from drainage via settlement ponds from which treated surface water is released by diffuse overland flow at appropriate locations. To reduce the amount of		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			silt laden water to be treated, clean water drains will be created upstream of the works area to divert water away from construction areas, thereby lessening the volume of water to be treated onsite. De-watering of excavations, where required, will be through filtered 'silt socks' / dewatering bags or a '<i>Siltbuster</i>' or similar system, prior to discharge. Excavations will be kept to the absolute minimum for the specific task and undertaken on a 'just in time' basis to minimise the extent of silty water generated and requiring treatment prior to discharge. A comprehensive vegetation restoration programme will be implemented on disturbed peat surfaces to minimise the risk of run-off from bare peat surfaces post-construction (details in EIAR Chapter 6, Section 6.5.2.2). This will involve the replacement of saved sods of the surface bog vegetation or piles of surface peat (containing rhizomes, seeds etc.) which will have been removed at the commencement of works and stored. Re-seeding of bare surfaces with a suitable seed mix (as recommended by the project ecologist) may supplement the above in some places.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Water Quality	NIS	3.4.1.3	Sediment traps or settlement ponds will be provided at all outfalls during construction. All construction site run-off will be channelled through a stilling process to allow suspended solids to settle out and through a spill-containment facility prior to discharge. Daily monitoring of all sediment traps and settlement ponds will be undertaken by the Contractor and supervised by the Environmental Manager to ensure satisfactory operation and/or maintenance requirements. The storage on site of oils, hydraulic fluids, etc. will be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005). The pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, etc. will be completed in the dry to avoid pollution of the freshwater environment. Vehicles will be refuelled off-site where possible. For vehicles that require refuelling on-site, fuels will be stored in the temporary construction compound and banded to at least 110% of the storage capacity of fuels to be stored. Refuelling will take place via a mobile double skinned fuel bowser. The bowser will be a double axle refuelling trailer which will be towed to the refuelling locations by a 4x4 vehicle. The 4x4 will carry, a drip tray, spill kit and absorbent mats in case of any accidental		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			spillages. Only designated competent personnel will refuel plant and machinery on the Site. All machinery operating on water course crossings will be steam-cleaned in advance of works and routinely checked to ensure no leakage of oils or lubricants occurs. All fuelling of machinery will be undertaken on dry land. Instream works shall be undertaken during the period 1st July to 30th September as required by Inland Fisheries Ireland Guidance (2016) to avoid accidental damage or siltation of spawning beds, and unless otherwise specified by IFI during consultations in advance of works. Culverting works will be undertaken in dry conditions and in low flow conditions on drains that do not run dry. This will be within the summer period during periods of dry stable weather. During the culvert installation and associated construction work, double silt fences shall be emplaced immediately downgradient and downstream of the construction area for the duration of the construction phase. There will be no concrete batching on the Wind Farm Site. Rather, it will be transported to the Site as it is required. A dedicated, bunded area will be created to cater for concrete wash-out. This will be for the wash-out of the chutes only after the pour. Concrete trucks will then exit the Site and return to the supply plant to wash out the mixer itself. The main concrete		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			pours at the turbine locations will be planned in advance and will adhere to the following: Avoiding large concrete pours, for Turbine Foundations for example, on days when heavy or prolonged rainfall is forecast, i.e., 25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or rainfall depth greater than monthly average in seven days (prolonged heavy rainfall over a week). Concrete pouring will be avoided during a period in which a Met Éireann Status Red weather event has been implemented. Ensuring that all concrete pour areas are dewatered prior to pouring concrete and while the concrete is curing. Making covers available so that areas can be covered if heavy rain arrives during the curing process which will prevent runoff of concrete which has a high pH. In the unlikely event of any incidents of pollution to watercourses, immediate steps will be undertaken to resolve the cause of the pollution and mitigate against the impact of pollution, following the advice set out in, the site-specific Emergency Response Plan (CEMP- Management Plan 1).		
Ground Stability	NIS	3.4.2	The CEMP includes an emergency response to be applied in the event of a landslide or ground instability. In particular, catch fences and other physical barriers (i.e. concrete blocks) will be on-site and available in sufficient quantities to be used in the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			event of ground instability. A plan will be made to prevent or divert any landslide away from the European sites associated with Killala Bay. On-site training and toolbox talks will ensure any response to any potential incident is escalated quickly and efficiently. Following best practice guidelines (as outlined by The Scottish Executive & Halcrow Group Ltd in "Peat Landslide Hazard and Risk Assessment - Best Practice Guide for Proposed Electricity Generation Developments", April 2017), peat landslide risk analysis has indicated a NEGLIGIBLE HAZARD of instability in relation to the proposed turbine locations and proposed access tracks, should all mitigation measures and recommendations be adhered to, and as such the project should have no adverse effect on the soils, geology or surface water aspects in the vicinity of the proposed Tirawley Wind Farm project.		
Horizontal directional drilling	NIS	3.4.3	As noted in section 3.2 above, during the HDD processes there is a risk of leakages of drilling fluids which can have toxic effects on aquatic biota (depending on the type of lubricant used). It is noted that for this Project, 'Clearbore' or a similar environmentally friendly drilling fluid product will be used during		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			the HDD process. Clearbore is produced using free flowing polymers and is designed to instantly break down and become chemically destroyed in the presence of small quantities of calcium hypochlorite. At normal usage, the product is not toxic to aquatic organisms and is biodegradable. Full details for mitigation during the HDD process are given in Chapter 9: section 9.5.1.12.		
Chemicals	NIS	3.5.3	While storage of chemicals on the Wind Farm Site will be limited to relatively minor quantities of hazardous materials used for maintenance purposes, these will be housed in the site compound within a secure bunded COSSH store to ensure containment should a spillage or leakage occur and thus prevent contaminants from reaching local drains and watercourses.		
Proposed Management Methodology	Biodiversity Enhancement Management Plan (BEMP) Appendix 6.4	2.3	The following management measures outline the work that will be required for implementation of the Plan and will be in effect for the lifetime of the project. Prior to the measures for the BEMP being implemented, AT18 and the associated road (outside of BEMP area) will have been constructed. The sectors of the quarry which will receive spoil will have been prepared by the Contractor accordingly (following		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			details as described in EIAR). The areas to receive spoil are shown in Figure 2.6 of EIAR (and see Figure 3). Prior to this, an ecologist will have carried out a pre-construction survey for the presence of amphibians within the ponds in the southern sector of the site (northern two ponds are not in areas to receive spoil or road excavations) and any other temporarily flooded areas of the quarry floor. Should any spawn or young/adult frogs or newts be found, these will be removed (under licence) to one of the other ponds within the facility. The construction works required to prepare the ground for spoil deposition will be carried out outside of the bird breeding season (March-August). If there is a need for construction works during the restricted season, these will only occur after a pre-construction survey to ensure breeding birds will not be disturbed by works. It is noted that once the preparatory work has been complete, the deposition of spoil would not have effects on local breeding birds. At the commencement of the above-mentioned construction works, all discarded metal and other materials associated with former quarrying activity, as well as materials dumped since (un-		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			authorised), will be removed from the quarry facility for recycling or authorised disposal. The filling of the cells with peat and mineral soil (latter may at times be partly mixed with peat) will be supervised, as required, by the ECoW. When deposition is complete, the material in the cells will be covered with topsoil and/or peat and allowed to settle. Measures will then be implemented to maximise the ecological value of these areas in the context of the overall BEMP area		
Measure no. 1: Baseline ecological resurvey of BEMP area	Biodiversity Enhancement Management Plan (BEMP) Appendix 6.4	2.3.1	Once the construction of AT18 and the access road through the site (leading to AT17) is complete, and the storage facilities prepared and receiving spoil, a general baseline ecological survey of the site will be undertaken to establish conditions at start of Plan period. This will include the following (all surveys will be undertaken by personnel with appropriate expertise): <u>Habitat and flora survey</u> - this will be in period May to September. Principal habitats will be mapped and species lists compiled. Notes will be made on areas of disturbance and where management works may be required. It is anticipated that an up-to-date aerial image will be compiled from a drone survey (and such would be repeated in future years).		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			<u>Bird survey</u> - this will comprise two site visits in summer and two in winter. A transect will be set up through the main habitats and will be used for future monitoring. <u>Bat survey</u> - this will take place in period April to August when maximum bat activity can be expected. Three evening walk-over surveys will be undertaken to record activity throughout the site. <u>Amphibian survey</u> - this will take place in period April to August when maximum amphibian activity can be expected within the ponds and wetlands on site. <u>Invertebrate survey</u> - this will comprise at least two site visits during the summer period, with focus on butterflies, dragonflies and damselflies. Any other wildlife species observed during the various surveys will be recorded, including mammal species such as the Irish hare (recorded in EIAR survey) and the common lizard (recorded in EIAR survey).		
Measure no. 2: Demarcation of BEMP area	Biodiversity Enhancement Management Plan (BEMP) Appendix 6.4	2.3.2	While the extent of the abandoned quarry facility is fairly clear, there is a need to identify the eastern and western boundaries, which are presently unmarked (though old fence lines may exist), so that third parties are aware of the area within the control of the Tirawley Wind Farm Project. This would be done by		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			insertion of wooden posts within the bog at intervals along these boundaries. As disturbance to the bog needs to be minimised, the posts will be inserted by a ground team on foot, i.e. the posts will be hammered in by operatives without the need for bringing machinery onto the peat surface. Should it be ascertained that grazers (sheep and/or cattle) are likely to enter the site from the adjoining bog, a sheep fence will be installed. If tracking machinery is needed to erect this, a row of bog mats will be installed to minimum disturbance to the bog.		
Measure no. 3: Lowland blanket bog	Biodiversity Enhancement Management Plan (BEMP) Appendix 6.4	2.3.3	Physical disturbance There is an obvious strip of disturbance where the bog adjoins the worked quarry areas, including patches where spoil had been spilled onto the bog vegetation - light scrapping back of such may be desirable, unless revegetation has occurred to such an extent that it would be better to avoid fresh disturbance (such will be established from the baseline survey). Drains The baseline survey to be carried out (see Measure 1) will identify if any former drains within the bog need to be blocked. If so, these will be assessed by a hydrologist to ensure that blocking same would not have any indirect impacts. Blocking of drains would normally be done by an excavator using peat (to		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			form a plug) from adjacent (already disturbed) areas. In the case of smaller drains, plastic dams, inserted by hand could be used (see example in Plate 7). The ultimate purpose of blocking drains is to raise water levels in the peat to encourage the growth of peat-forming vegetation and especially the growth of Sphagnum mosses. If there are areas where there are no obvious drains but water is seeping out from the peat, it may be possible to install low peat bunds using an excavator. These peat bunds are essentially low ridges of excavated peat which slows the flow of surface water. This in turn will increase surface wetness in disturbed areas thus facilitating the growth of Sphagnum on the bog surface. Procedures for drain blocking and bunding in bogs are described in detail in Mackin <i>et al.</i> (2017). Self-seeded conifers and spread of scrub Self-seeded conifers derived from commercial plantations are a threat to blanket bog habitats. The plantation to the northwest of the BEMP site was planted in the late 1990s and is reaching maturity and thus is a source of seed. Any self-seeded trees within the bog habitat will be plucked out by hand if small or marked for later removal if large. Also, the potential spread of gorse and/or willow onto the drier margins of the bog will be monitored and control measures will		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			be taken should this become an apparent problem. Measures would include cutting of scrub to the base and dapping the cut stumps with an environmentally sensitive herbicide.		
Measure no. 4: Other habitats	Biodiversity Enhancement Management Plan (BEMP) Appendix 6.4	2.3.4	It is unlikely that the other habitats within the site, such as grassland on gravel surfaces and spoil heaps (from former quarry activities), scrub and ponds, will require active management.		
Measure no. 5: Deposited peat and mineral soil	Biodiversity Enhancement Management Plan (BEMP) Appendix 6.4	2.3.5	Once the deposition of spoil is complete, the deposited material will be covered with either a layer of topsoil or peat or a topsoil/peat mix. This will be derived locally from the sidecast material within the wind farm. It is expected that the material will take several months to dry out and stabilise. It is proposed that the cells will be treated as follows (it is noted that fertilisers to promote growth will not be applied to any of the cells at any stage): Cell(s) with peat deposit If left to re-vegetation naturally, rushes will invariably become dominant throughout over a period of 1-2 years. A higher biodiversity value would be achieved by planting parts of the peat surface with trees and shrubs adapted to bog, chiefly willows (<i>Salix cinerea</i>, <i>S. aurita</i> & <i>S. purpurea</i>), birch <i>Betula pubescens</i> and possibly alder <i>Alnus glutinosa</i>. These would be sourced locally. Planting would best be done in clumps throughout the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			cell rather than continuous cover. It is noted that species such as willow, which has a good presence in the quarry, may naturally colonise the newly created surface. Cell(s) with mineral soil deposit The cells which are largely filled with mineral soil would best be used for meadow grassland, a habitat that has biodiversity value and is relatively scarce in the local area. The surface would be planted with a grass seed mix containing a native Irish wild flower component sourced in Ireland. Towards the end of the first full growing season (September - October) the sward would be mowed, with removal of cuttings. In the second year, a light spring mowing may be necessary and then a further autumn mowing. This management, i.e. sensitive mowing and with removal of cuttings, would then be repeated on an annual basis.		
Operational Phase					
Health & Safety	Chapter 5 Population and Human Health	5.5.7.3	For operation and maintenance staff working at the Proposed Development, 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 Equipment (PPE) to prevent injury.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Equipment within high voltage substations presents a potential hazard to health and safety. The proposed Onsite Substation will be enclosed by palisade fencing and equipped with intruder and fire alarms in line with ESBN and EirGrid standards. All electrical elements of the Proposed Development are designed to ensure compliance with electro-magnetic fields (EMF) standards for human safety. All onsite electrical connections are carried by underground cable and will be marked out above ground where they extend beyond the Site Access Track or Turbine Hardstand surface extents. Details of cables installed in the public road will be available from ESBN. 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. Rigorous statutory and engineering safety checks imposed on the turbines during design, construction, commissioning and operation		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			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 Proposed Development's performance. If a fault occurs, then a message is automatically sent to the operations personnel preventing emergency situations. 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. Access to the turbines inner structure will be locked at all times and only accessed by licenced employees for maintenance. 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: • Exact location • Type of incident • Hazards Access and egress • Number of casualties (if any) and condition • Emergency services present and required		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			The design of the Proposed Development has considered the susceptibility to natural disasters. The proposed site drainage (detailed in Appendix 2.1) 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 Proposed Development through to decommissioning. The Contractor's fire prevention/management 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 onsite at all times. 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. 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.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Flora and Fauna	Chapter 6: Biodiversity	6.5.6.2.1	Turbines should 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. 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. Automatic 'feathering' of idling blades will be implemented (through SCADA) to reduce rotation speed of blades to below 1 RPM while idling. The feathering of blades to prevent 'idling' during low wind speeds will be implemented for all turbines.		
Flora and Fauna	Chapter 6: Biodiversity	6.5.6.2.2	Increased cut-in speeds will be implemented from commencement of operation. Cut-in speeds will be increased during the bat activity season (April-September inclusive) where weather conditions are optimal for bat activity (see below) from 30 minutes prior to sunset and to 30 minutes after sunrise at all turbines. Cut-in speeds restrictions will be operated according to specific weather conditions: For turbines AT02, AT03, AT04, AT10, AT16 and AT18 1 When the air temperature is above 10°C at nacelle height. 2 Wind speeds below 5.5 m/s (at nacelle height).		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			For wind turbines AT07 and AT08 the same curtailment parameters will be implemented from start of July until 15th September inclusive. In the case of AT18, effects of curtailment should be subsequently monitored and updated if measures are found to be insufficient to prevent bat fatalities. <u>Alternative smart curtailment option</u> Due to the considerable unnecessary down time resulting from the proposed “blanket curtailment” (above) and the advances in smart curtailment, a focused curtailment regime is further proposed from the year two of operation. This will focus on times and dates, corresponding with periods when the highest levels of bat activity occur within the site. This includes the use of the SCADA (Supervisory Control and Data Acquisitions) operating system (or equivalent) to only pause/feather the blades below a specified wind speed and above a specified temperature within specified time periods. Post-construction 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 (see Section 6.10.2). 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		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			other factors that are known to influence collision risk. This will include all of the following: • Wind speed in m/s (measured at nacelle height) • Time after sunset • Month of the year • Temperature (°C) • Precipitation (mm/hr)		
Flora and Fauna	Chapter 6: Biodiversity	6.5.6.2.3	The vegetation-free buffer zones (refer to Section 6.5.6.1.1 above) around the identified turbines will be managed and maintained during the operational life of the Proposed Development. Due to mitigation by design, turbines are proposed to be sited at a separation distance from trees where effects on treelines, hedgerows and woodland is minimised. The immediate surroundings of individual turbines will be managed and maintained so that the areas have minimal potential to attract insects. This will be achieved through physical management of habitats without the use of toxic substances. Scrub will not be cleared surrounding AT16 and AT18 as the scrub here is of significant biodiversity value. As stated above,		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			curtailment will be implemented at these locations to facilitate this.		
Flora and Fauna	Chapter 7: Ornithology	7.7.2.1	Areas of forest or scrub around turbines which are cleared will be managed to prevent establishment of scrub and rank vegetation which would encourage small mammals and birds and attract species such as kestrel and hen harrier to hunt near the turbines and increase risk of collision. This maintenance will be carried out on an annual basis by mowing or strimming. The managed areas around turbines which will be implemented as mitigation for bats (see Chapter 6: Section 6.5.6.2.3) will suffice for birds as well. This approach has proved highly effective at several wind farms in central-eastern Spain where the number of collisions with lesser kestrel decreased by 75% to 100% after the ground was superficially tilled to a distance of 80 m from the turbine base (Pescador <i>et al.</i> 2019).		
Material and Waste Management	Chapter 8 Soil and Geology	8.5.2.8	All wastes from the control building and ancillary facilities will be removed by the appropriate contractor. The operational team will carry out maintenance works (to Site Access Tracks, 110 kV Onsite Substation and turbines) and will put in place control measures to mitigate the risk of hydrocarbon or oil spills during the operational phase of the windfarm. Any vehicles utilised during the operational phase will be maintained on a weekly		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			basis and checked daily to ensure any damage or leakages are corrected.		
Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.1	As part of the proposed wind farm drainage design, it is proposed that runoff from the proposed infrastructure will be collected locally in new proposed silt traps, settlement ponds and vegetated buffer areas prior to release into the existing site drainage network. The new proposed drainage measures will then create significant additional attenuation to what is already present. The operational phase drainage system will be installed and constructed in conjunction with the existing site drainage network and will include the following: • Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed into downstream field drains. • Collector drains will be used to gather runoff from Site Access Tracks and Turbine Hardstanding areas of the Wind Farm Site likely to have entrained suspended sediment, and channel it to new local settlement ponds for sediment settling.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- On sections of Site Access Tracks transverse drains ('grips') will be constructed where appropriate in the surface layer of the road to divert any runoff off the road into swales/roadside drains. - Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40 mm non-friable crushed rock. - Settlement ponds, emplaced downstream of Site Access Tracks and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to existing drains. - Settlement ponds will be designed in consideration of the greenfield runoff rate. - All surface water runoff from the development will have to pass through the proposed settlement ponds prior to release into the existing site drainage network.		
Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.3	The existing welfare facilities (septic tank) at the existing dwelling which will undergo a change of use to a Permanent Operations Compound will be upgraded to meet the needs of the Proposed Development.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			- These upgrades will include an appropriately sized effluent treatment system and percolation area all of which will be constructed and maintained in accordance with the relevant guidelines. - There will be no discharge of untreated wastewater during the Operational Phase.		
Noise	Chapter 11: Noise	11.5.4.2	- Turbines AT10, AT11 and AT12 shall be operated in Sound Optimized Mode SO2 during night-time period, from wind speeds of 7-12 m/s and for wind blowing towards the East. - Turbines AT10 and AT11 shall be operated in Sound Optimized Mode SO2 during night-time period, from wind speeds of 7-12 m/s and for wind blowing towards the North-East. - Turbine AT5 shall be operated in Sound Optimized Mode SO1 during night-time period, from wind speeds of 7-12 m/s and for wind blowing towards the South-West. - Turbines AT5 and AT18 shall be operated in Sound Optimized Mode SO1 during night-time period, from wind speeds of 7-12 m/s and for wind blowing towards the South. - Turbine AT11 shall be operated in Sound Optimized Mode SO2, and Turbines AT12, AT16 and AT18 shall be operated in Sound Optimized Mode SO1 during night-time period,		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			from wind speeds of 7-12 m/s and for wind blowing towards the South-East.		
Shadow flicker	Chapter 15: Shadow Flicker	15.2.9.3	Shadow control system will be installed on each of the wind turbines. The control system will calculate, in real-time: • Whether shadow flicker has the potential to effect nearby properties, based on pre-programmed co-ordinates for the properties and turbines • Wind speed (can affect how fast the turbine will turn and how quickly the flicker will occur) • Wind direction • The intensity of the sunlight When the control system detects that the sunlight is strong enough to cast a shadow, and the shadow falls on a property or properties, then the turbine will automatically shut down; and will restart when the potential for shadow flicker ceases at the effected properties. 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.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			The proposed method of mitigation will be implemented to mitigate shadow flicker effects at all sensitive receptors within the study area, allowing for a short period of time for the rotor to come to a stop. 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 Mayo County Council, an investigation will take place 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 property in which the complaint was made. Further refinement of the blade shadow control system will be conducted to eliminate the shadow flicker occurrence from the specified turbines. This could result in the shutting off turbines at specific times of day.		
Major Accident	Chapter 16: Major Accidents and Natural Disaster	16.4.2	In the unlikely event of a fire at a turbine, operations building, at the substation or BESS, all personnel onsite will meet at a designated fire point and emergency services will be contacted. Mayo County Council is the fire authority providing a fire and emergency rescue service to the functional area of Mayo County Council. For operations of an emergency Jennings O'Donovan		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			& Partners Limited Consulting Engineers Sligo nature under Section 26 of the Fire Services Act 1981, refer to Mayo County Major Emergency Plan7.		
Traffic	Chapter 17: Traffic and Transportation	17.7.2	- All vehicles using the Wind Farm Site shall either have roof mounted flashing beacons or will use their hazard lights. - A speed limit of 25 km/h shall apply to all vehicles within the Wind Farm Site. - Signage shall be maintained throughout the operational period. - Road surfaces shall be inspected on a quarterly basis and any remedial works identified will be carried out within one month of the inspection.		
Decommissioning Phase					
Flora and Fauna	Chapter 7: Ornithology	7.7.3	As the decommissioning works will involve works similar to those involved at construction stage, these could result in similar effects on birds. Hence, the mitigation that will be undertaken during construction will also be applied during the decommissioning phase (taking into account changes in bird populations and distributions that may have occurred locally during the operational life of the Proposed Development).		
Material and Waste Management	Chapter 8: Soil and Geology	8.5.3.3	Where possible, redundant Site Access Tracks, turbine bases and hardstand areas will be reinstated. Some of the Site Access		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Tracks and hardstanding areas, if not required during operation, will be reinstated. Areas of excess soil and rock will be reused in order to match the surrounding land as near as possible. Drainage and slopes will be restored as close to the original ground as possible if it is geotechnically and environmentally beneficial to do so. After decommissioning of the wind farm, all Site Access Tracks and areas of hardstanding will be returned to as close to their natural state as possible, again if it is geotechnically and environmentally feasible.		
Traffic	Chapter 17: Traffic and Transport	17.7.3	As the turbine blades can be cut into manageable lengths on decommissioning, there is no requirements to re-use the TDR for decommissioning. Thus, all decommissioning related traffic will use the R314, L-5177-0, 5176-0, L-1107-99, L-1110-87, L-1110-117 and L-1111-0 as well as the local road network within the Proposed Development noted in Section 17.4.2. The Developer is applying for a consent for an operational period of 35 years for the Proposed Development. Cranes of similar size to those used for construction will disassemble each wind turbine using the same crane Turbine Hardstands. The towers, blades and all components will then be removed from the Wind Farm Site and reused, recycled, or disposed of in a suitably licenced facility. The wind turbine transformers will also be removed from		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			the Wind Farm Site. There is potential to reuse wind turbine components, while others can be recycled. Underground cables will be removed while the ducting will be left in-situ. The foundations and upstand sections will remain in-situ. All Wind Farm Site Access Tracks, Turbine Hardstanding areas and drainage will be left in-situ for future use. It is intended that all above ground components and underground cabling (ducting left in-situ) will be removed from the Wind Farm Site as part of the decommissioning of the Proposed Development. The following elements are included in the decommissioning phase: • Wind turbines dismantling and removal off the Wind Farm Site • Underground cabling removal (ducting left in-situ) • Turbine Foundation backfilling following dismantling and removal of wind turbines (any excavated material, will be re-instated / foundations that protrude above ground level will be backfilled with soil -underground reinforced concrete remaining in-situ) • Transport Route Accommodation Works Any structural materials suitable for recycling will be disposed of and sent to a licenced facility. The financial costs of		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			decommissioning, at current material values, will be more than met by the recycling value of the wind turbine components. Prior to wind turbine removal, due consideration will be given to any potential effects arising from these operations which are mentioned in this EIAR (see Section 17.7.2). Potential effects are likely to be similar to that of the construction phase, to an equal or lesser extent. Some of the potential issues could include: • Potential disturbance by the presence of cranes, HGVs, and personnel onsite • Time of year and timescale (to be outside sensitive periods). Prior to the decommissioning work, a comprehensive plan will be drawn up and submitted to the relevant planning authority for written agreement. The plan will take account of the findings of this EIAR and the contemporary best practice at that time, to manage and control the component removal and ground reinstatement. If these alternatives are not viable then the process equipment would be decommissioned; all plant, machinery and equipment will be emptied and dismantled to be sold or recycled or, where these are not possible, disposed of through a licenced waste		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			contractor. If required, all machinery will be cleaned prior to removal and all necessary measures implemented to prevent the release of contaminants. All waste will be removed from the facility and recycled wherever possible; disposal operations will be controlled by licenced waste contractors. The buildings and infrastructure would be retained and repurposed.		

Table 18.2: Monitoring Schedule

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
Pre-construction Bat Monitoring	Chapter 6: Biodiversity	6.9.1	If three years lapse from between the planning-stage baseline surveys and installation of the wind turbines, it will be necessary to repeat one full season of surveys during the activity period (EUROBATS, 2014). Future survey work will be completed according to best practice guidelines available (NatureScot 2021) and will include static detector, activity and roost inspection surveys.			
Pre-construction Tree Survey	Chapter 6: Biodiversity	6.9.1.1	A preliminary survey of trees within a 200 m zone of each turbine was undertaken on 8th and 9th March 2023 and 14th to 15th February 2024. This has identified 29 trees either category 1 or 2 (see Appendix 6.2 for full details). All of these trees require at-height surveys to be conducted by a suitably qualified ecologist with roost disturbance and inspection camera licences should felling or trimming be required. Should potential roost features (PRFs) be found above ladder height the use of tree climbing / cherry pickers and/or scaffolding will be required in order to gain access to PRFs for detailed examination with the use of recording inspection cameras. Surveyors will carry out a detailed internal inspection using a torch, mirror and endoscope. Data such as internal dimensions			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			particularly length of cavity would be gathered where relevant. Should the removal of the roost be required at a later stage these dimensions will be vital. Should a bat roost be found a derogation licence will be sought from the NPWS seeking permission for the translocation of the roost (if possible). Evidence of bat usage sought during the surveys will include: • Bat droppings (these will accumulate under an established roost or under access points); • Live bats; • Insect remains (under feeding perches); • Oil (from fur) and urine stains; • Scratch marks; and • Bat corpses.			
Pre-construction Otter Survey	Chapter 6: Biodiversity	6.9.2	If three years lapse from between the planning-stage surveys (carried out in 2022-23) and commencement of construction works at water crossings, it will be necessary to carry out a survey for otter in areas of potential suitable habitat which will be disturbed by the works as the local distribution of otter may have changed in that period.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			It is noted that should the pre-construction survey indicate a requirement for protection of the relevant species (in this case otter), appropriate measures will be taken to comply with all relevant legislation and best practice guidance in force at the time.			
Pre-construction Badger	Chapter 6: Biodiversity	6.9.3	If three years lapse from between the planning-stage surveys (carried out in 2022-23) and commencement of construction works, including tree-felling, it will be necessary to carry out a survey for badger in areas of potential suitable habitat which will be disturbed by the works as the local distribution of badger may have changed in that period. It is noted that should the pre-construction survey indicate a requirement for protection of the relevant species (in this case badger), appropriate measures will be taken to comply with all relevant legislation and best practice guidance in force at the time.			
Pre-construction Amphibian Survey	Chapter 6: Biodiversity	6.9.4	The status of the common frog and smooth newt within the ponds within the abandoned quarry at Castlelackan Demesne will be determined prior to the commencement of any construction works, including those in relation to spoil deposition.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			Should the pre-construction survey indicate a requirement for protection of the relevant species, appropriate measures will be taken to comply with all relevant legislation and best practice guidance in force at the time. This will include removal (under licence) of spawn, tadpoles and/or adults from the pond which will be lost to one of the other ponds onsite.			
Ecological Monitoring	Chapter 6: Biodiversity	6.9.5	An Ecological Clerk of Works (ECoW) will be employed by the Contractor for the duration of the construction phase and will ensure that all mitigation measures relating to ecology described in this report and contained within the planning permission are implemented.			
Post construction Habitats	Chapter 6: Biodiversity	6.10.1	Post-construction habitat monitoring will focus on the following: • Blanket bog at wind turbine AT15 location which had been disturbed by construction activities; • The newly planted hedgerows and the woodland plot; • The Biodiversity and Enhancement Management Plan area (see details in Appendix 6.4). When all ground works are complete on the bog at wind turbine AT15 location, a vegetation survey will take place by an ecologist. This will describe the state of the vegetation in			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			the area where disturbance has occurred. A series of monitoring quadrats will be established to accurately describe the vegetation, including proportion of bare peat, at the time (Year 1) and in subsequent years. Details will be worked out by the ecologist but it is likely that quadrats will be 2 m x 2 m in size and will be geo-referenced and photographed. Vegetation recovery will be monitored over a period as follows: Years 1, 2, 3, 5, 10, 15, 20, 25, 35. All newly planted hedging and woodland will be monitored annually for the first 10 years of the operation of the scheme. Any identified failed trees will be replaced. Repairs will be made to fencing and any specific tree wire protection as required. Reports will be prepared for each year of monitoring and issued to the relevant planning authority.			
Post construction Bats	Chapter 6: Biodiversity	6.10.2	Monitoring will take place for at least 3 years after construction, which will provide sufficient data to detect any significant change in bat activity relative to pre-construction levels. It will assess changes in bat activity patterns and the efficacy of mitigation to inform any changes to curtailment. During years one to three of operation (under blanket curtailment restrictions) bat activity will be measured at each			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			turbine location, in combination with carcass surveys. In addition, wind speed and temperature data will be continuously recorded at the nacelle height of each turbine. Modern remotely-operated wind turbines as proposed here allow cut-in speeds to be controlled centrally/automatically, facilitating an operation regime designed to minimise harmful impacts to bats. If, following the initial 3 years of post-construction surveys, bat activity increases above the baseline and/or remains consistently high and carcass searches indicate fatalities are occurring (refer below), increased cut-in speeds will continue. This will subsequently be monitored in Years 5, 7, 10, 15, 20, 25 and 35, with further review after each monitoring period. Alternatively, if it is found that the results of bat activity surveys and fatality searches confirm that the level of bat activity at turbine locations is low then consent will be sought from Mayo County Council for the cessation in the requirement for these cut-in speeds / curtailment measures, or a reduction on the timing restrictions for these measures.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			Where post construction acoustic surveys are undertaken, they will utilise full spectrum automatic detectors deployed, as a minimum, for one complete bat activity season. Acoustic monitoring will be supplemented with thermal imaging cameras etc. to provide more detailed information on bat activity in the vicinity of turbines. An assessment of static data gathered during operational surveillance will be completed using Ecobat type analysis as recommended by SNH (2021) as a minimum, or other equivalent guidance as dictated by up-to date standards and practices.			
Post construction Mitigation monitoring	Chapter 6: Biodiversity	6.10.2	The success of the implemented mitigation measures for bats on the project will be monitored for a period of three years after construction and appropriate measures taken to enhance these if and where required. Should bat fatalities be found within the first three years of surveys additional mitigation measures will be implemented in order to prevent this from reoccurring. Buffer zones surrounding the turbines will be increased from 50 m to 65 m and/or curtailment parameters will be tweaked to increase cut-off times.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			A recommended schedule for monitoring is given in Table 6.14 below. <u>Bat fatality monitoring</u> Although curtailment is a mitigation proven to lower bat fatalities it is recommended that the scheme be monitored for bat fatalities for the first three years of operation (post construction surveys) and subsequently in years 5, 7, 10, 15, 20, 25 and 35 as part of the additional curtailment monitoring schedule. A comprehensive onsite fatality monitoring programme is to be undertaken following published best practice (e.g. SNH 2021 or equivalent at the time of operation), as follows: a) Carcass removal trials to establish levels of predator removal of possible fatalities. This will be done following best recommended practice and with due cognisance of published effects such as predator swamping, whereby excessive placement of carcasses increases predator presence and consequently skews results. At the time of writing (2024), predation trials set using trail cameras following guidance set out in Smallwood (2010) provides the most accurate results.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			b) Turbine searches for fatalities will be undertaken with the use of conservation dogs following best practice in terms of search area (minimum radius hub height) and at intervals selected to effectively sample fatality rates as determined by carcass removal trials in (a) above. At the time of writing (2024), the typical search area surrounding the turbine bases follow Edkins (2014) <i>Impacts Of Wind Energy Developments On Birds And Bats: Looking Into The Problem</i>, who recommends the "search width should be equal to the maximum rotor tip height", e.g. turbines at Tirawley have a max tip height of 135 m thus the spread of searched area, as a rectangle, square or circle, should be 67.5 m in either direction from the turbine base." c) Search intervals would follow SNH (2021). d) Recorded fatalities would be calibrated against known predator removal rates to provide an estimate of overall fatality rates. e) Monitoring report to be submitted annually to Mayo County Council at agreed intervals			
Pre-construction and	Chapter 7 Ornithology	7.8.1.1	Confirmatory breeding bird surveys focused on sparrowhawk, buzzard, merlin, kestrel and snipe, will be required in the spring/summer prior to construction to establish the breeding			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
construction Bird Surveys			status and distribution within the Wind Farm Site to a distance of up to 500 m from any works area. From the results of monitoring, the likely need for restrictive zones to avoid or minimise the potential for adverse effects on breeding activities will be determined. All monitoring surveys will be undertaken by a suitably qualified ornithologist. As more than two or three years are expected to have passed between the baseline surveys in 2021-2023 and the commencement of construction, the surveys will include all target species as the distribution of some species may change in the intervening period. Any ground clearance of vegetation during the restrictive period March to August (inclusive) that could support breeding birds will be walked to establish the presence of breeding birds (mainly passerines). This will be done by an ornithologist up to 10 days before the clearance works take place. If 10 days elapse without the clearing commencing, a further survey will take place. The focus will be on the area to be cleared but zones up to 100 m (approximately) around the area will also be included. Should a breeding territory be identified, the surveyor will attempt to establish the phase of			

Reference Heading	ElAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			building, e.g. nest building, incubating, feeding young, and will advise the contractor accordingly on measures to be followed.			
Post construction Bird Surveys	Chapter 7 Ornithology	7.8.1.2	Flight activity surveys Flight activity surveys will be undertaken using the Vantage Point method (Scottish Natural Heritage 2017) during the operational phase of the Wind Farm. This will use the same five vantage points as used for the baseline ElAR surveys. The surveys will be undertaken monthly in Years 1, 2, 3, 5, 10 and 15 of the life-time of the Proposed Development (in accordance with Scottish Natural Heritage Guidance 2009). Distribution and abundance surveys Distribution and abundance surveys will be undertaken to monitor short-term and long-term effects (if any) on bird species of conservation importance within the Wind Farm Site. It is proposed that breeding snipe and wintering hen harrier are the key species. For these two species, the methodology will be similar to as described for the baseline surveys in Section 7.2.3 (namely Breeding wader survey & Hen harrier winter roost survey). Surveys will be in the same monitoring years as for the vantage point surveys.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			Collision searches Whilst no significant effects on birds due to collision are predicted, the Wind Farm will provide an opportunity to gain baseline data on bird/turbine interaction and hence the Wind Farm Site will be monitored for bird fatalities. Carcass search was traditionally completed by human observers whose efficiency is influenced by several factors including carcass type, environmental conditions and observer competence. Numerous studies have been conducted demonstrating that dogs have a superior ability to detect bird and bat carcasses than humans, particularly with small carcasses or in dense vegetation (see for example Mathews 2013). A standard plot size will be selected at each turbine location where search will occur. 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): Intact - a carcass that is completely intact, is not badly decomposed, and shows no sign of being fed upon by a predator or scavenger			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			- 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 - 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 for birds can be combined with the bat carcass searches which will be carried out in the first three years of operation (post-construction surveys) and subsequently in years 5, 10, 15, 20, 25 and 30 in the spring to autumn periods. In addition, winter surveys will be carried out for birds in each survey year owing to the occurrence of wintering hen harrier in the area.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
Water quality monitoring	Chapter 9: Hydrology and Hydrogeology	9.5.1.1	Proposed Drainage and Water Quality Monitoring: An inspection and maintenance plan for the onsite drainage system will be prepared in advance of the commencement of any works and will be included in the CEMP. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Any excess build-up of silt levels at dams, the settlement ponds, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. During the construction phase field testing (visual, supplemented with pH, electrical conductivity, temperature, dissolved oxygen and turbidity monitoring), sampling and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken for each primary watercourse, and specifically following heavy rainfall events (i.e. weekly, monthly and event-based).			
Earthworks	Chapter 9: Hydrology and Hydrogeology	9.5.1.2	Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
Water quality monitoring	Chapter 9: Hydrology and Hydrogeology	9.5.1.10	Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system.			
Cultural heritage	Chapter 14: Cultural heritage	14.5.1	Ground works during the construction phase will be subject to archaeological monitoring by a suitably qualified archaeologist under licence by the National Monuments Service. This will also include a systematic advance programme of archaeological field-walking surveys within Proposed Development areas in forestry plantations following tree felling to confirm the conditions predicted in this assessment, i.e., that they contain no visible surface traces of potential unrecorded archaeological or architectural heritage sites. In the event that any sub-surface archaeological features are identified during archaeological monitoring they will be securely cordoned off, cleaned and recorded <i>in situ</i>. The National Monuments Service will then be notified and consulted to determine further appropriate mitigation measures, which may include preservation <i>in situ</i> (by avoidance) or preservation by record (archaeological excavation).			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
Traffic	Chapter 17: Traffic and Transportation	17.10	The local road network near the site used to transport construction materials will be monitored during construction so that any damage caused by construction traffic associated with the Proposed Development can be identified and maintenance works carried out as soon as practicable to avoid issues for other road users and the local population of the area. Any extensive repairs, such as full road width resurfacing, required to the local road network arising from damage caused by traffic associated with the Proposed Development will be carried out once construction activities have ceased onsite. The monitoring will be undertaken by the Owner's Engineer to be appointed by the Developer for the construction stage in conjunction with the Local Authority Roads Area Engineer on the R314, R315, L-1108, L-5177-0, L-5176-0, L-1107-99, L-1110-87, L-1110-117 and L-1111-0 including the local road network within the Proposed Development as outlined in Section 17.4.2. The appointed Contractor will be responsible for seeing that HGV drivers travelling to and from the site obey the designated speed limits, rules of the road and that they only use the designated CHR. This will be undertaken through regular toolbox talks for drivers during the construction of the Proposed Development.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
Water quality	Management plan 2 Water quality management	2.2	Field Monitoring Field monitoring of water quality parameters and collection of samples will be undertaken by the Ecological Clerk of Works or water specialist. The person undertaking the water monitoring will be appropriately qualified to third level education and experienced in the field for no less than 5 years on the required monitoring methods and the use, calibration and maintenance of all monitoring equipment used. Sampling will be in accordance with International Standards of Operation. The chosen laboratory will be accredited. Laboratory Analysis Laboratory analysis of water samples will also be undertaken as part of the monitoring programme by an independent and appropriately certified laboratory to be appointed by the Ecological Clerk of Works or water specialist. ISO 17025 Accreditation proves a laboratory has an acceptable quality management system in place, and it has the ability and competence to provide testing and calibration results. Coordination of the laboratory sampling and analytical programme will be undertaken by the person undertaking the water monitoring or the Environmental Manager. Samples will be dispatched for analysis under chain of custody			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			procedures. Laboratory analytical results will be sent directly to the Ecological Clerk of Works/ water specialist and the Environmental Manager. Interpretation and reporting of both the field and laboratory data will be the responsibility of the Ecological Clerk of Works/water specialist.			
Water quality	Management plan 2 Water quality management	3.1	Construction-stage details of monitoring and precise monitoring locations will be agreed in writing with the Local Authority prior to commencement of construction works and following consultation with Inland Fisheries Ireland. Water Quality Monitoring locations will be identified through grid reference, photographic record and indicated on a plan. For repeat sampling locations, each location will also be marked on the ground (stake/post) to ensure that the correct location is sampled each time. Sample locations will be labelled consistently for the duration of the monitoring period. Where any additional locations are sampled during the works, the location (grid reference) of the sampling point will be recorded, and a photograph will be taken at time of sampling.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			'Control' sample locations will also be included in the scope of any monitoring. A water sampling location map will be developed and included in the detailed method statements for precise locations at water crossings within this development. Hydrochemistry Monitoring Sample locations, monitoring frequency and precise hydrochemistry parameters will be agreed in writing with Mayo County Council, prior to commencement of construction, and following consultation with Inland Fisheries Ireland. As a minimum, the monitoring programme will include: Daily visual observation in areas of high construction activity or during high rainfall periods to identify any evidence of siltation, oil or silt. Visual inspections will include details of the colour of the water at the time of inspection.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			- Weekly visual inspections and monthly field hydrochemistry monitoring. - One round of post construction monitoring, to be agreed with Mayo County Council. Post construction will be defined as when the reinstatement phase is completed. Monthly analysis of water parameters will be carried out. Construction-stage analytical determinants (including limits of detection and frequency of analysis) will be specified and agreed with the Local Authority and third parties for each sample location. The agreed suite of grab sample determinants will include the following: Parameters for hydrochemistry analysis - pH - Temperature - Total Suspended Solids (TSS) - Dissolved Organic Carbon (DOC) - Conductivity - Dissolved Oxygen (DO) - Total Oxidized Nitrogen (TON) - Ammoniacal Nitrogen			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			• Ammonia • Potassium • Phosphate • Biological Oxygen Demand (BOD) • Chemical Oxygen Demand (COD) • Total Petroleum Hydrocarbons (TPH)*			
Water quality	Management Plan 3 Surface water management plan	6	• Surface water runoff control infrastructure will be checked daily and maintained on a monthly basis or as required. • 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 works. • 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. • The monitoring requirements for local surface water bodies upstream and downstream of the Site during			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			the construction phase are outlined in Management Plan 2- Water Quality Management Plan.			
Waste management	Management plan 5 Waste management plan	2.3	Checks and Records All stores onsite of oil, fuel, chemicals etc will be regularly checked (in particular in extreme weather conditions) for evidence of leaks or spills. The timing of each of these checks is detailed in Section 3. These checks will be visual inspections to look for evidence of contamination. Records of all visual checks will be maintained and be available for inspection on request. Waste Management will be a regular item on team meetings as required by the CEMP. Waste Management Practices will be revised at these meetings. A waste audit will be carried out every six months (Section 2.3.3). Waste Inventory A waste inventory will be maintained and kept up to date. It will include an inventory of all waste materials leaving the site for disposal and the name of the licensed operator and intended disposal facility. A Waste Inventory Spreadsheet will be added to this plan by the Contractor.			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			Monitoring of Site Waste Management Plan The contractor will appoint a person to implement and monitor the Waste Management Plan. This will be the Ecological Clerk of Works. As stated, the Waste Management Plan will include an inventory of the types and estimates of the waste to be produced onsite. The appointed person will ensure that a Site Waste Audit is carried out every six months.			
Monitoring	Biodiversity Enhancement and Management Plan (Appendix 6.4)	2.4	Monitoring for habitats For habitat distribution within the plan area, it is proposed that monitoring will comprise a repeat of the general ecological survey of site (as described in Measure 1 above), including specific monitoring using quadrats where proactive work has taken place within the blanket bog area and where meadow grassland has been planted on the deposition cells. The general walkover survey to describe habitats and species distribution would take place in Years 1, 2, 3 and 5 following the implementation of the Plan, with Year 1 being the base year at the time the works are carried out. After Year 5, a review of the progress of the Plan, in light of the objectives, will be conducted by the relevant parties (wind farm operator and independent ecologist). A programme will be developed			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			for the next 5-Year period of the Plan (and so on for the lifetime of the project), which will be agreed with the relevant planning authority. Subsequent monitoring is likely to be at a lower frequency than in Years 1-5. Where permanent quadrats are set up in the bog and grassland habitats, these would be monitored at the same frequency. The purpose of the quadrats is to monitor in detail vegetation changes over time. The location of these quadrats will be marked clearly using wooden pegs and the grid reference will be recorded using GPS. The occurrence and cover of vascular plant and moss species will be recorded in these quadrats according to the Zurich-Montpellier approach (Mueller-Dombois and Ellenberg, 1974). Various important parameters will also be recorded, including height of vegetation, cover of bare peat/soil, and degree of grazing and poaching (if any). This survey will take place in the late summer period of each monitoring year. Photographs of the quadrats will also be taken on deployment and subsequently during the following years of monitoring. During the site visits for habitat monitoring of bog, a walk-over survey will take place in order to check for the presence of self-seeded conifers that may become established (as required in Measure 3). Seedlings up to approximately 20 cm in height can be easily plucked out by hand, while larger			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			saplings may need to be removed by loppers or hand-saw at some stage later in the year. The walk-over survey will also observe if any further drains require blocking or if any of the newly installed dams (if used) require maintenance. Monitoring for fauna As it is expected that the diversity of bird species will increase as the Plan progresses, the breeding and wintering birds will be monitored. This will be done using the same quadrat as used in the initial baseline survey (Measure 1), though a deviation may be needed to include the re-vegetating deposition areas. Bats and amphibians will also be included within the monitoring, following standard methods as used in the initial baseline survey. The monitoring for fauna will be undertaken in Years 1, 2, 3 & 5, with a review after Year 5 (as with the habitat monitoring). Time Period for Plan Implementation It is expected that Year 1 of the Plan will coincide with the completion of wind farm construction works. The baseline surveys (Measure 1) and the subsequent physical works required (as described in section 2.3) will be implemented in			

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			Year 1, subject to settling of the deposited spoil and appropriate seasonality for surveys. Year 2 and subsequent years of the Plan will be at approximately 12 months intervals after Year 1. It is preferable that the various monitoring is carried out at similar times in each monitoring Year. Tasks such as mowing of meadow grassland will be undertaken in each of the years (Measure 5).			