APPENDIX 17.1

MITIGATION MEASURES

Introduction

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

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

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

The mitigation proposals in the below format provides an easy to audit list that can be reviewed and reported on during the future phases of the project. The proposal for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as **Appendix 2.1** of this EIAR. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

All monitoring measures which will be implemented during the pre-commencement, construction, operational and decommissioning phases of the project are outlined in **Table 17.1b**. All monitoring measures were set out in the relevant chapters of this EIAR. The monitoring proposals are presented in terms of the monitoring requirement, frequency of monitoring and the mechanism for

reporting results where applicable. By presenting the monitoring proposals in the below format, it is intended to provide a monitoring schedule that can be reviewed and tracked during all phases of the project to ensure all the required monitoring is completed as required.

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

Table 17.1a: Summary of Mitigation Measures

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase						
MM1	Land Use	Chapter 4: Population and Human Health	4.5.5 Land Use	Existing forestry tracks have been incorporated into the design to minimise the construction of new Site Access Roads and minimise the removal of forested areas. New Site Access Roads have been sensitively designed to minimise impact on forestry. Electricity cables will be installed underground in or alongside Site Access Roads to avoid and minimise negative impact. Prior to the grid connection installation works within public roads, it is proposed that all access points (domestic, business, farm) are considered when finalising the temporary road closures and diversions, to maintain local access as much as possible and avoid impacts on various land uses.		
MM2	Tourism	Chapter 4: Population and Human Health	4.5.6 Tourism	In providing for public safety, appropriate signage and safety measures will be put in place where walking trails/forestry tracks will be closed to the public due to construction and decommissioning activities.		
MM3	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.2 Habitats *Filago minima*	A pre-construction survey will take place to map its distribution along tracks in the summer before construction commences.		
MM4	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.3 Badgers	As required under the Wildlife Acts, mitigation is required to ensure that active setts are not disturbed. Owing to the difficulty of surveying for badgers within closed canopy conifer forests, the following approach will be followed: Survey for presence of badgers will be carried out at the time of the tree felling operations. This will be by an ecologist with experience of badger survey and working in association with the tree felling contractor. Survey for badger is preferably carried out in the period October to March when vegetation cover is low.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Before any felling commences, the ecologist will survey marginal areas around the plantation for signs of badger presence. Also, any accessible areas within the plantation, such as unplanted gaps, will be searched for signs. Once felling commences, the ecologist will monitor the progression of the works as the required areas are cleared. Should there be any evidence of a badger sett, all work will cease immediately and a buffer zone will be established where felling works will be restricted. Mitigation will be implemented as considered necessary. This would include application to NPWS for permission to close a sett that could be disturbed by the works. Note that since closure of active setts is prohibited during the badger breeding season (December to June inclusive), scheduling of the tree felling process is important to avoid delays.		
MM5	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.5 Common Frog	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 or wetlands in the vicinity.		
MM6	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.6.1 Bats Buffer	Areas of conifer plantation will be felled in order to discourage bat species from flying close to turbines. Based on the most up-to date guidance it is proposed to create buffers of 100 m from blade tip to forestry edge for turbines 3, 4, 5 and 10 as these are based within conifer plantation. In other areas treelines and conifer edges will be cut back to a distance of 65 m from blade tip to top of tree (max height of tree at full growth). Turbines 3, 4, 5 and 10 should have a clearing of 152m. All other turbines require a setback of 110m from woodland,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				treeline, scrub or hedge. Key-holed wind turbine locations will be cleared of all vegetation. It is important that conifers are not cut and left in situ; appearing like typical recently cut plantation. This habitat type quickly succeeds to scrub, a favourable habitat feature for feeding bats. Instead, land will be cleared and replaced with a low, maintained sward of grassland (mowed once or twice each year) or maintained as bare ground with a hardcore surface for the lifetime of the project.		
MM7	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.6.1.1 Bats Vegetation Removal	An ecologist/ECoW will supervise areas where vegetation, scrub and hedgerow removal will occur prior to construction.		
MM8	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.6 Bats Pre-construction Surveys	It is recommended that if three years lapse from between planning-stage surveys in 2019 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 should be completed according to best practice guidelines available. The most current guidance documents for Irish wind farms are from NatureScot (NatureScot, 2021) and Northern Ireland Environment Agency (NIEA, 2021). NIEA guidance suggests increased duration of static monitoring of 50 nights a high suitability sites for bats and provides alternative dates for erection of statics when the proposed site is situated in an upland location.		
MM9	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.8 Pre-construction bat survey	It is recommended that if three years lapse from between planning-stage surveys in 2019 and installation of the wind turbines, it will be necessary to repeat one full season of surveys during the activity period. Future survey work should be completed according to best practice guidelines available. The most current guidance documents for Irish wind farms are from NatureScot (NatureScot, 2021) and Northern Ireland Environment Agency (NIEA, 2021).		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM10	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.8 Pre-construction badger survey	As it is expected that more than 2 years will have passed since the 2021 baseline survey before construction commences, all work areas will be subject to a pre-construction survey for badger. This survey will give particular focus to the afforested part of site where badger is most likely to occur.		
MM11	Flora and Fauna	Chapter 6: Aquatic Ecology	6.5.1 Embedded Mitigation	The design principle of maintaining set-backs of 65m for turbines and associated infrastructure from watercourses and utilising existing forestry access tracks will be implemented.		
MM12	Peat Management	Chapter 8: Soil and Geology	8.Subsoil and Bedrock Removal	The removal of peat and mineral subsoil / bedrock is an unavoidable impact of the 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 impact on the geotechnical and hydrological balance of the Site.		
MM13	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.1.2 Mitigation by Design & Mitigation Objectives	Prior to the commencement of construction, the drainage plan will be implemented. **ATTENUATION FEATURES:** Mitigation measures to address surface water runoff and drainage include in line attenuation features such as check dams and stilling ponds and buffered outfalls). Both check dams and stilling ponds provide mitigation against potential impacts to water quality, erosion, and discharge velocity, however they also facilitate buffered and diffuse percolation of surface water runoff into the receiving environment along the permitter of the development footprint. **CHECK DAMS:** Check dams will be constructed along the length of constructed drainage at regular intervals in line with relevant guidance (**Section 9.2.2**) (**Figure 9.12**). **STILLING PONDS:**		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Stilling ponds with buffered outfalls will be constructed at drainage outfalls associated with the construction runoff drainage network (**Figure 9.1a, Section 5.7 of Management Plan 2 Appendix 2.1**. Buffered outfalls will be established at intervals along the clean runoff drainage network. **PROMOTION OF PEATLAND HABITATS** Excavated peat will be deposited with a view to restore infilled excavation areas associated with the site e.g., adjacent to hardstand areas and borrow pits.		
MM14	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.1.3 Constraints	The following buffer zones will be marked and implemented prior to construction: • 50m Surface Water Buffer Zone - Mapped surface water features i.e., mapped streams, rivers, lakes. Source for mapped surface water features; EPA. • 15m Drainage Buffer Zone - Non-mapped drainage features i.e., non-mapped streams, natural and artificial drainage features. Recommended groundwater buffer zones range from e.g., 15m (exclusion zone karst swallow holes) to entire catchments (source protection in regionally important karstified aquifer) depending on site specific characteristics. For the purpose of this assessment the following conservative approach has been applied: • 100m Groundwater Buffer Zone – Groundwater abstraction points in relation to proposed access tracks and cable trenches i.e., shallow excavation. Source for mapped abstraction points: GSI. Not applicable, none within 100m of the Site. Applicable to the grid connection and turbine delivery routes. • 250m Groundwater Buffer Zone – Groundwater abstraction points in relation to proposed borrow pits and foundations. Source for mapped abstraction points: GSI.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM15	Land Use	Chapter 13: Material Assets and Other Issues	13.4.3 Agriculture	Mitigation measures to minimise impacts on agricultural land use have been incorporated into the design stage. The construction and operational footprint of the Development has been kept to the minimum necessary to avoid impact on existing land uses and existing tracks have been used where possible.		
MM16	Land Use	Chapter 13: Material Assets and Other Issues	13.5.4 Forestry	Existing forestry tracks have been incorporated into the design to minimise the construction of new Site Access Roads and minimise the removal of forested areas. New Site Access Roads have been sensitively designed to minimise impact on forestry. Electricity cables will be installed underground in or alongside Site Access Roads to avoid and minimise negative impact.		
MM17	Telecoms and other service interference	Chapter 13: Material Assets and Other Issues	13.6.5 Telecommunications	All electrical elements of the Development are designed to ensure compliance with electro-magnetic fields (EMF) standards for human safety. Mitigation measures were undertaken in the design phase through mitigation by avoidance i.e., the known routes of the telecommunication links were plotted and a buffer was applied to them, outside of which the proposed turbines were located. Compliance with the EMC Directive 2014/30/EU will mean that the electromagnetic emissions from devices used will not cause interference to other equipment.		
MM18	Telecoms and other service interference	Chapter 13: Material Assets and Other Issues	13.7.5 Electricity Networks	Mitigation by design and avoidance will minimise impacts on existing electricity networks. • Confirmatory drawings for all existing services will be sought upon consultation with ESB Networks. • 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• 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.		
MM19	Telecoms and other service interference	Chapter 13: Material Assets and Other Issues	13.8.5 Air Navigation	The IAA will be notified of intention to commence crane operations with at least 30 days prior notification of their erection.		
MM20	Natural Resources	Chapter 13: Material Assets and Other Issues	13.9.4 Quarries	Existing tracks have been used where possible and the layout was designed to minimise the length of new track required in order to reduce the requirement for such stone material.		
Construction Phase						
MM21	Land Use	Chapter 4: Population and Human Health	4.5.5 Land Use	As part of these works, the public and other stakeholders will be provided with updates on construction activities which will affect access to lands. This will be communicated to members of the public through a community liaison officer employed for the duration of the construction period.		
MM22	Land Use	Chapter 4: Population and Human Health	4.5.5 Land Use	In providing for public safety, appropriate signage and safety measures will be put in place where forestry tracks will be closed to the public due to construction activities. During the construction phase, a diversion will be put in place for the section of the Beara to Breifne Way which passes through the Site. This will direct walkers to an alternative route adjacent existing access tracks for walkers to bypass the construction activity. Appropriate signage will be put in place to direct		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				walkers. Notification of this diversion will be provided to Sport Ireland, Failte Ireland and Cork County Council to provide online information for walkers and hikers in advance of their recreation activity.		
MM23	Health and Safety	Chapter 4: Population and Human Health	4.5.7 Human Health and Safety	All construction staff will be adequately trained in health and safety and will be informed and aware of potential hazards. All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safe Pass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The Developer is required to ensure a competent contractor is appointed to carry out the construction works. The Contractor will be responsible for the implementation of procedures outlined in the Safety & Health Management Plan. In relation to COVID-19, up to date Health Service Executive guidance will be consulted regularly in line with Health and Safety Authority recommendations and all reasonable on-site precautions will be taken to reduce the spread of COVID-19 on construction sites, should the virus be prevalent at the time of construction. Once mitigation measures and health and safety measures are followed, the potential for impact on human health on the		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				construction site during construction is expected to be not significant and temporary to short-term. Public safety will be addressed by restricting access to the public in the vicinity of the site works during the construction stage. The construction site and associated recreation trails will be temporarily closed in sections to the public for the 18-24 month construction period. This measure aims to avoid potential injury to members of the public as a result of construction activities. Where recreational trail sections are temporarily closed to the public during construction, signage will be provided indicating alternative routes for walkers which avoid the construction site. This aims to avoid potential confusion and disorientation to recreation users as well as maintaining public safety in proximity to the construction site. Appropriate warning signage will be posted at the construction site entrance, directing all visitors to the site manager. Appropriate signage will be provided on public roads approaching site entrances and along haul routes. In relation to the turbine delivery route, extra safety measures will be employed when large loads are being transported, for instance, Garda escort will be requested for turbine delivery and a comprehensive turbine delivery plan will be utilised to avoid potential impact to human safety for road users and pedestrians. For the installation of the grid connection cable in the public road, a detailed traffic management plan has been developed **(Appendix 2.1**) in discussion with locals who will be directly impacted by the works, and in agreement with the Local Authority. Public consultation will be conducted along the grid		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				cable route to inform local residents ahead of construction works.		
MM24	Shadow Flicker	Chapter 4: Population and Human Health	4.6 Shadow Flicker	Due to the potential for shadow flicker to affect receptors within the shadow flicker study area, it is proposed that a 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 affect nearby properties, based on pre-programmed co-ordinates for the properties and turbines • Wind speed (can effect 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 affected properties.		
MM25	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.2 Habitats Habitat Loss	The project will result in the permanent loss of an estimated 40.2 ha of habitat on site. This loss will be mitigated through a Habitat Enhancement Plan (HEP) which is presented in **Appendix 5.5**.		
MM26	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.2 Habitats Ecological Clerk of Works (ECoW)	An Ecological Clerk of Works (ECoW) will be on site for the duration of the construction phase. As required, this person will be assisted by a consultant ecologist with expertise in peatland habitats. The consultant ecologist will be employed by the client and will be independent of the Contractor. As ground excavations are opened up, the ECoW will walk the work corridor with a surveyor and within sensitive peatland areas will mark out (with range poles or equivalent) the extremities of the required work area. This will identify the limit of the work area and will prevent unnecessary incursions by the Contractor onto adjoining intact heath or bog.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM27	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.2 Habitats Ecological Clerk of Works (ECoW)	Upon removal, subsequent reuse of the heath and bog surface (cut out as sods or 'turves') will occur within the work footprint. A two-pronged approach will be followed involving (i) the immediate re-use along road margins, and (ii) the longer-term use around turbine and hardstand margins (this involves storage). Both approaches are on the basis that the areas of heath and bog have a minimum peat depth of c.20-30 cm, which represents the acrotelm (or living layer) of the bog/heath system. The method involves the removal of the surface layer in sods or 'turves' by a dumper/digger with bucket. Care will be taken to keep the turve as intact as possible and the vegetated side upwards (as far as is feasible). For the use of the turves on the side casting and marginal strips of the new roads, the procedure will be that the contractor will dig out the surface peat turves and place these immediately on the side-casting and marginal strips in the preceding section (250 – 500 m length) that had been constructed. These will later be bedded in using the bucket of a digger. This approach will provide almost immediate cover of the bare surfaces. Turves to be used for re-vegetation of areas at the turbines / hardstands will be dug out as above and transported to pre-identified storage areas. The storage areas will be: (i) located in areas of the site that is not existing heath or bog habitat, (ii) in parts of the site where disturbance at a later date will not occur. The turves will be off-loaded from a trailer and placed side by side and vegetation side upwards. They will be placed in single		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				layers, i.e. not piled on top of each other. Should storage be for prolonged periods (months), the turves may need to be watered during dry spells. When ready for placement at turbine/hardstand locations, or in areas where substantial bare surfaces occur due to the works, they will be lifted with a dumper and bucket and taken to their destination. Here they will be off-loaded and laid vegetation side up. Should enough turves be available, they will be packed close together. Otherwise, they can be laid across the bare surface to cover the required area. The turves will be bedded in with the bucket of a dumper. All of the above will be supervised by the ECoW and will be inspected by the project ecologist. The above process will be followed at the borrow pit north of T4. The surface here will be stripped and the turves stored until the pit is ready for reinstatement. As above, the turves will not be stored on areas of existing heath or bog vegetation. The reinstatement on a peat layer will be monitored by the EcoW and the project ecologist.		
MM28	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.2 Habitats *Filago minima*	The areas where the plant occurs will be avoided by the trench excavations and all works in such areas will be supervised by an ecologist with experience in rare plants. Should the plant occur across an entire width of track, a licence will by sought from NPWS to remove the plants from the required work area and to transplant to a suitable location elsewhere. The application for a licence will be supported by a Management Plan for the species compiled by an ecologist with experience of rare plants and plant translocation schemes.		
MM29	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.6 Bats Vegetation Removal	An ecologist/ECoW will supervise areas where vegetation, scrub and hedgerow removal will during construction.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM30	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.6.1.2 Bats Other Measures	During construction, relevant guidelines for bats will be implemented as appropriate (e.g., NRA guidelines). • Where possible construction will take place during daylight hours in order to minimise light disturbance on bats. Should fixed lighting be required these will consist of LED luminaires using warm white colours < than 2700 Kelvin. Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats. Lighting will be directional and avoid lighting key features suitable for bat activity such as treelines or woodland edge. Some works along the cable route and wind farm site may occur at night but the project ecologist/ECoW shall limit night-time works to sections of the route / site which avoid sensitive features (e.g., mature treelines). • No upgrade works are proposed on bridges or culverts as part of the proposed works. Should any required works be identified in the future, the bridge shall require a pre-construction survey to assess if a bat roost is present. As necessary, any measures carried out to mitigate the potential impact to bats must be conducted under the terms of an appropriate NPWS wildlife derogation licence. • All mature broadleaf trees within the site were assessed for their potential to host bat roosts. Two ash trees were noted with potential. These trees however will remain unaffected by the proposed development. Given potential roost features (prf) can develop over time all mature broadleaves that may be affected by the development (felled or trimmed) will be reassessed prior to commencement of felling works. The assessment should consist of a Preliminary Ground Level		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Roost Assessment carried out between November and March followed by an at height full potential roost feature survey on trees with roost potential. Tree-felling will ideally be undertaken in the period late August to late October/early November. During this period bats are capable of flight and may avoid the risks of tree-felling if proper measures are undertaken. A secondary period of tree felling can be undertaken in February. If bats or a bat roost is present then the NPWS must be contacted and a derogation licence received before the commencement of felling. As part of any derogation licence application an impact assessment, mitigation measures and schedule will be required. Felling will be delayed until the bats have gone or been removed.		
MM31	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.7 Kerry Slug	• Areas of suitable habitat that occur outside of the footprint of the development will be avoided during the course of construction thereby minimising the loss and disturbance of Kerry Slug habitat (this measure is dealt with under **Section 5.6.2**). • Immediately prior to undertaking works in areas of suitable habitat (wet heath / blanket bog / rock outcrop), the project ecologist will check for the presence of Kerry Slug. Should slugs be discovered, then they will be transferred to suitable habitat in the surroundings. Similar on-going monitoring of suitable habitat within works areas will continue throughout the construction phase. Such monitoring will be undertaken during periods of wet weather when slugs are most active and feeding on the surface and therefore at greater risk of impacts by movement of machinery. It is noted that a derogation licence for the above has been sought from the NPWS.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM32	Flora and Fauna	Chapter 6: Aquatic Ecology	6.5.2.3 Mitigation by Reduction	• During the construction phase the appointed Contractor(s) will ensure that the following mitigation is adhered to in line with IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters: • No works will take place within the 65m buffer zone of watercourses except for the watercourse crossings, road development and drainage measures. • The site compound and any temporary soil storage areas will be located at a minimum distance of 65m from any watercourse. All drainage from these facilities will be directed through a settlement pond with appropriate capacity and measures to provide spill containment. • All site drainage, as described in the surface water management plan and shown on associated drawings, will be directed through either sediment traps, settlement ponds and / or buffered drainage outfalls to ensure that total suspended solid levels in all waters discharging to any watercourse will not exceed 25mg/l (IFI, 2016). 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 Environmental Manager or Ecological Clerk of Works to ensure satisfactory operation and/or maintenance requirements. A full specification for the water quality monitoring is presented in the WQMP. • The storage of oils, hydraulic fluids, etc., will be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005).		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• All machinery operating at the Site will be fully maintained and routinely checked to ensure no leakage of oils or lubricants occurs. All fuelling of machinery will be undertaken at a discrete "fuel station" designated for the purpose of safe fuel storage and fuel transfer to vehicles. • Any extensions to existing drainage culverts on the Site Access Roads will be undertaken in dry conditions and in low flow. • 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. There will be no batching or storage of cement allowed in the vicinity of any watercourse crossing construction area. • Procedures will be put in place to ensure the full control of raw or uncured waste concrete to ensure that watercourses will not be impacted. • Should there be any incidents of pollution to watercourses, immediate steps as specified in the drainage network peat (CEMP-Management Plan 1) will be undertaken to resolve the cause of the pollution and where feasible, mitigate against the impact of pollution. • Re-seeding / re-vegetation of all areas of bare ground or the placement of Geo-jute (or similar) matting will take place prior to the operational phase to prevent silt-laden run-off. Seed mixes will contain only suitable native species of plant that occur in the local area.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Silt traps erected during the construction phase within roadside and artificial drainage will be replaced with stone check dams for the lifetime of the project. These stone check dams will only be placed within artificial drainage systems such as roadside drains and not in natural streams or drainage lines. • A full review of construction stage temporary drainage will be undertaken by the Developer (in conjunction with the Project Hydrologist/ Site Engineer and the Project Ecologist) following the completion of construction, and drainage removed or appropriately blocked where this will not interfere with infrastructure.		
MM33	Flora and Fauna	Chapter 7: Ornithology	7.5.1.2 Measures to prevent disturbance to breeding Hen Harriers	To prevent any potential disturbance to nesting and/or foraging Hen Harriers, works will be restricted along the identified section to the period outside of the breeding season (March-August). This will ensure that the breeding Hen Harrier population withing the SPA is not disturbed.		
MM34	Flora and Fauna	Chapter 7: Ornithology	7.5.1.3 Measures to prevent disturbance to sensitive bird species	The study has identified Red Grouse and Snipe (both Red-listed) as the species most sensitive to disturbance that are known to nest within the site. Should any of these species be recorded breeding within 500m of the works area (as established through monitoring during construction), a buffer zone shall be established around the expected location of the nest and works will be restricted until it can be demonstrated by an ecologist that the species has completed breeding in the identified area. Any restricted area that is required to be set up will be marked clearly marked using hazard tape fencing and all site staff will be alerted through toolbox talks.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM35	Land Use	Chapter 8: Soil and Geology	8.5.2.1 Land Take	To facilitate the access roads, civil works, site compounds, borrow pits and Turbine Hardstands, 35.4ha coniferous forestry will need to be clearfelled. The felling area proposed is the minimum necessary to construct the Development and to comply with any environmental mitigation (bats in particular).		
MM36	Peat Management	Chapter 8 Soil and Geology	8.5.2.2.2 Subsoil and Bedrock Removal Mitigation by Good Practices	Excavation of peat in areas where there is >1.0m in peat depth will follow appropriate engineering controls such as the drainage of the peat along the proposed Site tracks in advance of excavation activity (1 month in advance where possible) so as to reduce pore water content and thus instability of the peat substrate prior to excavation. Such drains will be positioned at an oblique angle to slope contours to ensure ground stability. Drains will not be positioned parallel to slope contours, that is, a gradient more than zero. It is noted that some drains will be close to parallel with elevation contours. This drainage will be attenuated prior to outfall. It is noted that peat depth at the Site is generally shallow and management of saturated peat will be required at relatively few locations. In those parts of the Site where excavation may intercept areas of peat that are >1.0m depth, a geotechnical engineer/engineering geologist will be onsite to supervise and manage the excavation works and confirm the necessity for supporting newly excavated peat exposures or redirect initial construction phase drainage to maintain ground stability. For side walls in all excavations a safe angle of repose will be established. This will ensure the potential for side wall collapse will be minimised. For peat, the safe angle of repose is approximately 15°, which equates to a c. 10m horizontal distance if excavating to 2.5m depth, however given the quality of the peat, and the potential residual water content after pre-		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				excavation drainage works, or increased water content following heavy rainfall events, there remains a risk of localised stability issues arising in areas of deeper peat. Therefore, for excavation in areas of deeper peat (>2.0m) excavation supports will be used and this will be incorporated into the CEMP for the Development, for example temporary sheet piling, or similar. This will minimise the effect of excavation to the minimum required. Areas of the site where deeper (>2.0 m) peat was detected during site surveys are presented in geo-constraint maps (**Appendix 8.1**). Similarly, the safe angle of repose for subsoils at the Site (GRAVELS), or any other material (e.g., crushed rock) arising at the site must also be considered and similar consideration and mitigation applied respectively. Adopting good practices, planning ahead and real time monitoring in more sensitive (>1m peat depth) areas will ensure that any excavations associated with the Development will have minimal impact, that is the risk of the activity of excavation having an increasing or variable impact will be reduced. Similarly, application of the above mitigation measures will reduce the risk of stability issues arising at a localised scale.		
MM37	Peat Management	Chapter 8 Soil and Geology	8.5.2.2.4 Subsoil and Bedrock Removal Mitigation by Reuse	Subsoil and bedrock which are excavated as part of the construction phase will be reused onsite where possible. It should be noted that the bedrock at the Site, Siltstone is classified as a weak rock and comprised mainly of very small silt particles. There is a risk that if used for track surfacing that the trafficked material will gradually degrade, potentially leading to chronic siltation of drainage features or dust depending on meteorological conditions. Therefore, bedrock material arising at the Site will be reused as fill material, but Site Access Roads and Turbine Hardstands will be surfaced with a harder rock imported to the Site. The imported rock will be locally sourced		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				and similar in nature to the local area in term of geo-chemistry. Similarly, the subsoil (GRAVELS) or till at the site possess a relatively high proportion of clay and silt particles (**Appendix 8.1**), which can enhance the entrainment of solids in runoff relative to other soils/materials. Therefore, similar precautions should be considered when handling and reusing subsoil materials on site. Excess bedrock will be reused as backfill in areas previously excavated, or as backfill in cut and fill operations, for example; Site Access Roads and Turbine Hardstands. Using the local bedrock as fill will ensure that impacts to hydrochemistry are minimised. Geotechnical testing on imported material will be carried out prior to its reuse onsite particularly for reuse as a running or load bearing surface and will only be reused for those purposes if the suitability of same is conforms to relevant standards. Peat material excavated will be reused as backfill in areas previously excavated as much as possible, and/or for reinstatement works elsewhere on the Site. To facilitate this the acrotelm (living layer) and the catotelm (lower layer) will be treated as two separate materials. Catotelm peat will be used to backfill, for example around turbine foundation pads once established. Acrotelm peat will be used as a dressing on top of deposited catotelm peat in order to promote and re-establish flora and ensure the acrotelm layer becomes relatively cohesive in terms of localised peat stability (vegetated). Similarly, all soil and subsoil types or horizons identified during site investigations and during actual construction, **Appendix 8.1**,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				will be treated as separate materials and arisings separated accordingly. This includes, for example Acrotelm peat, catotelm pet, clays, subsoils (GRAVEL / TILL), weathered rock. The management, movement, and temporary stockpiling of material on site, including a materials balance assessment and plan will be detailed in the CEMP, this will include identification of suitable temporary set down areas which will be located within the Development footprint and will consider and avoid geo-constraints identified in this report. Temporary set down / stockpile areas will be considered similarly to active excavation areas in terms of applying precautionary measures and good practices, and mitigation measures, including those relating to control of runoff and entrapment of suspended solids.		
MM38	Peat Management	Chapter 8 Soil and Geology	8.5.2.2.5 Subsoil and Bedrock Removal Mitigation by Remediation	Excess subsoils and bedrock will be used for remediation and reinstatement purposes elsewhere on the Site, including areas already impacted by peat cutting and agricultural activities, eroded or degraded areas, for example, reinstating original ground level in areas of cut peat and/or damming drains in peat areas. It is recommended that the ongoing destructive agricultural and peat cutting practices within the Development landholding ceases for the lifespan of the project, for example; the cutting of peat and soils and the installation of drainage features at the site. Drainage features adjacent to the Development footprint will be designed and / or modified to include appropriate attenuation features and buffered outfalls etc.		
MM39	Peat Management	Chapter 8 Soil and Geology	5.5.2.3.1 Storage of Stockpiles Mitigation by Avoidance and Good	No permanent stockpiles will remain on the Site. All excavated materials from the Site or introduced materials for construction will be either used or removed from the Site.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Practice	No temporary stockpiles will be positioned or placed on areas of peat which have not been assessed or are indicated as being geo-hazards, particularly in areas of unacceptable factor of safety / stability (**Appendix B, Appendix I, Appendix 8.1**). All temporary stockpiles will be positioned on established and existing hardstand areas or in designated areas which are appropriate for short term storage. No temporary stockpile placed on established hardstands in areas of deeper peat will be in excess of 1m in height. This is due to potential localised stability and subsidence issues in relation to the peat under and in vicinity of the hardstand and stockpile. Immediate reuse of material in so far as practical, is recommended. For example, the material arising from the first excavation is deposited in areas identified as having potential for restoration or requiring fill, the material arising from the second excavation is used as fill and reinstatement material in the first excavation location, etc.		
MM40	Peat Management	Chapter 8 Soil and Geology	5.5.2.3.2 Storage of Stockpiles Mitigation by Reduction	Volumes and types of materials arising, temporary stockpiling locations, routes for reuse and remediation, requirements in terms of logistics and considerations in terms of timing and planning of movements of material will be recorded. The Peat and Spoil Management Plan, **Management Plan 4, CEMP Appendix 2.1**, will ensure that the material arising from any excavation will have a predetermined plan and route for re-use / remediation, or disposal if all potential for reuse / remediation have been exhausted. Mitigation measures for stockpiles related to the Grid Connection Route are as follow: stockpiles will be restricted to less than 2m		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				in height and will be subject to approval by the Site Manager and Project Ecological Clerk of Works (ECoW). Additionally, any excavated material will be later used to backfill the trench where appropriate, any surplus material will be transported to a licensed facility.		
MM41	Peat Management	Chapter 8 Soil and Geology	8.5.2.4.1 Vehicular Movements Mitigation by Avoidance and Good Practice	Vehicular movements will be restricted to the footprint of the Development and advancing ahead of any constructed hardstand will be minimised in so far as practical. For example, excavation ahead of established hardstands will be in line with expected phases of Turbine Hardstand and Site Access Road construction in terms of both delivery of and installation of material and site activity periods whereby excavations will not be opened ahead of site shut down periods. This will be done with a view to minimising soils / subsoils exposure to rain and runoff. Ancillary machinery will be kept on established Turbine Hardstands, and no vehicles will be permitted outside of the footprint of the Development and will not move onto land that is not proposed for the Development if it can be avoided. Where vehicular movement are necessary outside of the Development, ground conditions will be maintained as well as possible. This includes for example replacing sods, smoothing over with excavator bucket etc. Where ground conditions are poor, or prolonged works, temporary access measures will be deployed, for example floating platforms / floating access track. Floating tracks are applied directly to peatlands and remove the need to excavate any peat. The weight of the track structure will gradually lead to subsidence of the material, and compression of underlying peat, namely the acrotelm potentially resulting in reduced transmittance of runoff and impacting on baseline		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				hydrological regime at the site. This can lead to excessive wetting upgradient and peatland drying and chronic degradation of water supply down gradient of tracks. Proposed drainage as part of the Development will be designed to maintain the baseline hydrological regime as far as practical. For the Grid Connection Route, before starting construction, the area around the edge of each joint bay which will be used by heavy vehicles will be surfaced with a terram cover (if required) and stone aggregate to minimise ground damage. Adhering to the mitigation measures described herewith will minimise the adverse impacts posed by vehicular movements, and ultimately any impacts arising will be temporary considering the initial decommissioning and construction of the Development will in effect reverse any impact by vehicular movement within the Development.		
MM42	Peat Management	Chapter 8 Soil and Geology	8.5.2.5.1 Ground Stability Mitigation by Avoidance and Good Practice	Vehicular movements will be limited to the Development, areas of potentially high risk (Geohazards, for example; GSI high risk landslide susceptibility) in terms of peat and slope stability will be avoided. Vehicular movements or construction activities outside of the footprint of the Development will be assessed by a competent geotechnical engineer before progressing. Temporary stockpiles will be limited to 1m height and removed for reuse/remediation purposes or disposed offsite as soon as possible. It is envisaged that all material will be reused on site, unless obviously contaminated (for example; due to accidental hydrocarbon/fuel spill). Therefore, the risk posed by the management of material in terms of peat and slope stability is dramatically reduced if not avoided completely.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Furthermore, with a view to applying the precautionary principle, the following procedures will be adopted as best practice mitigation measures at the Site. • All Site excavations and construction will be supervised by a geotechnical engineer/engineering geologist. • The Contractor's * methodology statement and risk assessment will be in line with the Construction Environmental Management Plan and will be reviewed and approved by a suitably qualified geotechnical engineer/engineering geologist prior to Site operations. (* Contractor here refers to the chosen or contracted construction company at the commencement stage of the proposed Development). • Particular attention and pre-construction assessment (developer / sub-contractor site specific risk assessment and method statement (RAMS) and on site toolbox talks etc.) and mitigation planning will be given to any new infrastructure, for example, the proposed Site tracks, culverted watercourse crossing and hardstand associated with proximal geo-hazards. • Any excavations that have the potential to undermine the up-slope component of a peat and / or unstable subsoil slope will be sufficiently supported by buttress, frame or rampart to resist lateral slippage. To this end, all new turbine foundation excavation locations will incorporate a safe angle of repose, however with a view to minimising the impact of the Development Excavation in peat of >1m depth will be supported by a restraining / support wall during the construction phase.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• In such excavations, the groundwater level (pore water pressure) will be kept low at all times (excavation dewatering) to avoid ground stability risks (subsidence) associated with peat and careful attention will be given to the existing drainage and how structures might affect it. Draining water from the construction area will be done through advanced dewatering techniques. In particular, ponding of water will not be allowed to occur in recent excavations, particularly in any areas encountered where peat is >1m. All deliberate or incidental sumps will be drained to carry water away from the sump following rainfall. Otherwise, this water will increase hydraulic heads locally (or increased bog water or groundwater levels), increase pore water pressure and can potentially lead to instability. • In areas of saturated peatlands, prior to excavation, drains will be established to effectively drain grounds prior to earthworks. Such drains will be positioned at an oblique angle to slope contours to ensure ground stability. Drains on areas of the Site with minimal risk of bog failure as identified by Site Investigations will be positioned at a more acute angle to the slope contour in order to reduce the velocity of surface water drainage. It is noted that deeper (>2.0 m) peat at the site is generally confined to isolated pockets and the need for 'heavy duty' measures such as sheet piling is very low. • Due to peat's fluid-like properties, all peat excavated will be immediately removed from sloping areas. Peat will be carefully managed particularly when in temporary storage. Temporary storage areas will be isolated from the receiving environment by means of temporary infrastructure such as		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				boundary berms comprised of subsoils sourced at the site, or similar material. There is potential for large volumes of bog water draining from new stockpiles which will also be managed. Mitigation will include removal of gross solids from runoff prior to bog water intercepting the wind farm drainage network. Temporary measures such as dewatering and pumping through silt bags will be employed to assist this process. Draining of stockpiled peat, in a controlled manner is recommended, with a view to reducing the weight and mobility of the material, therefore reducing risk in terms of localised stability. Similar measures will be applied to the management of subsoil arisings at the site. • Peat is required for reinstatement, therefore acrotelm peat (top living layer, c. 0.5m) will be stripped off the surface of the bog and placed carefully at the margins of the Development along the Site track and hardstand margins that are characterised by near-horizontal slopes (<6°). • Relatively high impact construction activities (e.g., excavations, movement of soils / subsoils / rock) will be limited to the spring to autumn period as this period is considered to be the optimal seasonal period in terms of likely rainfall conditions, low soil moisture deficit (SMD), and relatively stable pore water pressure conditions (not withstanding excessive human interference of pore waters). However, it should also be noted that the hypothesis of the spring to autumn period being optimum in terms of dry metrological conditions is based on 30-year average data, and in reality, 30 year max rainfall events are observed to be significant throughout the year over the 30 year period. Therefore, considering the variability of metrological		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				conditions and the potential for significant events to occur at any stage of the year, the construction phase will be limited to favourable meteorological conditions. Construction activities will not occur during periods of sustained significant rainfall events, or directly after such events (allowing time for work areas to drain excessive surface water loading and discharge rates reduce). • From examination of factual evidence to date, the majority of landslides occur after an intense period of rainfall. Stability issues at a localised scale will be similarly impacted by rainfall events, particularly when dealing with exposed soils or open excavations. An emergency response system will be developed for the construction phase of the project, particularly during the early excavation phase. This, at a minimum, will involve 24-hour advance meteorological forecasting (Met Eireann download) linked to a trigger-response system. When a pre-determined rainfall trigger level is exceeded (e.g., one in a 100-year storm event or very heavy rainfall at >25mm/hr), planned responses will be undertaken. These responses will include; cessation of construction until the storm event including storm runoff has passed over. Following heavy rainfall events, and before construction works recommence, the Site will be inspected and corrective measures implemented to ensure safe working conditions, for example dewatering of standing water in open excavations, etc. • Any impact to the hydrological and/or hydrogeological regime will be avoided as far as practical in relation to identified Geo-Hazards where the presence of steep inclines, deep till deposits and iron pan give rise to elevated ground stability, particularly where the potential for impacts		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				to hydrogeology in those area / subsoils exists. For example, runoff from constructed hardstands will not be diverted and discharged into Geo-Hazard areas where possible. If unavoidable, due to slope direction etc., erosion control will be implemented in so far as practical. Consequences of impacting, diverting and/or concentrating runoff in geo-hazard constraints will potentially impact on stability at the site. The increased likelihood of this issue is particularly pronounced in geo-hazard areas.		
MM43	Peat Management	Chapter 8 Soil and Geology	8.5.2.5.2 Ground Stability Mitigation by Reduction Appendix 2.1 CEMP	The temporary storage of construction materials, equipment, and earth materials will be kept to an absolute minimum during the construction phase of the Development. This will be achieved by means of appropriate planning and logistical considerations, similar to the measures set out in relation to the management of spoil on the Site. For example, the excavation material for the construction of access track will not progress ahead of actual track construction (as discussed under mitigation addressing vehicular movements), therefore minimising the volume of arisings to be managed. Areas for permanent deposit of material e.g., backfill adjacent to constructed infrastructure, will be identified and suitable material deposited as it becomes available.		
MM44	Peat Management	Chapter 8 Soil and Geology	8.5.2.5.3 Ground Stability Mitigation by Remediation	There are no indications of significant issues on the Site in terms of ground stability, however excavation and construction activities will lead to some impacts with respect to the immediate area adjacent to the Development and areas impacted by potential localised stability issues. In these instances, remediation of soils will include the deposit of suitable material where required. This will include replacement of soils / subsoils in line with baseline conditions. For example, the three principal materials excavated in order of depth will include peat / peat soil		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				(including segregated acrotelm (top living layer) and catotelm peat) or topsoil at the surface, till, and crushed rock. Remediated areas will be managed and monitored in terms of reestablishment of vegetated cover. In the unlikely event that a peat or slope stability issue does arise on the Site during the construction or operational phases of the Development, given the variable potential extent of associated impacts, remediation will be assessed, prescribed and monitored by a suitably qualified geotechnical engineer/engineering geologist on a case-by-case basis.		
MM45	Peat Management	Chapter 8 Soil and Geology	8.5.2.5.4 Ground Stability Emergency Response and Monitoring Appendix 2.1 CEMP	Emergency responses to potential stability incidents have been established and form part of the CEMP, **Management Plan 1, Emergency Response Plan** before construction works initiate. The following potential emergencies and respective emergency responses are addressed in brief: • Peat stability issues at a localised scale during excavation works – In the event that soil stability issues arise during construction activities, all ongoing construction activities at the particular area of the Site will cease immediately, the assigned geotechnical supervisor will inspect and characterise the issue at hand, corrective measures will be prescribed. Localised stability issues will likely occur with a broad range in severity including; minor side will collapse with no significant impact, to relatively significant areas of peat being impacted by excavation activities, or in worst case scenarios localised stability at one location triggering a chain of events leading to significant peat or slope stability issue arising. The assigned geotechnical engineer will assess each scenario and will escalate to the following mitigation scope as the need arises.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Provision for a peat stability monitoring programme to identify early signs of potential bog slides (pre-failure indicators, for example cracks forming). This will be done in line with Scottish Government's 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Developments 2017). • Significant peat or slope stability issues during construction activities – In the unlikely event that soil and slope stability issues arise during construction activities, all ongoing activities in the vicinity will cease immediately, all operators will evacuate the area by foot, if safe to do so, until the area is assessed by competent person/s, the assigned geotechnical supervisor will inspect and characterise the issue at hand, corrective measures will be prescribed. The area impacted will be characterised fully and risk assessments completed prior to any further works commencing at or near the location. This assessment will be phased including initial rapid response Phase 1 Assessment which will include at a minimum the prescription of exclusion zones and preliminary mitigation steps to be taken, for example; the management of runoff in or from the affected area. Considering the highly dynamic nature of peat or soil stability issues at any particular site, it is important to establish an equally dynamic yet robust framework to follow in the event of an incident. Establishment of an emergency framework will follow relevant guidance to initially qualify any incident (by on site competent geotechnical engineer) and risk assess the area, and to then apply initial measures and design a complete emergency / contingency plan in line with an established structured		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				emergency response. Relevant guidance includes as presented in **Section 8.2.2** of **Chapter 8 Soil and Geology** will be adhered to. Emergency response will prioritise isolating and containing any materials which is being or will be intercepted by the established drainage network or receiving surface water network. Emergency materials and equipment requirements will be identified, incorporated in the CEMP, and will be managed on site with a view to be being easily accessible and readily available. On-site training and toolbox talks will ensure any response to any potential incident is mobilised quickly and efficiently. The following is a non-exhaustive list of potential emergencies and respective emergency responses: • Peat stability issues at a localised scale during excavation works – In the event that soil stability issues arise during construction activities, all ongoing construction activities at the particular area of the Site will cease immediately, the assigned geotechnical supervisor will inspect and characterise the issue at hand, corrective measures will be prescribed. • Significant peat or slope stability issues during construction activities – In the unlikely event that soil and slope stability issues arise during construction activities, all ongoing activities in the vicinity will cease immediately, operators will evacuate the area by foot, the assigned geotechnical supervisor will inspect and characterise the issue at hand, corrective measures will be prescribed.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Precautionary measures e.g., silt screen fencing etc. will be in place. Emergency response above existing or in place measures might include crudely building dams with an excavator to attenuate or direct flow until conditions stabilise, depositing subsoil or crushed rock material to dam drainage channels, and reactionary dewatering through silt bags to appropriate areas of the site i.e., vegetated area and without impacting on problem area in terms of stability.		
MM46	Peat Management	Chapter 8 Soil and Geology	8.5.2.6.1 Soil Contamination Mitigation by Avoidance	In the event an accidental discharge was to occur without mitigation, contaminates will likely leak or be spilled on soils initially. Protecting soils from such will in turn mitigate against the potential for contaminates reaching the hydrological network associated with the Site, however given that such features are fundamental to the potentially far reaching effect of contaminants.		
MM47	Peat Management	Chapter 8 Soil and Geology	8.5.2.6.2 Soil Contamination Mitigation by Reduction	The potential for contaminants will be reduced by managing the importation and mobilisation of equipment and materials associated with the Development, as follows: • Excess packaging and other materials will be discarded appropriately at the Temporary Construction Compound before advancing to the destined construction area. • Any vehicles coming onto the Site will be required to be inspected and cleaned before leaving the Temporary Construction Compound and before advancing to the destined construction area. • Precast concrete will be used wherever possible i.e., formed offsite. Elements of the Development where precast concrete will be used have been identified and are indicated in the CEMP. Elements of the Development where the use of precast concrete will be used include e.g., structural		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				elements of watercourse crossings (single span / closed culverts) as well as cable joint bay structures. Elements of the Development where the use of precast concrete is not possible includes e.g., turbine foundations.		
MM48	Peat Management	Chapter 8 Soil and Geology	8.5.2.6.3 Soil Contamination Mitigation by Remediation	Mitigation by remediation, for example, housekeeping, maintenance etc, in terms of waste or contaminants will be an ongoing measure throughout the construction phase of the Development, that is any and all contaminants will be removed from the Site in an appropriate manner when ever produced or observed.		
MM49	Peat Management	Chapter 8 Soil and Geology	8.5.2.6.4 Soil Contamination Emergency Response	Potential emergencies and respective emergency responses are assessed below: • Hydrocarbon spill or leak – Hydrocarbon contamination incidents will be dealt with immediately as they arise. Hydrocarbon spill kits will be prepared and kept in vehicles associated with the construction phase of the Development. Spill kits will also be established at proposed construction areas, for example, a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for hydrocarbon contaminated materials will also be at hand. • Significant hydrocarbon spill or leak – In the event of a significant or catastrophic hydrocarbon spillage, emergency responses will be escalated accordingly. Escalation can include measures such as the installation of temporary sumps, drains or dykes to control the flow or migration of hydrocarbons, excavation and disposal of contaminated material. • Cementitious material – Cement / concrete contamination incidents will be dealt with immediately as they arise. Spill kits will also be established at proposed construction areas,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				for example, a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for cementitious materials will also be at hand. 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. In the event of a significant contamination or pollution incident e.g., discharge or accidental release of hydrocarbons / fuel to surface water systems, contamination occurrences will be addressed immediately, this includes the cessation of works in the area of the spillage until the issue is resolved. The relevant authorities, noted above and stakeholders will also be promptly informed.		
MM50	Peat Management	Chapter 8 Soil and Geology Appendix 2.1 CEMP	8.5.2.7 Material and Waste Management	A site-specific Peat and Spoil Management Plan and a Waste Management Plan has been prepared as part of **Appendix 2.1, Management Plan 4**. All excavated earth materials will either be re-used in an environmentally appropriate and safe manner e.g., landscaping and bog restoration OR removed from the Site at the end of the construction phase. No permeant stockpiles will be left on the site. Any surplus of natural materials (e.g., peat) to be used as backfill or deposited elsewhere in the Site will not be deposited to above existing ground level for the area in question. This ensures that peat used as backfill around newly established turbine foundations will not exceed local ground level, and any peat or natural materials deposited elsewhere, for example peat cutting areas, will not exceed original ground level. In essence,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				no permanent stockpiles will be established as a product of the construction phase of the Development, or associated restoration activities as all materials will be re-used as much as possible on-site. Excavated materials onsite will be reused and recycled according to the Waste Hierarchy as much as possible. Where it is not possible to do so, any excess materials (road building materials) or artificial (PVC piping, cement materials, electrical wiring etc.) will be taken offsite and disposed of at a licensed facility at the end of the construction phase, refer to **Appendix 2.1, Management Plan 5: Waste Management**. Any accidental spillage of introduced materials, such as concrete, will be removed from the Site. The CEMP will include scheduled checks on equipment, materials storage and transfer areas, drainage structures and their attenuation ability (covered in greater detail in the Hydrology chapter of this report) on an ongoing / daily basis during the construction phase of the project. The purpose of this management control is to ensure that the measures in place are operating effectively, prevent accidental leakages, and identify potential breaches in the protective retention and attenuation network during earthworks operations. In addition, all such management plans will be revised as 'live' documents, so that lessons learned and improvements will be made over course of the Development. It is noted that the Development intends to reuse all surplus excavated material at the site, however in the event of waste arising at the site, management of waste arising from the		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				construction phase of the Development will require classification, appropriate transfer, and appropriate disposal. Waste streams will vary and will include the following potential categories: • Inert / Non-Hazardous Soils & Stones (EWC Code: 17 05 04) – greenfield subsoils and bedrock is likely to be Inert. This could include surplus coarse / hardcore aggregate contaminated with soils remaining at the end of the construction phase of the development. • Hazardous Soils & Stones (EWC Code: 17 05 03*) or oily waste (spill kit consumables) – Soils or any materials with significant hydrocarbon contamination will likely be hazardous due to Total Petroleum Hydrocarbon concentrations. Soils impacted by significantly by cementitious material contamination will likely be hazardous due to elevated pH concentrations.		
MM51	Peat Management	Chapter 8 Soil and Geology	8.5.2.8 Clear Fell of Forestry	Further mitigation measures in regard to the management of forestry operations are detailed in application report Veon Ltd. (March 2022) Forestry Report – Proposed Windfarm at Gortyrahilly Co. Cork, (**Appendix 2.2**) including: • Phased felling approach, • Minimising erosion by use existing tracks and use of brash for off track areas, • Follow all relevant forestry guidance and policies, including; - Forest Protection Guidelines - Forestry and Water Quality Guidelines - Forest Harvesting and Environmental Guidelines - Forestry and Freshwater Pearl Mussel Requirements - Site Assessment and Mitigation Measures - Forest Biodiversity Guidelines - Forestry and The Landscape Guidelines - Forestry and Archaeology Guidelines		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• The permanent felling of 35 ha of forestry is subject to replacement obligations. Replanting elsewhere will be completed.		
MM52	Peat Management	Chapter 8: Soil and Geology	8.5.2.9 Managing & Reporting Environmental Incidents	Environmental incidents including accidental spillages on soils (e.g., fuel) and significant environmental incidents (e.g., landslide) will be reported to the Local Authority as part of emergency responses to such incidents. Incident notification will be escalated to relevant third parties where relevant e.g., Inland Fisheries Ireland (IFI) if surface water receptors are intercepted.		
MM53	Peat Management	Chapter 9: Hydrology and Hydrogeology	9.5.2.1 Earthworks Proposed Mitigation Measures – General / Wind Farm	Mitigation measures to reduce the potential for adverse impacts arising from earth works and management of spoil the following: • Management of excavated material – A Peat and Spoil Management Plan has been prepared and forms **Management Plan 4** of the Construction & Environmental Management Plan (CEMP, **Appendix 2.1**). It incorporates provision on materials management with a view to establishing material balance (reuse of excavation arisings) during the proposed construction phase, thus minimising the potential for or the length of time excavated materials are exposed and vulnerable to entrainment by surface water runoff. • No permanent stockpile will remain on the site during the construction or operational phase of the Development. Excavated materials will be stored temporarily adjacent to the excavation sites (**Management Plan 4, Appendix 2.1**). • Earthworks will be limited to seasonally dry periods and will not occur during sustained or intense rainfall events. Similar to measures outlined in relation to ground stability during excavation works (**Chapter 8: Soils and Geology**), an emergency response system has been developed for		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				the construction phase of the project (see Management Plan 1 – Environmental Response Plan, **Appendix 2.1**), particularly during the early excavation phase. This involves 24-hour advance meteorological forecasting (downloadable from Met Éireann) linked to a trigger-response system. When a pre-determined rainfall trigger levels is exceeded (e.g., sustained rainfall (any foreseen rainfall event longer than 4-hour duration) and/or any yellow or greater rainfall warning (>25mm/hour) issued by Met Éireann), planned responses will be undertaken. These responses will include; cessation of construction until the storm event including storm runoff has passed over, assessment of construction areas and infrastructure by Ecological Clerk of Works, and confirmation no additional escalation of response is required. All construction works will cease during storm events such as yellow warning (Met Éireann) rainfall events. Following heavy rainfall events, and before construction works recommence, the Site will be inspected and corrective measures implemented to ensure safe working conditions, for example, dewatering of standing water in open excavations, repair works to drainage features if necessary. • Exposed soils/peat (exposed temporary stockpiles) will be covered with plastic sheeting during all heavy rainfall / storm events and during periods where works have temporarily ceased before completion at a particular area (e.g., weekends, overnight, etc). • All drainage infrastructure (as per drainage design, **Sections 4 and 5 of the Management Plan 3, Appendix 2.1**) required for the management of surface water runoff or draining peat ahead of excavation works will be established		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				before excavation works commence. Similarly, mitigation measures related to surface water quality will be implemented before excavation works commence. • Conceptual and information graphics presented in **Appendix 9.12 – Tile no. 7, 8 and 9** present indicative layout and specification for both passive treatment trains (clean water interceptor drains), active management treatment trains (management and treatment of construction water) and emergency response and intervention.		
MM54	Site Drainage	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	9.5.2.2 Earthworks Proposed Mitigation Measures – Grid Connection Route	The Grid Connection Route will require excavation of cable trenches in existing roadways as well as forestry tracks and private lands. With reference to general excavation practices discussed above, excavation of cable trenches in close proximity to surface water features will require special consideration in terms of managing movements, spoil arising from excavations, and entrainment of solids and contaminants in surface water runoff. Mitigation measures to reduce the potential for adverse impacts arising from earth works and management of spoil include the following: • In sensitive areas, excavation of material will be conducted in a controlled manner whereby any temporary deposit of the material in buffer zones can be minimised. For example, vacuum excavation techniques or similar will be used for excavations within Surface Water Buffer zones and other sensitive areas (constraints) (**Figure 9.8 a-k**). Excavated soil will be removed to temporary storage areas. • Management of excavated material will adhere to the		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				measures related to the management of temporary stockpiles outlined in **Chapter 8: Soils and Geology**, a Peat and Spoil Management Plan has been established and forms part of the Construction & Environmental Management Plan (CEMP, **Appendix 2.1**, **Management Plan 4**) with a view to establishing material balance during the proposed construction phase, thus minimising the potential for, or the length of time excavated materials are exposed and vulnerable to entrainment by surface water runoff. No permanent, or semi-permanent stockpile will remain on the site during the construction or operational phase of the Development. • All spoil from trenches in public roadways will be removed form Site as it is excavated and transported to a licenced facility for soil and stones**.** Road surfacing materials will be stored in a ship for recycling by adding bitumen. • Temporary stockpile locations will be situated outside of Surface Water Buffer Zones. Temporary Spoil stockpiles shall have side slopes battered back to a safe angle of repose, e.g., 1:1. Silt fencing is to be erected around the base of the temporary mound. Soil will be reinstated on completion of drilling and jointing operations. Temporary storage areas will require bunding and management of runoff likely contaminated with suspended solids (**Appendix 9.6-Tile 7**). Management of construction waters is discussed in following sections. • Earthworks will be limited to meteorologically dry periods and will not occur during sustained or intense rainfall events. Similar to measures outlined in relation ground stability		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				during excavation works (Chapter 8: Soils and Geology), and as discussed in this chapter, an emergency response system has been developed for the construction phase of the project (see Management Plan 1 appended to the CEMP, Appendix 2.1), particularly during the early excavation phase. This, at a minimum, will involve 24 hour advance meteorological forecasting (Met Éireann download) linked to a trigger-response system. When a pre-determined rainfall trigger level is exceeded (e.g., 1 in 100 year storm event or very heavy rainfall at >25mm/hr), planned responses will be undertaken. These responses will include cessation of construction until the storm event including storm runoff surge has passed over. Following heavy rainfall events, and before construction works recommence, the site will be inspected and corrective measures implemented to ensure safe working conditions, for example dewatering of standing water in open excavations and transfer to treatment train.		
MM55	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.3 Construction Water Management, Dewatering, Treatment & Discharge of Trade Effluent	Mitigation measures to reduce the potential for adverse impacts arising from earth works / management of spoil and associated entrainment of solids in runoff and construction water will include the following: • Conceptual and information graphics presented in **Appendix 9.6- Tiles no, 7,8 and 9** present indicative layout and specification for Active Management treatment trains (containment, management and treatment of construction water) and emergency response and intervention (recycling or diversion of poor-quality runoff to the Active Management portion of the treatment train). Continuous real time monitoring is also detailed. • Management of excavations, that is areas of soil / subsoils to be excavated will be drained ahead of excavation works		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				whenever necessary, for example, saturated areas of peat, thus reducing the volumes of water encountered during excavation works. • Engineered drainage and attenuation features (discussed in following sections) will be established concurrent with excavation works. • Dewatering flow rate or pumping rate will be controlled by an inline gate valve or similar infrastructure. This will facilitate reduction of loading on the receiving drainage and attenuation network, thus enhancing the attenuation and settlement of suspended solids. All pumped water will be discharged to constructed drainage and in line treatment train or to a vegetated surface through a silt bag outside of surface water buffer zones. Dewatering is a dynamic process and will require continuous monitoring and modification depending on conditions encountered. • In some areas of the Development constraints related to incline and/or stability, or construction activities within the 50m buffer zone, will likely limit the potential for installation of engineered attenuation features. In such instances water arising from dewatering activities will be directed or pumped to a settlement tank before being discharged to the receiving drainage network, OR pumped to an area of the site where the installation of attenuation features is suitable. • No extracted or pumped water will be discharged directly to the drainage or surface water network associated with the Site (This is in accordance with the Local Government (Water Pollution) Act, 1977 as amended).		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM56	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.4.1 Active Construction Water Management	In all instances where construction water, or runoff has the potential to entrain solids during excavation and other construction activities, runoff will be contained by means of temporary berms (lined geotextile of similar), bunds (lined) and sumps. This will be referred to as Dewatering. Construction water (contaminated) will be pumped to the Treatment Train. Contaminated water arising from construction works, namely; excavations, drilling and temporary stockpiling, will be contained and treated prior to release or discharge. The schematic presented here is a conceptual model of measures implemented to manage arisings and runoff: A. Arisings. Arisings from the launch / reception pit, or any other significant excavation (e.g., cable joint bays), will be directed the treatment train. B. Temporary Bund. Arising control area i.e., a temporary bund. Gross solids will be temporarily deposited here. Water arising with the material will be allowed to drain to sump. C. Sump / Pump. Sump will discharge by gravity / pumped to stilling pond. D. Temporary Stilling Pond. This can be constructed using soils for bunding in combination with an impermeable liner. E. Outfall. The outfall from the stilling pond will be buffered (coarse aggregate) to dissipate energy and diffuse discharging water. F. Silt Screen. A silt screen will be in place down gradient of the Stilling Pond outfall. This is a precautionary measure to mitigate peak loads or surcharges in the system. G. Monitoring Location/s. Discharge quality will be monitored in real time using telemetry systems. Monitoring of discharge quality will be carried out at the outfall of the stilling pond i.e.,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				before being actually discharged to surface vegetation or surface water (licenced). H. Sump / Pump. Discharge By-Pass. If water discharging from the stilling pond exceeds quality reference limits water will be diverted (pumped) from the stilling pond to the settlement / treatment tank. I. Stilling Pond By-Pass. Similar to Discharge By-Pass, if conditions dictate water can be diverted directly to Settlement / Treatment Tank. J. Settlement / Treatment Tank. A settlement tank will in line and ready to use if required i.e., water quality at stilling pond outfall fails to meet quality reference limits. The tank will be equipped with treatment systems which will be activated as the need arises, for example, very fine particles which are very slow to settle can be treated with a flocculant agent to promote settlement of particles. K. GAC Vessel/s. As a precautionary measure, GAC (Granulated Activated Carbon) vessel/s will be in line and ready to use if required. GAC vessels are used to filter out low concentrations of hydrocarbons. Significant hydrocarbon contamination is only envisaged under accidental circumstances. If a hydrocarbon spill does occur, normal operations will pause and the treatment train will be utilised to remediate captured contaminated runoff. L. GAC Vessel By-Pass. If the quality of the water is acceptable in terms of hydrocarbon contamination. M. Treated water will be discharge by gravity / pump to the stilling pond for additional clarification, monitoring and buffered discharge to vegetated area. N. Silt Bag. A silt bag can be used as alternative to stilling ponds. However, silt bags must only be used as primary method in lower risk areas i.e., outside of buffer zones, etc. Stilling		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				ponds will be the primary method (D, N) is circumstances where risk is elevated, however a gate vale and silt bag can be included in the treatment train and used as an emergency discharge route in the event that the stilling pond needs remediation or maintenance. In all instances, stilling ponds (D), Silt Bags (N) and outfalls (E) will be situated outside of surface water buffer zones. At many locations, particularly at HDD locations works will be within buffer zones. In these instances, waters can be pumped to the treatment train which can be positioned upgradient along the road (Grid Connection Route) where discharge to vegetated areas / roadside drains can be managed. Discharge of non-contaminated storm runoff to vegetated land within a site red line boundary is not a licenced activity however this methodology is possible only under relatively low flow conditions (e.g., <2 litres per second (l/sec) typical of runoff over a relatively small site area. In the event that the expected incoming flow rate or dewatering rate is relatively high (>2 l/sec) a discharge licence will be acquired, and trade effluent will be discharge directly to the surface water network. The latter will include all works associated with HDD. The discharge points will be identified during the licence application process. As discussed previously, the main components of the treatment will be positioned outside of the 50m surface water buffer zone where possible. The developer will identify suitable locations for the establishment of temporary infrastructure considering other variable such as traffic and access management. Similarly, the preferred location of discharge points will be outside of buffer zones and into minor or		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				non-mapped surface water / drainage features where possible. The subject drain will be inspected to ensure connection to the mapped network (not blocked). The quality of the water being discharged will be monitored. If discharge water quality is poor (e.g., >25mg/l) additional measures will be implemented, for example, pausing works as required and treating construction water by dosing with coagulant to enhance the settlement of finer solids – this can be done in a controlled manner by means of a suitably equipped settlement tank. Collected and treated construction water will be discharged by gravity / pump to a vegetated area of ground within the Site. Silt fences will be established at the discharge area to ensure potential residual suspended solids are attenuated and the potential for erosion is reduced. The discharge area will be outside of 50m surface water buffer areas (similar to dewatering of excavations. The quality of water discharged will be in line with licence discharge limits assigned by the Council and will be monitored in real time (telemetry with 15 min sampling rate), as well as laboratory samples taken, analysed and reported and the frequency indicated in the licence. Daily sampling is recommended given the short duration and temporary nature of the works. Discharging of construction water (trade effluent) directly to surface waters or groundwater is a licenced activity. (This is in accordance with Local Government (Water Pollution) Act, 1977 as amended).		
MM57	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.4.2 Passive Construction Water and Runoff Management	Passive management systems include some of the features described in Active Management treatment trains. These include: • Spoil bunds and/or temporary berms. Spoil bunds and/or		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				berms will be constructed using either crushed rock or clean soils and overlain or lined with an impermeable layer e.g., geotextile or plastic membrane. These features are intended to control the movement of construction water / runoff with a view to: - Containing contaminated water (e.g., drilling / excavation spoil and runoff laden with solids). Temporary bunds will be used to manage spoil arising from drilling operations or saturated spoil arising from excavations in sensitive areas e.g., within SW buffer zones. - To divert runoff i.e., divert clean/storm runoff during construction works or contaminated construction water away from sensitive receptors such as drains/surface waters directly adjacent to construction areas. • Silt screens. These will be utilised in a similar sense to berms whereby, silt screens will be installed between construction areas and sensitive receptors, including: - At the outfall of the treatment train where discharging to vegetated ground or within non-mapped drains (within redline boundary). - Along the permitter of construction areas which are directly adjacent to watercourses or within surface water buffer zones. This includes all watercourse crossings and sections of Grid Connection Route alongside adjacent watercourses. Passive systems are intended to function with minimal supervision, however in the management of construction water on this site or development, in many cases the diverted water		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				will likely require active management to ensure sensitive receptors are protected. For example, diverted storm water, if clean can discharge to the receiving vegetated areas or existing drains, but any construction waters impacted by contaminants on the site must be managed, and potentially active management / treatment is required.		
MM58	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.5 Release and Transport of Suspended Solids Proposed Mitigation Measures	In order to mitigate the impact posed by release of suspended solids to the surface water environment, the following mitigation measures will be implemented. The drainage, attenuation and other surface water runoff management systems will be installed concurrent with the main construction activities to control increased runoff and associated suspended solids loads in runoff during intensive construction activities e.g., excavation of turbine base. Drainage infrastructure will be installed during meteorologically dry ground conditions. Diffuse surface water runoff will be managed as follows: • Collector drains and/or soil berms will be established to direct/divert surface water runoff from development areas, including temporary stockpiles, and direct same into established treatment trains including stilling ponds, buffered discharge points or other surface water runoff control infrastructure as appropriate. This is particularly important for effective surface water management associated with proposed infrastructure within the 50m surface water buffer zones. The drainage system will be permanent. • Silt fences will be established along the perimeter of source areas e.g., stockpiles, within the drainage network, and in existing natural drains and degraded peat areas which are		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				likely to receive surface water runoff. Section 5.5 of the Surface Water Management Plan (**Management Plan 3, Appendix 2.1**), describes this in more detail. This will reduce the potential for surface water runoff loaded with suspended solids to rapidly infiltrate towards and be intercepted by drainage or significant surface water features. Where possible multiple silt fences will be installed at multiple locations in drains / treatment trains discharging to the surface water network. Double silt fences / screens will be deployed at outfalls within surface water buffer areas. Silt fences will be temporary features but will remain in place for a period following the completion of the Construction Phase until such time that site conditions are stable. Waters arising as a product of excavation activities will be managed as follows: • Waters arising from dewatering practices during excavation works will be significantly loaded with suspended solids. As such, constructed stilling ponds followed by buffered outfalls may be insufficient in controlling the release of suspended solids to the surface water network. Routine monitoring will prevent the possibility of clogging from significant volumes of settled or attenuated solids. Therefore, any water pumped from excavations, or any waters clearly heavily laden with suspended solids will be contained and managed and pumped through the preestablished Active Management treatment train. This will include continuous active monitoring of water quality by turbidity measurement on an hourly basis. Waters (likely loaded with suspended solids) intercepted by the established drainage network will be managed as follows:		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• In line Stilling Ponds will buffer the run-off discharging from the drainage system during construction, by retaining water, thus reducing the hydraulic loading to watercourses. Stilling ponds are designed to reduce flow velocity to 0.3m/s at which velocity, silt particle settlement occurs. Stilling ponds will be permanent (life of development at minimum). Flow control devices such as weirs and baffles will facilitate achieving better attenuation, particularly when considering fluctuating runoff rates. • In line Check Dams will be constructed across drains. Check dams will reduce the velocity of run-off in turn promoting settlement of solids upstream of the dam. Check dams will also reduce the potential for erosion of drains. Rock filter bunds may be used for check dams however, wood or straw/hay bales can also be used if properly anchored, that is; supported with rock or fitted timber to reduce potential for material to be swept away by incoming water. Multiple check dams will be installed, particularly in areas immediately downgradient of construction areas. Check dams will only be constructed in drainage infrastructure and not in significant surface water features i.e., streams or rivers. Check dams (comprised of rock) established will be permanent. The following will be implemented in the design of check dams and their deployment (CIRA, 2004): - Permanent rock filter bunds (coarse aggregate) will be used for check dams however, temporary wood or straw/hay bales can also be used if properly anchored and if the need arises. Permanent rock filter bunds are preferred as this will ensure that rapid surface water runoff is mitigated against for the life of the Development.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				- Check dams will be installed at c. 20m intervals within the length of drainage channels. This is dependent on the slope angle and height of check dams constructed. - Check dams will include a small orifice / pipe at the base to allow the flow of water during low flow conditions i.e., maintain hydrological regime during low flow conditions. Note: the use of coarse aggregate will facilitate some infiltration. - Erosion protection will be established on the downstream side of the check dam i.e., cobbles or boulder (100-150 mm diameter) extending at least 1.2m. - Check dams will be constructed as part of the drain i.e., reduce the potential for bypassing between the drain wall and check dam. • Surface water runoff will be discharged to land via buffered drainage outfalls. Buffered drainage outfalls will contain hard core material of similar or identical geology to the bedrock at the site to entrap suspended sediment. In addition, these outfalls promote sediment percolation through vegetation in the buffer zone, removing sediment loading to acceptable levels any adjacent watercourses and avoiding direct discharge to the watercourse. A relatively high number of discharge points / buffered outfalls has been established as part of the design, thus decreasing the loading on any particular outfall. Discharging at regular intervals mimics the natural hydrology by encouraging percolation and by decreasing individual hydraulic loadings from discharge points.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• As per the drainage design (**Figure 2.6**), buffered drainage outfalls will be located outside of 50m surface water buffer zones. Similarly, outfalls will not be positioned in areas with extensive existing erosion and exposed soils. Buffered outfalls will be fanned and be comprised of coarse aggregate (cobbles / boulders). These structures will be akin to rip raps (coastal erosion defences/ outfall erosion defences). Silt fences (**Figure 2.6**) will be established downstream of buffered outfalls with a view to ensuring the effectiveness of the attenuation train, particularly during elevated flow events. Buffered outfalls established will be permanent. • Very fine solids, or colloidal particles, are very slow to settle out of waters and the finest of particles require near still water and relatively long periods of time to settle, therefore, such particles are unlikely to settle despite the aforementioned measures. To address this, as required, flocculant will be used to promote the settlement of finer solids prior to redistributing to the treatment train and discharging to surface water networks. Flocculant 'gel blocks' are available and can be placed in drainage channels upstream of stilling ponds. Gel blocks are passive systems, self-dosing and self-limiting, however they still require management (by the Contractor's Environmental Manager and supervised by the Developer appointed Ecological Clerk of Works (Ecological Clerk of Works (ECoW)) as per the manufacturer's instructions. Flocculants are made from ionic polymers. Cationic polymers (positive charge) are effective flocculants; however, their positive charge make them toxic to aquatic organisms. Anionic polymers (negative charge) are also effective flocculants, and are not toxic i.e., environmentally friendly. Therefore,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				when flocculants are required, the material used must be made from anionic polymer. Gel blocks will be a temporary measure during the construction phase. • Straw bales (similar to stone check dams) and silt fences (discussed under diffuse runoff) can also be used within drainage channels for the purposes of attenuating runoff and entrained suspended solids, however these measures should be considered temporary and will be used mainly in managing potential acute contamination incidents (e.g., additional features to control runoff during excavation works) or to facilitate temporary works (e.g. corrective actions, discussed in later sections). Note: the installation of straw bales or silt fences will require checking on a daily basis by the Contractor's Environmental Manager and supervised by the Ecological Clerk of Works (ECoW) to ensure the bypassing does not occur. Coarse stone / boulders could be used in conjunction with these measures to address such issues. The above measures, buffer zones, constructed drainage, check dams, two-stage stilling ponds design for attenuation, buffered outfalls are referred to as The Treatment Train, whereby the runoff will continuously be treated from source (construction area) to receptor (site exit, outfall of attenuation lagoon). Where necessary (>25mg/l suspended solids) the treatment train will be augmented through the use of anionic polymer gel blocks. These measures reduce the suspended sediment and associated nutrient loading to surface water courses and mitigates potential impacts to water quality and on plant and animal ecologies downstream of the site.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				The precautionary and mitigation measures listed here will avoid, reduce or remedy all potential impacts on water quality and will ensure that the sensitive receptors in the catchment of the development do not suffer any deterioration in water quality, either during construction, operation, or decommissioning. With reference to EIAR **Chapter 6: Aquatic Biology**, the populations of Freshwater Pearl Mussel in the lower catchments of the windfarm and along the grid connection route will not be negatively affected by the proposed development. Therefore, the risk to sensitive receptors is be low. Particularly sensitive areas are identified and presented **in Figure 9.8 (a – k)** to inform the drainage design. The drainage design is presented on **JOD Drawings 6225-PL-100 to 6225-PL-107** and calculations are included in **Management Plan 3 – Surface Water Management Plan** appended to the CEMP, **Appendix 2.1**. The design indicates in detail the locations of treatment train features, and the specification required at each location		
MM59	Site Drainage	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	9.5.2.6 Release of Hydrocarbons Proposed Mitigation Measures	To control and contain any potential hydrocarbon and other harmful substances spillage by vehicles during construction, the refuelling of plant equipment should be carried out at a location separate from the Development Site were possible, thus mitigating this potential impact by avoidance. However, given the remote nature of the Site, this is not likely to be a practical measure for large machinery such as cranes used during the Development. Where fuelling offsite is impractical (e.g., bulldozers, cranes, etc.), and refuelling must occur on site, then a discrete "fuel station" (**Figure 2.16**) will be designated with the Contractor's compound for the purpose of safe fuel storage and fuel transfer		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				to vehicles. This fuel station will be bunded to 110% volume capacity of fuels stored at the site. The bunded area will be drained by an oil interceptor and drainage of same will be controlled by a pent stock valve that will be opened to discharge storm water from the bund outside buffer zones. A suitably qualified management company will take responsibility for management and maintenance of the oil interceptor and associated drainage on a regular basis, including decommissioning following construction. For site cranes, refuelling will take place outside of buffer zones and a drip tray will be used. Spill kits will be available within the refuelling vehicle for any such refuelling activity. Despite the management of refuelling and fuel storage, there remains the risk of leakage from vehicles and plant equipment during construction activity. The plant equipment used on site will require regular mechanical checks and audits to prevent spillage of hydrocarbons on the exposed ground (during construction). Oil (hydrocarbon) absorbent booms will be installed in all surface water features associated with the Development, downstream of each of the proposed construction areas, and at principal surface water features draining the Site. 2 no. oil booms will be installed at each required location, this will facilitate changing out of booms if needed, without facilitating direct flow of floating product during such activities if present. Oil booms deployed will have sufficient absorbency relative to the hazard, for example the volume of fuel in a particular construction vehicle.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				In the event of an accidental spill during the construction or operational phase of the Development, contamination occurrences will be addressed immediately, this includes the cessation of works in the area of the spillage until the issue is resolved. In this regard, spill kits will be kept in each vehicle associated with the Development i.e., spill kits will be readily available to all operators. Spill kits will contain a minimum of; oil absorbent granules, oil absorbent pads, oil absorbent booms, and heavy-duty refuse bags (for collection and appropriate disposal of contaminated matter). No materials contaminated or otherwise will be left on the Site. Spill kits will also be established at proposed construction areas, for example a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for hydrocarbon contaminated materials will also be at hand. Once the above measures are implemented the risk of hydrocarbon contamination intercepting the surface water network will be significantly reduced, however there remains a level of risk, and therefore both precautionary measures and emergency response protocols have been established and specified in Management Plans 1 and 3 of the CEMP, **Appendix 2.1**.		
MM60	Site Drainage	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	9.5.2.7 Construction and Cementitious Materials Proposed Mitigation Measures	In order to mitigate the potential impact posed by the use of concrete and the associated effects on surface water in the receiving environment, the following precautions and mitigation measures are recommended: • Precast concrete will be used wherever possible i.e., formed offsite. Elements of the Development where precast concrete will be used have been identified and are indicated in the CEMP, **Appendix 2.1**. Elements of the Development		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				where the use of precast concrete will be used include structural elements of watercourse crossings (single span / closed culverts) as well as Cable Joint Bays. Elements of the development where the use of precast concrete is not possible includes turbine foundations and joint bay pit excavations. Where the use of precast concrete is not possible the following mitigation measures will apply. • Lean mix concrete, often used to provide protection to main foundations of infrastructure from soil biome, can alter the pH of water if introduced, which would then require the treatment of acid before being discharged to the surrounding environment. The use of lean mix concrete will be minimized, limited to the requirement of turbine foundations. The risk of runoff will be minimal, as concrete will be contained in an enclosed, excavated area. • The acquisition, transport and use of any cement or concrete on site will be planned fully in advance of commencing works by the Contractor's Environmental Manager and supervised at all times by the Developer appointed Ecological Clerk of Works (Ecological Clerk of Works (ECoW)). • Vehicles transporting such material will be relatively clean upon arrival on site, that is; vehicles will be washed/rinsed removing cementitious material leaving the source location of the material. There will be no excess cementitious material on the vehicle which could be deposited on trackways or anywhere else on site. To this end, vehicles will undergo a visual inspection prior to being permitted to drive onto the proposed site or progress beyond the		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 in so far as practical and reasonably foreseeable. 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 (>3mm/hour, yellow on Met Éireann rain forecast maps), and do not proceed during any yellow (or worse) rainfall warning issued by Met Éireann. This also will avoid such conditions while concrete is curing, in so far as practical. • 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 not be undertaken. Excavations will be prepared before pouring of concrete by pumping standing water out of excavations to the treatment train and buffered surface water discharge systems in place. • Temporary storage of cement bound sand (if required for construction of the substation building) will be on hardstand		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 on site. Such material will be returned to the source location or disposed of off-site appropriately. Concrete washing will be contained and managed similarly. • A designated skip(s) will be provided for washing out of concrete chutes. The contents will be allowed to settle and the supernatant will be removed off site by licenced generator to a licenced waste water treatment plant.		
MM61	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.8 Watercourse Crossings Proposed Mitigation Measures	All watercourse crossings must be designed to facilitate peak, or storm discharge rates so as to avoid localised flooding and associated issues during storm events. The OPW is responsible for the implementation of the regulations and consent to construct any bridge will be sought from the OPW via their application process. Details on the application process and guidance / requirements of the bridge design and considerations in terms of flow can be found in the OPW guide Construction, Replacement, or Alteration of Bridges and Culverts (A Guide to Applying for Consent under Section 50 of the EU (Assessment and Management of Flood Risks) Regulations SI 122 of 2010 and Section 50 of The Arterial Drainage Act, 1945). This application and consent process will mitigate against the potential for the design of the new bridge leading to significant adverse impacts. The requirements of OPW have been incorporated into the design of the proposed watercourse crossings. Preliminary design details are included in		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				drawings ref. 6225-PL-WC 1-7. All crossings will have clear span structures. Single span structures are structures which span the width of the channel with no associated instream support and do not affect the bed of the river or water body. This ensures that the bank and instream habitats are maintained and the river bed is not impacted. Where existing closed culverts/pipes are in place at existing watercourse crossings, extending the existing closed culvert will minimise construction activities required and in turn minimise potential impacts when compared to removal and replacing the entire watercourse crossing. With reference to ecology, none of the proposed watercourse crossing locations are associated with areas, or immediately proximate to surface water features with significant ecological sensitivity or importance. The principal risk to ecological sensitivities associated with proposed watercourse crossing works is the potential for adverse impacts to water quality downstream of the Site, namely the potential for mobilisation of solids. It is also noted that watercourse crossing methodologies employed will ensure potentially long term / permanent impacts downstream (e.g. scouring etc) or upstream (e.g. passage of fish) will be avoided. Considering all of the above and considering baseline conditions – including ecological sensitivity and importance of surface water features associated with each of the watercourse crossings, all crossings will be Clear Span Bridges.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				This is in line with good practice as defined by relevant guidance (SEPA, 2010) whereby; the course of action serves a demonstrated need, minimises the potential for ecological harm. • Considering the width of all waterbodies associated with crossings discussed here (<2m width) in stream supports will be required for the construction of single span structures. • The design facilitates adequate hydraulic capacity (Volume III). This ensures that the design will maintain the existing channel and will facilitate peak discharge events (storm events) without flow being constrained and contributing to flooding or other issues. Values presented **Appendix 9.1** – SFRA indicate the potential discharge rate associated with each watercourse crossing during a 1 in 100-year storm event. For existing crossings the channel width will be maintained. • In line with the above design consideration, allowance will be made for the transport of sediment through the crossing, not just hydraulic capacity. • The design facilitates adequate freeboard to OPW requirements. The design facilitates passage of woody debris. Freeboard to facilitate navigation and recreation is not applicable in relation to the development and associated surface water features. • For single span structures, abutments will be set back from the river channel and banks to allow the continuation of the riparian corridor underneath the structure. This helps to		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				minimise or prevent the need for bed and bank reinforcement, reduces the risk of creating a barrier to fish passage and allows mammal passage under the structure. The distance between the bridge abutments will be as wide as possible and will maintain the bank habitat, maximising the riparian corridor and allowing the river some space to move. Foundations (of abutments) will be deep enough to minimise or prevent the need for bed or bank reinforcement or bridge weirs or aprons. This will maintain the natural bed material and bed levels, protecting habitat and allowing fish passage. Foundations will be buried deep enough to allow for scour during high flows. Construction will be supervised by a suitably qualified engineer who will confirm that the depth is as per the design. • The design minimises the potential for localised bank and bed erosion. In regard to the Turbine Delivery Route there: **Temporary Watercourse Crossings – Temporary Crossing on Sullane River = Single Span Structure.** This is in line with good practice as defined by relevant guidance (SEPA, 2010) whereby; the course of action serves a demonstrated need, minimises the potential for ecological harm. This feature will require drilling/piling of abutment supports on approach to the river. These will be positioned as far back from the surface water feature as practical. With reference to the proposed bridge design (**Drawing Ref. 6225-PL-810**), the design includes for the managed storage of arisings in designated areas, and the active management of		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				runoff with including interreceptor drainage, sumps, and silt fences. With reference to **Section 9.3.13** Flood Risk Identification the site of the temporary crossing and ancillary infrastructure and materials is within a mapped probable flood zone. To mitigate against any potential for on-site flood risk and consequences, it will be a strict requirement to carry out works at this location during seasonally dry conditions. Exposed soils and fill materials will be reinstated and/or will have erosion control installed as part of the design and sufficient time as to be in place prior to the next seasonally wet period. This will minimise the potential for flood events to impact on the construction works, plant machinery or operators etc, and will minimise the potential for entrainment of soils or other materials in high water flow during potential flood events. In regard to the Grid Connection Route: **There are 170 culvert crossings proposed for the Grid Connection Route.** (* **Note**: Likely to be additional minor culverts). With reference to **Section 9.3.13** Flood Risk Identification some portions of the Grid Connection Route are within a mapped probable flood zone. To mitigate against any potential for onsite flood risk and consequences, it will be a strict requirement to carry out works at this location during seasonally dry conditions. Exposed soils and fill materials will be reinstated and/or will have erosion control installed as part of the design and sufficient time as to be in place prior to the next seasonally wet period. This will minimise the potential for flood events to impact on the construction works, plant machinery or operators etc, and will		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				minimise the potential for entrainment of soils or other materials in high water flow during potential flood events. There remains the potential for the actual construction of such crossings to have significant adverse impacts on the receiving watercourse/s through general construction activities. Relevant guidance documents (**Section 9.2.2**), have been consulted and applicable mitigation measures have been incorporated into the design of the proposed bridges and construction methodology of same. These will be adhered to with a view to mitigating and reducing any potential impact on the receiving watercourse.		
MM62	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.8.1 Instream Works	Infrastructure such as culverts will require instream works. Where in stream works are required, the following will be implemented: • Contracted operators will draft method statements and risk assessments in line with mitigation outlined in this report and in consultation with relevant guidance prior to commencing works (as part of the watercourse crossing consent application). Relevant guidance referenced here includes: • The construction area will be isolated, this means; the water feature (streams / drains) will be temporarily dammed upstream of the watercourse crossing and flow will be diverted by means of a flume / pipe by gravity or pumped (this is referred to as over pumping) downstream of the watercourse crossing and construction area. Following the successful upstream damming, a downstream dam or barrier will also be established. The downstream barrier will ensure contaminated runoff in the isolated work area can be contained and managed and will block surface water back flow in lower lying or flatter areas. Over pumping of a surface water feature is considered diversion of water runoff		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				only and therefore considered similar to discharge of storm water runoff only to sewer (exempt from licensing), however it is imperative that controls are in place to ensure environmental impacts are minimised, particularly in relation to ecological sensitivities (for further information refer to **Chapter 5**), and also in relation to water quality. • In order to ensure isolation and over pumping is carried out effectively, the methodology must ensure that dams are secure / sufficiently supported, and that pumping of water can continue uninterrupted and that pumps are capable of keeping up with the discharge rate of the surface water feature. Pumping systems will require backup and fail-safe protocols e.g., backup pumps and generator. At significant surface water features e.g., non-mapped streams, isolation and diversion of drainage will be implemented. • Provided the construction water within the isolation area is managed effectively, over pumping of the surface water feature does not pose a significant risk to surface water quality downstream of the watercourse crossing. With reference to Section 6.4.2 of Chapter 6: Aquatic Biology, clear span design of the bridges/crossings will not affect instream aquatic habitat or interfere with the passage of fish or aquatic fauna • Water ingress into the construction area will be managed and collected by established sumps immediately downstream of the works (upstream of the downstream barrier). Runoff within the construction area will likely be heavily laden with suspended solids. Where required, dewatering (pumping out or extracting) of such waters will		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				be discharged to an inline settlement tank, or preestablished stilling pond to remove suspended solids before being discharged. The quality of the water being discharged will be monitored. If discharge water quality is poor (e.g. >25mg/l) additional measures will be implemented, for example treating construction water by dosing with coagulant to enhance the settlement of finer solids – this can be done in a controlled manner by means of a suitably equipped settlement tank. Collected and treated construction water will be discharged by gravity / pump to a vegetated area of ground within the Site. Silt fences will be established at the discharge area to ensure potential residual suspended solids are attenuated and the potential for erosion is reduced. The discharge area will be outside of the surface water buffer areas (similar to dewatering excavations). For further details refer to **Appendix 9.6-Tiles 6 to 9.** • Discharging of construction water (trade effluent) directly to surface waters is a licenced activity. No extracted or pumped or treated construction water from the isolated construction area will be discharged directly to the surface water network associated with the Site (This is in accordance with Local Government (Water Pollution) Act, 1977 as amended). It is noted that all runoff on the site will eventually discharge to the receiving surface water network, however with appropriate management the quality of runoff discharging to the surface water network will be acceptable e.g. <25 mg/l Suspended Solids. • Operation of machinery in-stream will be kept to an absolute minimum and avoided where possible. Where in stream works are required, the area will be isolated by means of		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				over pumping or drainage diversion, discussed further below. • Works in relation to watercourse crossings will be carried out during periods of sustained dry meteorological conditions and will not commence if sustained wet conditions or if wet conditions are forecast (**Section 9.5.2.1**). • Works in relation to watercourse crossings will be planned and carried out as efficiently as possible. This means work plans are agreed fully and all equipment and materials are prepared fully before in stream works commence. Works will be completed as quickly as possible and will not pause for the duration of the in stream works e.g., Installation of culverts (24 hour as necessary), with the exception of circumstances related to meteorological and/or health and safety conditions. • Only precast concrete will be used for in stream works. • Precautions will be made to mitigate the potential risk of a hydrocarbon spill. Further to measures outlined in **Section 9.5.2.4**, settlement tanks (will be adequately equipped with hydrocarbon removal functionality on standby, for example hydrocarbon absorbent booms, oil skimmers, and GAC (granulated activated carbon) filters.		
MM63	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.8.2 Diversion of Drainage	Diversion of artificial drainage channels will be required at locations where the development layout intercepts existing artificial drainage networks, for example T9 and associated hardstand area is overlain on an existing drainage feature. Diversion of drainage will be done under similar conditions to that described above for instream works. Many of the existing		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				constructed drainage channels are observed to be dry during sustained dry meteorological conditions which implies that over pumping or diverting of water flow may not be necessary, nonetheless the methodology described for instream works will be implemented to mitigate the risk of any flow through the construction area or for unforeseen wet meteorological events. Any newly installed drain will be fully formed prior to the diversion of existing drainage. Erosion control will be incorporated into the design, this requires minimising the area of exposed soil in existing and newly established channels. This will include a combination of the use of coarse aggregate / crushed rock (non-friable / non-weak), engineered solutions and/or revegetation. A series of temporary silt fences will be installed to mitigate against the entrainment and mobilisation of solids during key events during the construction process, for example, the initial use of the new diverted channel, or the infilling of the original channel made redundant. The use of silt screens as a form of mitigation during watercourse crossing works is considered a precautionary last defence measure, provided measures detailed above will be made effective.		
MM64	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.9 Grid Connection Route – Excavation of Cable Trenches, Watercourse Crossings and Horizontal Directional Drilling	Excavation and installation of cable ducts within existing bridges (alteration) will require consent from the OPW and various mitigation measures. Mitigation measures outlined in this Report have been developed to minimise the environmental impacts of the grid connection route on the receptors of conservation importance that have been recorded in the area. Mitigation measures mentioned in this Report are included in the CEMP**, Management Plan 2- Water Quality Management Plan, Appendix 2.1.**		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Detailed site investigations, method statements and risk assessments will be carried out with a view to identifying and qualifying risk associated with all watercourse crossings associated and in close proximity to the grid route connection corridor. In relation to directional drilling, and the general risk to groundwater during grid connection route construction, risk assessment and prescription of mitigation measures will be designed in accordance with relevant guidance and reference documents, including: Risk assessments involved identifying pathways and receptors for each potential source of contamination. This included each directional drilling location and is particularly important in relation to groundwater source protection zones and surface water bodies protected for the purposes of drinking water. Prescription mitigation measures are driven by the identification and qualified risk associated with each particular location and are as follow: **General Overview of Works Mitigation Measures** • The timing of grid connection cable laying will be carried out during metrologically dry seasons/periods. • An Ecological Clerk of Works (Ecological Clerk of Works (ECoW)) should be onsite in order to lessen environmental disruption and ensure site integrity is maintained. The Ecological Clerk of Works (ECoW) will also be responsible for routine environmental monitoring and report writing. • Methodology Statements of works, prepared by the Contractor, will be submitted to the local and relevant authorities associated with the Development. • Any temporary access structures, put in place to allow machinery access to the area will be arranged in discussion		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				with the Ecological Clerk of Works (ECoW) and the site will be fully restored post grid route connection (GRC) works. • All chemical fluids used in the boring process are to be inert to the environment (environmentally safe) and follow the relevant legislation. The Contractor is to retain a chemical register and have Safety Data Sheet (SDS) documents available onsite during the operation. The Contractor will also be responsible for a Fluid Management procedure which should include: - Drilling Fluid program and MSDS - Management of spoil including volume on site, specialised site storage - Management of drilling fluid displacement (expected volumes and proposed storage) • Considering the high volumes, high flow rates and high contaminant content (drilling spoil) of water arising for drilling activities, water will be managed and treated by means of a settlement tank and/or associated infrastructure (**Appendix 9.6-Tile 8**). If a separation (recycling) system is to be used it must be adequately sized and bunded to handle the through-put of the drilling fluid so continuous drilling and reaming operation can be maintained. A separation system must be complete with screens and hydro - cyclones to separate the solids from liquid. Drilling fluids and drill spoils will be disposed off-site at an approved licensed location or discharged to the local surround area with approved licencing permits. **Good Practice of Plant Machinery** • All equipment used during HDD will be in good working		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				order, checked regularly and maintained when necessary. Fluid return lines used in HDD process should be tested for leaks prior to use to check their reliability. Plant machinery not in use is required to have drip trays below engines as well as at refuelling points, if necessary. • All practices involving bentonite will be monitored closely, that is: pumping pressure, drilling mud formulation i.e., drilling fluid volume and the volume of mud returns. • Fuels, lubricants and hydraulic fluids for equipment use on Site will be carefully handled to avoid spillage, properly secured and provided with spill containment kits in case of incident to ensure best practice. • Spill kits, hydrocarbon mats, oil booms etc., will be maintained at areas of works for emergency use and replaced when necessary. **Contingency Plan** • In the event that a drilling fluid spill or 'breakout' occurs, the Contractor shall cease drilling immediately, notify the Ecological Clerk of Works (ECoW) and Emergency Service Management Personnel. • 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 site compound. These agencies will be notified immediately in the event of a pollution incident. • The Contractor is to draft and apply a Contingency Plan highlighting with the principal HDD risks. At minimum, the		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Contractor will have equipment and materials on standby to mitigate against the following risks associated with HDD: - Hydro-lock (loss of fluid flow) - A hydro-fracture incident (loss of fluid pressure) - Fluid spill over - Hydrocarbon/fuel spill - Drill pipe rupture - Borehole path failure - Major workplace safety events in remote areas • The HDD operators will need to be equipped with straw bales, stakes to secure bails, oil booms, silt fences, sandbags, shovels, pumps, and any other materials or equipment necessary to contain and clean up and properly dispose of unintentional releases.		
MM65	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.10 Groundwater Contamination Proposed Mitigation Measures	As identified and discussed, the risk posed to groundwater quality by the Development is low, however mitigation measures to further reduce the risk will be implemented. The main threat to groundwater quality is the introduction of hydrocarbons to the site. In order to mitigate groundwater contamination by hydrocarbons in particular, the following will be implemented: • Minimum fuel storage will occur on site and re-fuelling of vehicles will occur off-site at a controlled fuelling station whenever possible. • Where fuelling must occur on site due to logistical reasons, then a discrete "fuel station" will be used. • For large machinery such as cranes, drip tray will be used and spill kits will be on hand.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				The following mitigation measures will be implemented in relation to non-hydrocarbon potential contamination: • Wastewater from sanitation facilities will be mitigated by use of temporary and portable sanitary facilities that are self-contained. These facilities will not interact with the existing hydrological environment in any way and they will be maintained, serviced and removed from site at the end of the construction phase. • Inorganic nutrients such as nitrogen and phosphorus compounds (if present in excavated sediment) will be controlled by the attenuation of the suspended solids (to which they adsorb to) and by retention of discharge waters within stilling ponds to allow peak runoff to recede prior to discharge. It is noted that the baseline surface water chemistry indicates elevated Ammoniacal Nitrogen and Phosphate. • Bacteriological contamination arising from availability of nutrients (e.g. sanitation, livestock etc.) will be mitigated by appropriate self-contained sanitation facilities (above) and livestock grazing control on the site overall, but particularly on areas zoned for excavation and development. • There is low risk of mobilising trace metals that may naturally be present. The potential impact may arise from introduced water percolation with excavated bedrock substrate. Concentrations of trace metals are usually low in the natural environment; however, water quality will be checked for metals concentration before, during and after the construction phase as part of monitoring at river monitoring locations.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM66	Site Drainage	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP Appendix 2.2 Forestry Management Plan	9.5.2.13 Clear Fell of Forestry	Good practices working in specific environments such as forested areas will be adhered to including working outside of surface water or other buffer zones, and risk assessing on a case by case basis in terms of drainage intercepting run off, ecological sensitivities, etc. Further mitigation measures in regard to the management of forestry operations are detailed in application report Veon Ltd. (March 2022) Forestry Report – Proposed Windfarm at Gortyrahilly Co. Cork (**Appendix 2.2**), including: • Phased felling approach. • Minimising erosion by use existing tracks and use of brash for off track areas. • Follow all relevant forestry guidance and policies, including; - Forest Protection Guidelines - Forestry and Water Quality Guidelines - Forest Harvesting and Environmental Guidelines - Forestry and Freshwater Pearl Mussel Requirements - Site Assessment and Mitigation Measures - Forest Biodiversity Guidelines - Forestry and The Landscape Guidelines - Forestry and Archaeology Guidelines • The permanent felling of 35.4 ha of forestry is subject to replacement obligations. • Harvest site plans including extraction routes, fuelling areas, stacking areas, turning areas and drain crossings etc. and HIRA will be designed and implemented during all harvesting operations.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• All drains, either mound drains, culverts, water crossings crossed during extraction, if necessary, will be cleared of any debris to ensure no drainage issues will occur for the remining trees, which can be a major attributor to windblow. • Felling and extraction of timber will, are to be undertaken in dry weather conditions. • Harvesting operations are scheduled according to the nature of the soil with sites being categorised into winter and summer sites depending on ground conditions. Also, best practice is to suspend mechanised harvesting operations during and immediately after periods of particularly heavy rainfall. • Waterways are particularly vulnerable to the effects of harvesting as silt from the movement of machinery can enter streams and rivers causing blockage of gravels which affects insect and fish life. Also nutrients released from decaying branches, particularly from large clearfelled sites, can cause enrichment of the waters which in turn causes pollution. To counteract these effects careful planning is required in carrying out harvesting operations. Some of the measures taken to avoid impacts include: - Limiting the size of the areas to be felled which reduces the amount of nutrients and silt released. - Minimising the crossing of drains and streams, but where necessary installing temporary structures (log bridges, pipes etc) to avoid machines entering the water. Establishing buffer zones around waterways from which machines are excluded.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM67	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.14 Emergency Response	Monitoring of the development during the construction and operational phase will potentially indicate weaknesses of the drainage and attenuation design, and/or the potential for excessive loading at particular locations etc. In such instances corrective actions will be taken to mitigate against any potential adverse impacts. Depending on the severity of the issue there is the potential that immediate action will be required, for example the introduction of straw bales to reduce flow / enhance attenuation at a particular location, erect silt fences etc., however such measures will be temporary. Any issue observed will require assessment by a specialist consultant and alternative mitigation design (in line with measures described in this EIAR) will be implemented to ensure the efficacy of the system during both the construction and operational phases of the Development. Scenarios where corrective action may be required, and proposed corrective mitigation measures include: • Potential issue; Elevated concentrations of suspended solids in runoff during excavation activities during an unforeseen or low probability storm event, for example a 1 in 100 year event. Proposed measure; Cover exposed stockpiles in plastic sheeting and placement of straw bales and silt fences in associated drainage channels. • Potential issue; Failure or degradation of stone check dam during a storm event with associated elevated runoff volumes. Proposed measure; Introduction of straw bales and silt fences in order to regain attenuation capacity of the drainage channel until the maintenance can be completed. • Potential issue; Localised peat stability issue leading to deposit of peat within an active drainage channel. Proposed measure; Introduction of straw bales and silt fences directly		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				downstream, of the area in order to attenuate gross solids isolate the area and over pump until remedial works and maintenance can be completed, divert all runoff from the area to Active Management area of the treatment train. • Potential issue; Management of unexpected runoff patterns leading to excessive drying or wetting in a particular area, potentially leading to enhanced erosion and / or adversely impacting on the ecological health of blanket peat ecosystems. Proposed measure; This type of issue will require assessment on a case by case basis. Solutions might include; decommission, modification, introduction or relocation of buffered outfall, or diversion of runoff volumes to or away from the area. In regard to the potential for erosion and similar physical processes, any such issues will become apparent through monitoring relatively rapidly, whereas in regard to ecological sensitivities and such issues will become apparent relatively slowly. It is noted that much of the Site is impacted as part of baseline in this regard e.g., extensive existing artificial drainage networks. Prior to commencement of construction, the Environmental Clerk of Works will prepare a register of corrective action and emergency response sub-contractors that can be called upon in the event of an environmental incident, and/or to give training on escalating incident where useful, including e.g. specialist hydrocarbon spill response, specialist hydrological and/or water quality response. Mitigations measures as outlined in the previous sections will reduce the potential for contamination of waters during the construction phase of the proposed development, however, there remains the risk of accidental spillages and or leaks of		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				contaminants, and excessive loading of surface water mitigation infrastructure. Emergency responses to potential contamination incidents will be established and form part of the CEMP, **Appendix 2.1**, Management Plan 1. Potential emergencies and respective emergency responses include: • Hydrocarbon spill or leak – Hydrocarbon contamination incidents will be dealt with immediately as they arise. Hydrocarbon spill kits will be prepared and kept in vehicles associated with the construction phase of the proposed development. Spill kits will also be established at proposed construction areas, for example, a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for hydrocarbon contaminated materials will also be at hand. • Significant hydrocarbon spill or leak – In the event of a significant hydrocarbon spillage, emergency responses will be escalated accordingly. Escalation can include measures such as installation of temporary sumps, drains or dykes to control the flow or migration of hydrocarbons and contaminated runoff will be contained, managed and pumped to a controlled area in line with Active Management including treatment through a suitably equipped treatment tank and Granular Activate Carbon (GAC) vessels. This process will be managed by the Ecological Clerk of Works (ECoW) in conjunction with a preidentified consultant (Ecological Clerk of Works (ECoW) specialist register) in regard to effective remediation, treatment and removal of hydrocarbon contaminated water and soils Excavation and appropriate disposal of contaminated soils will be required in this instance.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• If a significant hydrocarbon spillage does occur, the contractor on behalf of the developer will have an approved and certified clean-up consultancy available on 24-hour notice to contain and clean-up the spill. The faster the containment or clean-up starts, the greater the success rate, the lower the damage caused and the lower the cost for the clean-up. • Cementitious material – Cement / concrete contamination incidents will be dealt with immediately as they arise. Spill kits will also be established at proposed construction areas, for example a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for cementitious materials will also be at hand. • Other construction and general waste – Wastes which are dispersed by construction activities or by natural causes such as wind will be collected and dealt with immediately. In the event of a significant contamination or polluting incident the relevant authorities will be informed immediately.		
MM68	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.2.15 Managing & Reporting Environmental Incidents	Environmental incidents including accidental spillages on soils (e.g., fuel), breeches of licence limits if applicable (discharge of trade effluent), and significant environmental incidents (e.g. landslide) will be reported to the Local Authority as part of emergency responses to such incidents. Incident notification will be escalated to relevant third parties where relevant e.g., Inland Fisheries Ireland (IFI) if surface water receptors are intercepted.		
MM69	Air and Climate	Chapter 10: Air and Climate	10.2.8.1 Construction Phase Mitigation	The main potential impact during the construction phase of the Development will be from dust nuisance at sensitive receptors close to the Site. Good practice site procedures will be followed		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				by the appointed contractor to prevent dirt and dust being transported onto the local road network. Good practice site control measures will comprise the following: • Site Access Roads will be upgraded and built in the initial construction phases. These roads will be finished with graded aggregate which compacts, preventing dust. • 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 near the Site entrances to prevent mud/dirt being transferred from the site to the public road network. • Public roads along the construction haul route will be inspected and cleaned daily. In the unlikely event that dirt/mud is identified on public roads, the roads will be cleaned. The wheel wash facility will be investigated and the problem fixed to prevent this from happening again. • During periods of dry and windy weather, there is potential for dust to become friable and cause nuisance to nearby residences and users of the local road network. This requires wetting material and ensuring water is supplied at the correct levels for the duration of the work activity. The weather will be monitored so that the need for damping down activities can be predicted. Water bowsers will be available to spray work areas (wind turbine area and grid connection route) and haul roads to suppress dust migration from the Site.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Vehicles delivering materials to the 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 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. • All machinery when not in use will be turned off. • Ready-mix concrete will be delivered to the Site and no batching of concrete will take place on the Site. Only washing out of chutes will take place on site and this will be undertaken at a designated concrete washout facility at the contractor's compound. • Speed restrictions of 15km/h on access roads will be implemented to reduce the likelihood of dust becoming airborne. Consideration will be given to how on-site speed limits are policed by the Contractor and referred to in the 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• An independent, qualified Geotechnical Engineer will be contracted for the detailed design stage of the project and geotechnical services and will be retained throughout the construction phase, including monitoring and supervision of construction activities on a regular basis. The methodology statement will be signed off by a suitably qualified Geotechnical Engineer. • A complaints procedure will be implemented on site where complaints will be reported, logged and appropriate action taken.		
MM70	Noise	Chapter 11: Noise and Vibration	11.5.1 Construction Noise Mitigation	No significant construction noise effects have been identified. However, where the grid route is closer than 20m to a receptor, mitigation measures will be put in place (refer to **Section 11.4.1**). General guidance for controlling construction noise through the use of good practice given in BS 5228 will be followed, including the placement of an acoustic barrier between the works and receptor where activity is being carried out within 20m. During construction of the Development, activity shall be limited to daytime given in the NRA guidelines, except where delivery of large transport loads such as the turbines, where it may be necessary to transport outside of daytime hours.		
MM71	Waste	Chapter 13: Material Assets and Other Issues	13.10.7 Waste	**Concrete** During the construction phase: • Precast concrete will be used wherever possible i.e., formed offsite. Elements of the Development where precast concrete will be used have been identified and are indicated in the CEMP. Elements of the Development where the use of precast concrete will be used include structural elements of watercourse crossings (single span / closed culverts) as well as Cable Joint Bays. Elements of the development where the use of precast concrete is not possible include		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 on site will be planned fully in advance and supervised at all times. • Vehicles transporting such material will be relatively clean upon arrival on site, that is; vehicles will be washed/rinsed removing cementitious material leaving the source location of the material. There will be no excess cementitious material on vehicles which could be deposited on trackways or anywhere else on site. To this end, vehicles will undergo a visual inspection prior to being permitted to drive onto the proposed site or progress beyond the contractor's yard. Vehicles will also be in good working order. • 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 (>3mm/hour, yellow on Met Éireann rain forecast maps), and		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				do not proceed during any yellow (or worse) rainfall warning issued by Met Éireann. This also will avoid such conditions while concrete is curing, in so far as practical. • 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 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 on site. Such material will be returned to the source location or disposed of off-site appropriately. A concrete washings area can be seen on Drawing 6225-PL-803. Upon implementation of the above mitigation measures, the effects of the construction of the Development are considered to be not significant. **Chemicals, Fuels and Oils** 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				A Chemical and Waste Inventory will be kept. This inventory will include: • List of all substances stored on-site (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. • Mobile units must have secondary containment when in use/out on site. Under the EU Directive 95/55/EC all such dangerous substances will be conveyed in a container that compiles with the ADR. As such the manufacturer of each bowser will provide certification to contractors that the following: • A leak-proof test certificate. • A copy of the IBC approval certificate.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• An identification plate attached to the container. Where mobile bowsers are used on site, 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. • 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 refuelling on site will be within the temporary compound within the re-fuelling area (see Drawing No. 6225-PL-803). Only essential refuelling (e.g., cranes) will be carried out, outside of this area, but not within 65m 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 site in anticipation of recycling. **Metals** Waste metals from concrete reinforcing during construction and removal of metals during decommissioning etc. will have commercial value and will be re-used or recycled with the appropriate licensed waste contractor.		
MM72	Cultural Heritage	Chapter 14: Cultural Heritage	14.6.1 Construction Phase	The wind farm layout was informed by the archaeological desktop studies and fieldwork undertaken during the design and assessment phases and was designed to avoid the known locations of the archaeological monuments within the Site. The layout was also designed to avoid any potential significant impacts on the alignments of the two wedge tombs (CO069-003---- and CO069-093----) located within the Site, which are in good to poor states of preservation respectively. The mitigation measures presented in this section include pre-construction and construction phase archaeological site investigations as well as protection measures for known monuments. These mitigation measures are in accordance with guidelines for planning conditions for wind energy developments within close proximity to recorded archaeological monuments as published in the 2006 Wind Energy Development Guidelines (Section 7.4) and the 2019 Draft Revised Wind Energy Development Guidelines (Section 7.6).		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				The location of T9 and associated hardstand and access roads are within an area of improved green field land located 70m to the west of Wedge Tomb CO069-003----, and possibly within the general environs of any potential unrecorded sub-surface features associated with field boundary (CO069-070----). This grassland contains suitable ground conditions for undertaking a geophysical survey and this type of investigation will, therefore, be carried out in within the footprint of the T9 hardstand and access roads in the grassland area in advance of the construction phase. This will be followed by targeted archaeological test trenching of any identified features of archaeological potential which will also be carried out during the pre-construction phase. These investigations will be carried out under licences issued by the National Monuments Service. Ground works during the construction phase within all other areas of the Site as well as in green field locations within the grid route and turbine delivery work areas will be subject to constant archaeological monitoring under licence by the National Monuments Service. All grid connection road works within 50m of the location of lime kiln (CO057-002001-) will also be subject to constant archaeological monitoring and the location of this structure will also be clearly marked by signage during the construction phase. An archaeological watching brief of grid connection trench excavations within other sections of public roadways and forest roads will be carried out as part of the programme of licensed archaeological monitoring of the Project and the extent of this supervision will be agreed in advance with the National Monuments Service as part of the license application process.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				A systematic advance programme of archaeological field-walking surveys will also be carried out within construction 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. All construction phase ground works within felled areas shall then be subject to constant archaeological monitoring. In the event that any sub-surface archaeological features are identified during these site investigations they will be recorded and then securely cordoned off while the National Monuments Service are consulted to determine further appropriate mitigation measures, which may include preservation in situ (by avoidance) or preservation by record (archaeological excavation). Buffer zones at the edge of proposed construction areas within the environs of the known locations of the following extant archaeological monuments will be securely cordoned off and their locations clearly signed as 'No Entry: Archaeological Area' for the duration of the construction phase: Wedge Tomb CO069-003----, Wedge Tomb CO069-093---- and Enclosure CO069-002----. The locations of these monuments will also be identified as 'no-entry' areas during the construction phase site inductions. The location of the potential standing stone identified 70m to the south of T13 will also be cordoned off and clearly signed as a 'no-entry' area during the construction phase. The Project is located within the Múscraí Gaeltacht area and any signage erected within the public realm during the construction phase will include Irish and English text.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM73	Traffic	Chapter 15: Traffic and Transport	15.6.1 Construction Phase	The potential effects of the construction of Development have been identified as being potentially high but temporary in nature. The following mitigation measures are recommended: • 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 Cork 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, particularly at Reananerree on the L-3402. All drivers will be made 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, school drop off and pick-up. • The new N22 Macroom By-Pass will be used to transport turbine components, materials for upgrading the turbine haul route, materials for construction of the civil and electrical works on the wind farm site, as well as materials for the grid connection so as to minimise traffic through built-up areas such as Macroom, Ballymakeery and Ballyvourney. • All significant traffic likely to be generated by Gortyrahilly Wind Farm will be during the construction of the development and will be temporary in nature. It is envisaged that the construction period for the wind farm will span a 21-month period with the underground cable being installed over a concurrent 12-month period. The construction-phase Traffic Management Plan will mitigate		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				these impacts. A number of mitigation measures are embedded within the design: - The design is such as to minimise the extent of the new build requirement by using existing forestry tracks where possible, thereby minimising materials requirements. - The design is such as to maximise the use of onsite resources (particularly stone material for track construction) to minimise the requirement for material import. 59,053 m3 of stone is proposed to be won from the borrow pits which equates to a 5,905 HGV trips to the site avoided. - Retaining surplus excavated material on the Site so as to reinstate the borrow pits, thereby eliminating traffic associated with the disposal of same. 91,860 m3 of spoil are proposed to be stored in the on-site borrow pits, resulting in a saving of 9,186 HGV trips off the site. - Designing the cable for installation in pre-laid ducts, rather than directly installing the cable in the ground. The latter would require the entire trench from joint bay to joint bay to be fully open for cable laying. • 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 Cork and Kerry County Council Roads Departments to discuss the requirement for a Garda escort.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• 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 relatively modest distance between Ringaskiddy Port and the Site of c.92.8km, the journey is achievable within a 2–3-hour timeframe. Accordingly, locations for resting will not be required. Local residents along the affected route will be notified of the timescale for abnormal load deliveries. • A condition survey of the L-3400 and L-3402 roads will be carried out prior to commencement of construction and another post-construction. The Developer will lodge a bond with Cork 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 further defects will be remedied to the satisfaction of Cork County Council. • Wheel cleaning equipment will be used at the exit to the wind farm Site at each of the two proposed entrances (i.e., the main Site entrance from the L-3402-36 and the temporary entrance for delivery of turbine components from		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				the L-7405) to prevent any mud and/or stones being transferred from Site to the public road network. All drivers will be required to see that their vehicle is free from dirt and stones prior to departure from the construction Site. • The Site entry points will also be appropriately signed. Access to the wind farm construction Site will be controlled by on Site personnel and all visitors will be asked to sign in and out of the Site by security / Site personnel on entering and exiting the Site. All Site visitors will undergo a Site induction covering Health and Safety issues at the Contractor's temporary compound and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite. • 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. • To reduce dust emissions, vehicle containers/loads of crushed stone will be covered during both entrance and egress to the Site. • A survey of the turbine component haul route will be undertaken prior to commencement to identify if any new overhead lines or broadband lines will need to be lifted along the route to allow abnormal loads such as tower sections and nacelles to be delivered. Telephone lines on the L-3405-0 will need to be laid underground in advance of turbine deliveries – these can be incorporated into localised road widening works.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• During the construction phase, clear construction warning signs will be placed on the L-3402, the L-3400-79, L-3405-8 and L-7405-0 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 turbine delivery road and grid connection will be strictly in accordance with "Guidance for the Control and Management of Traffic at Road Works – 2nd Edition 2010" as well as "Traffic Signs Manual 2010-Chapter 8- Temporary Traffic Measures and Signs at Roadworks". • Road Closures will be obtained for grid connection works on narrow public roads i.e. L-7405 and L-7400. On narrower roads (such as the L-7405, L-7404 and L-7401-1 sections of the grid connection as shown on Figure 15.5) a full road closure is proposed. A number of options are available in some areas for diverting traffic that will allow flexibility during construction. When the L7401-1 is closed, local access will be provided and no requirement for diversions is envisaged. For the grid connection works within the L7400, the southern end (between the L3400-32 and the L-74002-0) will initially be constructed. Traffic from residents along the L-74002-0 will be diverted northwards along the L7400 and then south-eastwards along the L7401-0 and L-7401-20 to Coolea. Only when the southern end of the L7400 has been re-opened to traffic will the northern part be closed. When the L-7400 is closed, then traffic from residents in the Inchamore area (L-740001-0) can travel to Coolea via the L-7401-0 and L-7401-20. While traffic diversions are in place, local access will be maintained at all times. All access points (domestic,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 Cork 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 haul route L-3405-0 and L-7405-0 is proposed to be e completed in advance of road closures to the L-7404 the L-7405 or to the L-3400-32. • The L-3400-32 and the L-7405 shall not be closed at the same time i.e. one should remain open while the other is closed. • 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 wind farm site shall either have roof mounted flashing beacons or will use their hazard lights. • A speed limit of 25km/h shall apply to all vehicles within the wind farm site. • During times of high construction traffic on the Beara to Breifne Way, the contractor will transport walkers through the site. Such circumstance will arise during:		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				- Construction/Upgrade/Access tracks and construction of hardstands for turbines T3, T1, T2, T4, T5, T7, T8 and T9. - Construction of foundations to turbines T3, T1, T2, T4, T5, T7, T8 and T9. - Erection of Turbines T3 and T7.		
Operational Phase						
MM74	Health and Safety	Chapter 4: Population and Human Health	4.5.7 Human Health and Safety	For operation and maintenance staff working at the proposed wind farm, appropriate site safety measures will be utilised during the operational phase by all permitted employees. All personnel undertaking works in or around the turbines will be fully trained and will use appropriate Personal Protective Equipment (PPE) to prevent injury. Equipment within high voltage substations presents a potential hazard to health and safety. The proposed substation will be enclosed by palisade fencing and equipped with intruder and fire alarms in line with ESB and EirGrid standards. All electrical elements of the proposed development are designed to ensure compliance with electro-magnetic fields (EMF) standards for human safety. All on-site electrical connections are carried by underground cable and will be marked out above ground where they extend beyond the track or hardstanding surface. Details of cables installed in the public road will be available from ESBN. 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 will ensure the risk posed to humans is negligible. 24-hour remote monitoring and fault notifications are included as standard in the Turbine Operations and Maintenance Contracts. A Supervisory Control and Data Acquisition ("SCADA") system will monitor the Development's performance. If a fault occurs, then a message is automatically sent to the operations personnel preventing emergency situations. 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 The design of the Development has considered the susceptibility to natural disasters. The proposed site drainage will mitigate		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				against any potential flooding risk due to run off with the use of Sustainable Drainage Systems (SuDS). Construction drainage will be left in-situ for the lifespan of the project through to decommissioning. The Contractor's fire plans are reviewed and updated on a regular basis. A nominated competent person shall carry out checks and routine maintenance work to ensure the reliability and safe operation of firefighting equipment and installed systems such as fire alarms and emergency lighting. A record of the work carried out on such equipment and systems will be kept on site at all times. Shadow flicker detection systems will be installed on all turbines to manage occurrence of shadow flicker on nearby receptors. To ensure the proposed wind farm is compliant with noise limits, some of the turbines may need to be operated in noise reduced modes of operation to protect residential amenity. The wind farm system shall include a kill switch that can be operated at any time with an overriding manual shutdown system in case of an emergency.		
MM75	Shadow Flicker	Chapter 4: Population and Human Health	4.6 Shadow Flicker	Due to the potential for shadow flicker to affect receptors within the shadow flicker study area, it is proposed that a 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 affect nearby properties, based on pre-programmed co-ordinates for the properties and turbines • Wind speed (can effect how fast the turbine will turn and how quickly the flicker will occur) • Wind direction		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• 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 affected properties. It is intended that the measures outlined above, subject to safe shut down time, will eliminate the potential for shadow flicker to affect any of the properties within the study area, this will be the case regardless of which turbine is selected within the turbine range. In the event that complaints of shadow flicker are received by the Developer / Site Operator or by Cork 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. This could result in the shutting off turbines at specific times of day.		
MM76	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.6.2.1 Bats Feathering of Blades	All turbines will enact a feathering protocol when wind speeds are below the cut-in speed of the turbine. Feathering entails pitching turbine blades at 90 degrees or parallel to the wind to reduce their rotation speed while idling to below two revolutions per minute.		
MM77	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.6.2.2 Bats Curtailment	• At turbines where high bat activity was recorded during the baseline surveys in 2019 and 2021 (namely T1, T3, T6, T8, T9, T10, T11, T12 & T13), and as updated in pre-construction surveys, cut-in speeds will be increased during the bat activity season (April-October) where temperatures		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				are optimal for bat activity (above 11 degrees) to 5 m/s from 30 minutes prior to sunset to 30 minutes after sunrise at all turbines within the site (Betts, 2020). • It is noted that it is possible to refine the wind farm's curtailment program to an individual turbine level, allowing turbines of lower collision risk to operate when higher risk turbines are curtailed. Should the operator want to move to this more sophisticated solution, a regime can be implemented on certain times and dates, corresponding with those periods when the highest level of bat activity is expected to occur. In order for this to be achieved a static monitoring program should be completed at each turbine location linking real time bat activity with real time weather data (based from within the wind farm).		
MM78	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.5.7 Kerry Slug	• Areas of suitable habitat that occur outside of the footprint of the development will be avoided during the course of construction thereby minimising the loss and disturbance of Kerry Slug habitat. • Immediately prior to undertaking works in areas of suitable habitat (wet heath / blanket bog / rock outcrop), the project ecologist will check for the presence of Kerry Slug. Should slugs be discovered, then they will be transferred to suitable habitat in the surroundings. Similar on-going monitoring of suitable habitat within works areas will continue throughout the construction phase. Such monitoring will be undertaken during periods of wet weather when slugs are most active and feeding on the surface and therefore at greater risk of impacts by movement of machinery. The transfer of Kerry Slugs will be subject to a derogation licence from the Department of Housing, Local Government and Heritage (which has been applied for at time of writing).		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM79	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.8 On-going monitoring during construction	An Ecological Clerk of Works (ECoW) will be on site for the duration of the construction phase and will support the role of the site Environmental Manager. As required, this person will be assisted by a consultant ecologist with expertise in peatland habitats. The consultant ecologist will be employed by the client and will be independent of the Contractor. As ground excavations are opened up, the ECoW will walk the work corridor with a surveyor and within sensitive peatland areas will mark out (with range poles or equivalent) the extremities of the required work area. This will identify the limit of the work area and will prevent unnecessary incursions by the Contractor onto adjoining intact heath or bog.		
MM80	Flora and Fauna	Chapter 5: Terrestrial Ecology	5.8 Re-vegetation of bare surfaces	An ecological objective is to minimise the area of exposed peat surface and to encourage revegetation. This will be achieved by the removal and subsequent reuse of the heath and bog surface (cut out as sods or 'turves') within the work footprint. A two-pronged approach will be followed involving (i) the immediate re-use along road margins, and (ii) the longer-term use around turbine and hardstand margins (this involves storage). Both approaches are on the basis that the areas of heath and bog have a minimum peat depth of c.20-30 cm, which represents the acrotelm (or living layer) of the bog/heath system. The method involves the removal of the surface layer in sods or 'turves' by a dumper/digger with bucket. Care will be taken to keep the turve as intact as possible and the vegetated side upwards (as far as is feasible). For the use of the turves on the side casting and marginal strips of the new roads, the procedure will be that the contractor will dig out the surface peat turves and place these immediately on the side-casting and marginal strips in the preceding section		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				(250 – 500 m length) that had been constructed. These will later be bedded in using the bucket of a digger. This approach will provide almost immediate cover of the bare surfaces. Turves to be used for re-vegetation of areas at the turbines / hardstands will be dug out as above and transported to pre-identified storage areas. The storage areas will be: (i) located in areas of the site that is not existing heath or bog habitat, (ii) in parts of the site where disturbance at a later date will not occur. The turves will be off-loaded from a trailer and placed side by side and vegetation side upwards. They will be placed in single layers, i.e. not piled on top of each other. Should storage be for prolonged periods (months), the turves may need to be watered during dry spells. When ready for placement at turbine/hardstand locations, or in areas where substantial bare surfaces occur due to the works, they will be lifted with a dumper and bucket and taken to their destination. Here they will be off-loaded and laid vegetation side up. Should enough turves be available, they will be packed close together. Otherwise, they can be laid across the bare surface to cover the required area. The turves will be bedded in with the bucket of a dumper. All of the above will be supervised by the Environmental Manager and will be inspected by the project ecologist at regular intervals during the works. The above process will be followed at the borrow pit north of T3. The surface here will be striped and the turves stored until the pit is ready for reinstatement. As above, the turves will not be stored on areas of existing heath or bog vegetation. The		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				reinstatement on a peat layer will be monitored by the EcoW and the project ecologist, as required.		
MM81	Flora and Fauna	Chapter 6: Aquatic Ecology		The following measures will be implement during the operational phase to ensure the ongoing protection of watercourses and water quality at the Site and in downstream reaches: • The Site compound / office will house all potential pollutants within a secure bunded COSSH store for the operational phase of the project. • All onsite wastewater treatment facilities will function in full compliance with current water quality requirements (Building Regulations 2010 as amended S.R. 66:2015) to prevent nutrient loading entering aquatic environments.		
MM82	Flora and Fauna	Chapter 7: Ornithology	7.5.2.1 Measures for White-tailed Eagle	Once operational, a programme will be put in place to remove carcasses (mainly of sheep) from the site. This will involve search of the wind farm infrastructure area by site management for the presence of dead and/or injured animals (mostly lame sheep or animals caught in wire fencing). It is noted that such animals are usually identified by a concentration of corvids (ravens and hooded crows). Search would be on a weekly basis. Should a carcass be located, this will be removed at the earliest opportunity by an appointed representative following standard practice for the disposal of carcasses (subject to Health and Safety issues). Injured or trapped animals will be reported to local landowners		
MM83	Flora and Fauna	Chapter 7: Ornithology	7.5.2.2 Measures for Kestrel	Should monitoring identify more than one Kestrel casualty at a specific turbine(s), proactive measures will be taken to discourage the birds from hunting in the area of the turbine(s).		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				This will involve clearing rank vegetation from around the relevant turbine(s) to make it less suitable for supporting prey items such as small mammals (mice, shrews, voles) and birds (meadow pipit, skylark etc).		
MM84	Site Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.3.1 Increase in Hydraulic Loading Proposed Mitigation Measures	The principles of the mitigation measures described under **Section 9.5.2.3** (check dams, stilling ponds, attenuation lagoons etc.) are based on the control and management of runoff discharge rates, which ensure the regulating the speed of runoff within the drainage network, buffering the discharge from the drainage network where possible, and maintaining the natural hydrological regime. As such, the measures described with a view to controlling the release of suspended solids also mitigate against the potential for rapid runoff and rapid hydrological responses to rainfall potentially leading to flooding and erosion of the drainage network or downstream of the development. The same measures will be implemented with a view to mitigating against net increase surface water runoff arsing from the development. For example, the following conceptual model will be applied at a proposed turbine hardstand location: • Collector drains; allowing for 0.5m depth, 1.0m width, presume semi-circular, sectional area; c. 0.4m2. Presume 100m length of collector drain; up to 40m3 capacity per 100m, by 50% allowing for gradient equates to 20m3. Collector drains are not intended to store runoff, however the in line attenuation features, such as check dams and flow regulators will serve to reduce discharge rates dramatically, effectively backing up water and regulating the rate of discharge. The actual attenuation capacity of the drainage network and treatment trains will be calculated during the detailed design phase of the development.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Check dams at regular intervals throughout the drainage network (existing, new clean collector and new dirty collector drains) will attenuate runoff intercepted by respective drainage channels. • Dirty water collector drains (associated with construction areas) will direct runoff to established stilling ponds. Stilling ponds will reduce the velocity of runoff, further reducing the hydrological response to rainfall. • Buffered outfalls to vegetated areas will utilise the infiltration capacity of the ground prior to the rejected rainfall eventually being intercepted by the receiving surface water system. • Clean water collector drains will intercept clean runoff (upgradient of construction areas) and will direct runoff around construction areas. The runoff will be attenuated by means of check dams and intermittent buffered outfalls. The potential combined attenuation capacity of the proposed drainage infrastructure has been designed to attenuate net increase in water runoff during extreme storm events i.e., 1 in 100 year storm event (**Appendix 9.1:** SFRA) plus a 20% allowance for global warming.		
MM85	Waste	Chapter 13: Material Assets and Other Issues	13.10.7 Waste	**Staff Facilities** Provision for separation of waste streams will be provided so that e.g., paper, and cardboard waste and bottles may be recycled. **Sewage** It is proposed to install a rainwater harvesting system as the source of water for toilet facilities for the operational phase.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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.		
MM86	Traffic	Chapter 15: Traffic and Transport	15.6.2 Operational Phase	Effects during operation have been assessed as being imperceptible. However, it is still important that any effect is minimised as for as is possible. Therefore, the following measures are recommended: • All vehicles using the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights. • A speed limit of 25km/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 within one month of the inspection. • The Beara to Breifne Way shall be kept open to walkers during the operational period.		
MM87	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	3. Incident & Hazard Reporting	A reporting system has been developed (see sections **6.3** to **6.9** of **Management Plan 1**) for reporting environmental incidents or hazards for the site. These reports will be logged so that they can be regularly revised and form part of the response plan procedural review. **Sections 6.3** to **6.9** of this report have attached a blank environmental incident reports/audit forms that should be completed in the event of an accident/incident. This includes		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				details of all non-compliance and corrective actions carried out as a result of any incidents.		
MM88	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	4. Waste Disposal After Environmental Incidences	If spill kits etc. are used in the event of a pollution incident, operatives need to carefully dispose of used equipment by carefully placing them in a sealed bag or container. They should then be removed from site by a licensed waste contractor as per the **Waste Management Plan.** Contaminated soil also needs to be disposed of as hazardous waste by a permit holder. This is also further detailed in the **Waste Management Plan** of this CEMP.		
MM89	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	5. Site Induction and Toolbox Talks	It is imperative that all contractors, sub-contractors and staff on site are fully familiar with this emergency response plan and it will be detailed regularly in Toolbox Talks. During these talks, they will also receive regular reminders of the importance of the local environment and of the necessary environmental controls that are in place on site.		
MM90	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	6.1 Procedure to be followed in the event of an incident	The following procedures are intended as a guide in dealing with incidents. Health & Safety guidance should be followed at all times applying common sense and ensuring the health & safety of yourself and others: 1. Identify the source of the spillage and cut off source if possible, e.g. by closing valve, righting container etc. 2. Work on site will cease and all operatives will assist in placing spill mats on the affected area. Site Manager/ Main Contact should be notified. 3. Identify where spillage may go. If spillage is near a watercourse (drainage/ditch/ river) divert spillage away from the watercourse through the use of absorbent materials from the spill kit. 4. <u>SUSPENDED SOLIDS CONTAMINATION OF WATERCOURSE</u>: If watercourse is at risk of contamination		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				from suspended solids from a slope failure, do as follows: a) Place straw bales wrapped in geotextile or sand/gravel bags with geotextile curtains immediately in the watercourse(s) at regular intervals downstream from the incident. These sand/straw bags and bales will be removed and replaced with stone filters once water quality is stabilised. b) Stone check dams faced with a layer of geotextile will be constructed at critical points along the watercourse. c) Small sumps will be formed intermittently between the check dams to reduce the amount of suspended solids contained in the water. 5. OIL SPILL IN WATERCOURSE: If spill has reached the watercourse, do as follows: a) Place flexible absorbent booms across watercourse, ahead of the contamination within a quiet stretch of water. b) Place absorbent cushions in the water immediately upstream of these booms as well as downstream of the booms. c) Remove and replace saturated absorbent material as required. Please ensure removed cushions are placed in sealed polythene bags/containers and disposed of by the principal waste contractor. 6. PEAT SLIDE: Where the onset or actual detachment of peat (e.g., cracking, surface rippling) occurs: a) All activities in the area will cease and all available resources will be diverted to assist in the required mitigation procedures. b) All relevant authorities should be notified if a peat slide event occurs on site and this Emergency Response Plan (ERP) followed. c) Where peat slides do not represent a risk to a		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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. d) Where possible, check barrages (comprises the placement of rock fill across a watercourse which allows the passage of water but will prevent peat debris from passing through) will be constructed on land using rock fill to prevent a peat slide reaching any watercourse. e) 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. f) 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. g) All measures to contain the peat slide must be approved by the Cork County Council or Inland Fisheries Ireland (IFI). 7. In the unlikely event of a fire at a turbine or at the substation, all personnel on site will meet at a designated fire point and emergency services will be contacted. 8. Icing conditions bring a variety of risks, including power loss, ice fall and shedding (throw), and rotor imbalance. In the unlikely event of ice throw from blades or rotor imbalance occurs, all activities in the area will cease and site personnel will stand clear of turbines where possible until they have been shut down completely.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				9. Notify all parties in the order listed overleaf. Notification should be made by one member of staff whilst remainder of staff present deal with the spill/incident. 10. Dig up any and all contaminated ground as soon as possible/immediately. All contaminated materials should be placed in sealed polythene bags/containers and disposed of appropriately by an appropriate licensed waste contractor. 11. Complete required record of incident and response into reporting system		
MM91	Health and Safety	Appendix 2.1 CEMP Management Plan 1 Emergency Response Plan	6.2 Communication Plan	A Communication Plan (to be followed in the event of an incident) will be provided by the Contactor, in liaison with relevant stakeholders and will be included in the updated ERP prior to commencement of site development works. An outline Communication Plan is proposed below:		
Decommissioning Phase						
MM92	Decommissioning	Chapter 4: Population and Human Health	4.5.5 Land Use	The decommissioning works will be planned and controlled by a Construction and Environmental Management Plan (CEMP). This provides details on day to day works and methodologies. As part of these works, the public and other stakeholders will be provided with updates on construction activities which will affect access to lands. This will be communicated to members of the public through a community liaison officer employed for the duration of the construction period.		
MM93	Decommissioning	Chapter 4: Population and Human Health	4.5.7 Human Health and Safety	Once mitigation measures and health and safety measures are followed, the potential for impact on human health on the construction site during decommissioning is expected to be not significant and temporary to short-term.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Public safety will be addressed by restricting access to the public in the vicinity of the site works during the decommissioning stage. The construction site and associated recreation trails will be temporarily closed in sections to the public for the 18-24 month decommissioning period. This measure aims to avoid potential injury to members of the public as a result of activities. Where recreational trail sections are temporarily closed to the public during decommissioning, signage will be provided indicating alternative routes for walkers which avoid the construction site. This aims to avoid potential confusion and disorientation to recreation users as well as maintaining public safety in proximity to the construction site. Appropriate warning signage will be posted at the construction site entrance, directing all visitors to the site manager. Appropriate signage will be provided on public roads approaching site entrances and along haul routes. In relation to the turbine delivery route, extra safety measures will be employed when large loads are being transported, for instance, Garda escort will be requested for turbine delivery and a comprehensive turbine delivery plan will be utilised to avoid potential impact to human safety for road users and pedestrians. For the installation of the grid connection cable in the public road, a detailed traffic management plan has been developed (Appendix 2.1) in discussion with locals who will be directly impacted by the works, and in agreement with the Local Authority. Public consultation will be conducted along the grid cable route to inform local residents ahead of decommissioning works.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Once mitigation measures and health and safety measures are implemented and followed, the potential for impact on human health for members of the public during decommissioning of the proposed project is expected to be not significant and temporary to short-term.		
MM94	Decommissioning	Chapter 6: Aquatic Ecology	6.5.4 Decommissioning Phase Mitigation	Decommissioning of the Development will be scheduled to take place after the proposed 35-year lifespan of the project. Decommissioning phase impacts for the proposed development are likely to be broadly similar to construction phase impacts, in terms of potential surface water quality impacts from ground disturbance, refuelling and the storage of potentially hazardous materials onsite. The implementation of all mitigation measures detailed for the construction phase will be adopted in full during the decommissioning phase to ensure all such impacts are avoided. When the final Decommissioning Plan is prepared prior to decommissioning and presented as a standalone document, all drainage management measures, which will include maintenance of the operational drainage measures, will be included in that document, as required. However, it should be noted that by the time decommissioning is undertaken after the planned 30-year lifespan of the Development, the areas within the Site will have revegetated resulting in a resumption of the natural drainage management that will have existed prior to any construction. It is not anticipated that the decommissioning phase will interrupt this restored drainage regime in any way with the works proposed. As a minimum measure, areas where freshly placed soil material as part of turbine foundation reinstatement work will be surrounded by silt fencing if deemed necessary until the area has naturally revegetated.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Restoration of the Site following decommissioning of infrastructure will require the prior establishment of the new baseline conditions at the Site which will have developed over the intervening 35 years life of the project. These studies will inform any modification or additional sensitivities that may need to be factored in restoration and site specific measures.		
MM95	Decommissioning	Chapter 8: Soil and Geology	8.5.4 Decommissioning Phase	Ultimately, any such restoration activities will need to be assessed under the scope of multiple environmental disciplines, similar to this EIAR, and the potential synergistic effects. Given that the condition of the environment will likely change over the course of the operational phase of the Development, particularly in terms of the condition and degree of establishment of blanket bog and associated ecology, and ornithology, it is recommended that the potential for restoration following the decommissioning phase of the Development is evaluated closer to the time (c. 25-30 years). It should be noted that restoration activities do not currently conform to baseline conditions. Excavation and removal of some hardstand areas is planned as part of the Development and will be undertaken during the decommissioning phase. Excavation of all material including concrete turbine foundations will likely not be proposed due to the high impact nature of such works e.g., breaking of reinforced concrete. Extensive vehicular movement on peat is not anticipated to any significant extent considering adequate Turbine Hardstand will have been established, however the risk of fuel or other contaminant spillages, or management of waste are valid hazards during the decommissioning phase of the Development. The mitigation measures described in this EIAR chapter will be adopted and implemented by means of a Decommissioning Plan. On the basis that a Decommissioning Plan has been		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				established, **Management Plan 6** of the CEMP (**Appendix 2.1**) and will be implemented during the decommissioning works associated with the Development.		
MM96	Decommissioning	Chapter 12: Landscape and Visual Amenity	12.9.1 Decommissioning Phase	The decommissioning phase will see a similar nature of effects to the construction stage due to the movement of heavy machinery within the Site and to and from the Site removing turbine components. However, such effects will be temporary in duration and decreasing in scale as turbines are removed from view and the landscape is substantially reinstated to former uses (with the likely exception of the Substation infrastructure). Structures and cabling will be removed and hardstands and turbine foundations will be allowed to regenerate naturally. Roads and associated drainage will remain in place. As with construction stage landscape and visual impacts, decommissioning stage effects are not considered to be significant.		
MM97	Decommissioning	Chapter 15: Traffic and Transportation	15.6.3 Decommissioning Phase	As the turbine blades can be cut into manageable lengths on decommissioning, there is no requirements to re-use the turbine supply haul route for decommissioning. Thus, all decommissioning related traffic will use the L3402. The wind turbines proposed as part of the proposed Development are expected to have a lifespan of up to 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site may be decommissioned fully, with the exception of the electricity substation. Upon decommissioning of the proposed wind farm, the wind turbines will be disassembled in reverse order to how they were erected. All above ground turbine components will be separated and removed off-site for recycling. Turbine foundations will		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				remain in place underground and will be covered with earth and allowed to revegetate or reseeded as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in potentially significant environment nuisances such as noise, dust and/or vibration. The site roadways will be in use for additional purposes to the operation of the wind farm (e.g. for forestry and recreational use) by the time the decommissioning of the project is to be considered, and therefore the site roads will remain in situ for future use. If it were to be confirmed that the roads were not required in the future for any other useful purpose, they could be removed. The grid connection, when completed, will be handed over to EirGrid as the Transmission System Operator and thus it will not be removed. Therefore, there will be no impact on the local roads during decommissioning. The traffic management of the decommissioning phase will be advised by the road conditions at the time of decommissioning. It is not possible to predict the changes to the public road infrastructure and policies in the next 30-40 years. It is envisaged that a Traffic Management Plan will be developed for the decommissioning phase. Nevertheless, the following traffic management measures are likely to be required: • Signage will be erected at the site entrance and on the L3402 approaching the site. • Construction traffic associated with decommissioning will be		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				scheduled so as to avoid school drop off and collection times. • All vehicles using or while in operation at the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights. • A speed limit of 25km/h shall apply to all vehicles within the wind farm site. • During times of high traffic on the Beara to Breifne Way, the contractor will transport walkers through the site.		

Table 17.1b: Monitoring Schedule

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Pre-Construction Phase						
MX1	Drainage Maintenance	Appendix 2.1 CEMP Management Plan 3 Surface Water Management Plan	An inspection and maintenance plan for the drainage system on site will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the site ECoW or the Project Hydrologist.	On going	Monthly	Project Hydrologist
MX2	Clear Felling of Coniferous Plantation	EIAR Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP Management	Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. The 'before' sampling should be conducted within 4 weeks of the felling activity commencing, preferably in medium to high water flow conditions. The "during" sampling will be undertaken once a week or after rainfall events. The 'after' sampling will comprise as many samplings as necessary to demonstrate that	As Required	Monthly	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
		Plan 3 Surface Water Management Plan	water quality has returned to pre-activity status (i.e., where an impact has been shown). Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will also be undertaken as per water monitoring programme for the overall Development and each primary watercourse along the route.			
MX3	Drainage Inspection	EIAR Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP Management Plan 3 Surface Water Management Plan	Prior to commencement of works in sub-catchments across the site main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage.	As Required	Monthly	Project Hydrologist
MX4	Birds	EIAR Chapter 7: Ornithology	Pre-commencement bird surveys will be undertaken prior to the initiation of works at the Site. The survey will include a thorough walkover survey to a 500m radius of the Development footprint and/or all works areas, where access allows. If winter roost sites or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located, and earmarked for monitoring at the beginning of the first winter season or breeding season (respectively) of the construction phase. If it is found to be active during the construction phase no works shall be undertaken within a 500m buffer in line with best practise. No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied.	Once	As required	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Construction Phase						
MX5	Chapter 5: Terrestrial Ecology	5.9.1 Monitoring Habitats	At the end of construction (i.e., when all ground works are complete), a survey on the wind farm site will take place by a qualified ecologist. The extent of bare or disturbed areas will be recorded and a monitoring programme will be set up for vegetation recovery. Monitoring will be by the use of permanent quadrats – details will be worked out by the ecologist at the time 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, 7, 10, 15, 20. Particular attention will be given areas of blanket bog and wet heath where vegetation has been disturbed during construction. If significant erosion-related problems are detected, corrective actions will be taken as necessary. Depending on extent and location of the problem areas, such actions could include sodding of bare patches with turves taken from elsewhere (not from a site of conservation interest) or reseeding with suitably sourced seed appropriate for the Site. An annual report will be prepared for each year of monitoring.			
MX6	Chapter 6: Aquatic Ecology	6.7 Monitoring Construction	In order to verify the efficacy of pollution prevention and mitigation works during construction, Water Quality Monitoring will be undertaken prior to, during and post completion of construction works in accordance with the parameters and schedules as set out in the Water Quality Management Plan. Monitoring will be undertaken in all watercourses within the catchment of the construction area. Monitoring will be			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			overseen by a qualified and experienced Environmental Manager or Ecological Clerk of Works. The specific monitoring requirements including frequency and parameters, are detailed in the **Chapter 9: Hydrogeology and Hydrology** and in the Water Quality Management Plan. Baseline monitoring undertaken at the Site as part of this study will be repeated periodically i.e., before, during and after construction phase, to measure any deviations from baseline hydrochemistry that occur at the Site, including discharge rates. The construction and post construction monitoring programme for the Gortyrahilly site will include the following: • During the construction phase daily inspection of silt traps, settlement ponds, buffered outfalls and drainage channels will be undertaken. Routine measurement of total suspended solids, electrical conductivity, pH and water temperature at selected water monitoring locations at the Site will be carried out. Monitoring of locations where excavations are being dewatered (likely high in solids) will be done in real time. • During the construction phase of the project, the development areas will be monitored daily for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system so that it does not become blocked, eroded or damaged during the construction process.			
MX7	Chapter 7: Ornithology	7.5.2.3 Construction Monitoring	During the breeding season (March-August) bird monitoring surveys will take place to a distance of 500 m from the development area. The purpose of the monitoring will be to			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			identify the presence of sensitive breeding species of conservation importance so that mitigation can be taken to avoid impacts on the breeding activities from the works. The key species of concern at this site are Red Grouse, Snipe and Merlin. The monitoring surveys will be undertaken by a suitably qualified ornithologist. Should the presence of any of these species be confirmed, the location of the nest will be identified (as far as is possible without causing disturbance to the birds) and a buffer zone of 500 m will be observed where works are restricted until after breeding is complete.			
MX8	Chapter 9: Hydrology and Hydrogeology	9.5.2.12.1 Monitoring (Wind Farm Site)	To ensure effective implementation of mitigation measures, environmental auditing, and monitoring of environmental obligations of the Developer, an Environmental Clerk of Works (Ecological Clerk of Works (ECoW)) will be assigned by the Developer to carry out monitoring at the Site during the construction and operational phases of the Development. The role of the Ecological Clerk of Works (ECoW) will be to actively and continuously monitor site conditions and advise on environmental issues and monitoring compliance, and will not be responsible for implementing measures, the due duty of implementing measures will be held by the Developer / contracted construction operator. The Ecological Clerk of Works (ECoW) will have the authority to temporarily stop works in a particular area of the site to ensure corrective measures are implemented and adverse environmental impacts are minimised if not avoided. Monitoring of pollution prevention and mitigation undertaken by the Ecological Clerk of Works (ECoW) assigned by the Developer will include:			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• Monitoring site pollution prevention plan. • Water quality monitoring. • Advising on required pollution prevention measures (as described in this EIAR) and monitoring their effectiveness. • Liaison with local authorities in relation to pollution instances if applicable. • Considering the Ecological Clerk of Works (ECoW) will be responsible for monitoring a broad range of environmental factors at the Site, technical monitoring and advice will be sought such as from specialist consultants as the need arises e.g., installation and website for telemetry. The following measures will be implemented for Site monitoring in relation to the hydrological and hydrogeological impacts: • The baseline monitoring undertaken at the Site as part of this study will be repeated periodically before, during and after the construction phase of the Development to monitor any deviations from baseline water quality that occur at the Site. This monitoring along with the detailed monitoring outlined below will ensure that the mitigation measures that are in place to protect water quality are working. Specifically, a construction period and post construction monitoring programme for the Site will include the following: - During the construction phase, daily inspection of silt traps, buffered outfalls and drainage channels and daily measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations on the Site (locations close to active working zones). Monitoring of same during times when excavations are being dewatered (likely high in solids) will be done in real time. In this regard, physiochemical			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			properties will be monitored in real time by means of alarmed telemetry e.g., telemetric monitoring at baseline sampling locations and alarm thresholds established in line with water quality reference concentrations/limits which will be set using relevant instruments for example, Surface Water Quality Regulations, <25mg/l Total Suspended Solids (TSS). - Continuous Monitoring will be carried out as part of Active Management of construction water management and treatment (**Figure 9.12**). These monitoring systems will travel with the active construction areas / remain with the Active Management infrastructure. The purpose of this is to recycle water if quality is unfavourable and adjust the dewatering and treatment train accordingly until discharge quality is observed to be acceptable. A small degree of tolerance above reference concentrations is acceptable at this location but only if the discharge from the Active Management train discharges to another Passive Management system or to a non-sensitive vegetated area. If discharging within sensitive areas or buffer zones, the quality of discharge from the Active Management train will be in line with prescribed reference limits (e.g., 25mg/l TSS). - Continuous Monitoring at downstream Baseline SW Monitoring Locations (**Figure 9.6**) will be carried out using telemetry during the construction phase. Triggering of the threshold at these locations will trigger emergency response and escalation of measures including immediate full site inspection to ascertain to the potential unknown source (bearing in mind that the quality of managed runoff at the site will be known by			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			means of live telemetry and handheld meters). Continuous monitoring at Baseline SW Monitoring Locations will continue into the operational phase until stable conditions are observed e.g., stable conditions in line with baseline conditions for 6 months. - Post construction: inspection of silt traps, buffered outfalls and drainage channels, measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations at the Site will be carried out at a reasonable frequency (weekly initially gradually reduced based on observed stability of conditions), and will also be scheduled following extreme metrological events (Section 9.5.2.1). During the operational phase of the project the stilling ponds and buffered outfalls will be periodically inspected e.g., weekly during maintenance visits to the Site initially and gradually reduced based on observed stability of conditions. - During the construction phase of the project, the Development areas will be monitored daily for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system so that it does not become blocked, eroded or damaged during the construction process. This monitoring will continue at a reasonable frequency (weekly initially gradually reduced based on observed stability of conditions) during the operational phase of the Development, however it is envisaged that any potential issues in this regard will be identified and rectified during the construction phase. - During the construction phase of the project, the			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Development areas and adjacent receiving drainage systems will be monitored daily for evidence of erosion and other adverse impacts to natural drainage channels and existing degraded areas whereby soils/peat are exposed and prone to enhanced degradation. This monitoring will continue at a reasonable frequency during the operational phase of the Development, however it is envisaged that any potential issues in this regard will be identified and rectified during the construction phase. - During both the construction and operational phases of the project watercourse crossings will be monitored frequently (daily during construction and intermittently during operational phase i.e., weekly / monthly inspections initially and reduced gradually in line with observed stability and confidence in longer term data obtained. The water course crossings will be monitored in terms of structural integrity and in terms of their impact on respective watercourses. • A detailed inspection and monitoring regime, including frequency is specified in the Construction Environmental Management Plan (CEMP), Management Plan 2, **Appendix 2.1**. This includes an environmental risk register e.g. constraints linked to the development construction schedule, routine reporting on the performance and effectiveness of drainage and attenuation infrastructure, and any actions taken to rectify or enhance the system. • Site water runoff quality at all surface water monitoring locations will be monitored on a continuous basis during the construction phase of the Development. Monitoring will			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			continue into the operational phase until such time that the Site and water quality have stabilised (stable conditions in line with baseline conditions for e.g. 8 consecutive quarterly monitoring events). This monitoring will be carried out at the downstream surface water baseline sampling location (**Figure 9.6**) • Continuous monitoring systems will be in place, particularly in principal surface water features draining the site. For example, remote sensing, or telemetric monitoring sensors (turbidity) will be employed in this regard. • At construction areas requiring drilling (HDD) and/or significant excavations (launch pits, cable joint bays), and in the management of general excavations, arisings will be managed carefully with a view to containing and treating all drained water and runoff which will likely be laden with suspended solids. Active continuous monitoring will be required at these locations in line with the conceptual model presented in **Appendix D – Tile 2**. The monitoring location will be at the outfall or discharge point of the treatment train at any respective location. Continuous monitoring will include telemetry. • Continuous Monitoring Locations or Telemetric Monitoring Stations (TMS) will use probes to monitor the following parameters: - Electrical Conductivity - Turbidity (Data obtained can be equated to estimated Total Suspended Solids (TSS) through calibration) - pH - Temperature - Capacity for additional probes.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• TMSs will be self-powered and will be comprised of the following components at a minimum: - Remote Telemetry Unit (RTU) – Modem / data hub and transmission. - Solar panel - Sensor – pH - Sensor – Turbidity - Sensor – Electrical Conductivity - Sensor Cleaning Device (SCD)(Turbidity probe) - Power Management Unit (PMU) - Power Bank (PB) - Website – presenting data trends over time. - Metal stand / frame and protective fencing. - The TMS will have capacity for additional parameters. • Telemetric continuous monitoring sampling frequency is generally set at one data point per 15 minutes, however considering the intensive nature of the proposed works, particularly drilling activities, if possible it is recommended that sampling frequency is set at 5 minutes or less with a view to escalating responses to potential discharge quality issues in good time. Data is transmitted to a project website which will display data trends over time. Access to the website can be gained and shared via a website link. • Telemetric Monitoring Systems will be used a key part of Active Management of runoff and construction water at the site, as presented in **Figure 9.12 – Tiles no. 7 to 9**. • A handheld turbidity meter will be available and used to accurately measure the quality of water discharging from the site at any particular location. The meter will be			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			maintained and calibrated frequently (per the particular unit's calibration requirements / user manual), and will also be used to check and calibrate remote sensors if they are employed. Quality thresholds will be established for the purposes of escalating water quality issues as they arise. • Rainfall will be monitored (1 no. rainfall gauge required). This unit will be connected with and displayed with other site water quality telemetry data via the telemetry website. • Surface water runoff control infrastructure will be checked and maintained on an ongoing basis, and stilling ponds and check dams will be maintained (de-sludge / settle solids removed) on an ongoing basis, particularly during the construction phase of the Development. It is important to minimise the agitation of solids during these works, otherwise it will likely lead to an acute significant loading of suspended solids in the drainage network. This can be achieved by temporarily reducing or blocking inkling flow and vacuum extracting settled solids or sludge. Where the drainage feature posses relatively significant flow rates, isolating and over pumping is the best course of action. • As part of the **Construction Environmental Management Plan (CEMP), Management Plan 2**, regular checking and maintenance of pollution control measures are required (in line with frequencies outlined above), with an immediate plan for repair or backup if any breaches of design occur. In the event that established infrastructure and measures are failing to reduce suspended solids to an acceptable level, construction works will cease until remediation or upgrading works are completed.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• All details in relation to monitoring will be included in the **Surface Water Management Plan (SWMP) (Appendix 2.1)**. Consultation with relevant stakeholders will be sought prior to the SWMP being reviewed and approved by the planning authority. Monitoring of potential hydrological impact of the Development, particularly during the operational phase will be inherently linked to the ecological health of the blanket peat (as a functioning ecosystem) and therefore both hydrology and ecology will be considered, and monitored in tandem. For example, impacts to the hydrological regime at the Site can potentially impact on the ecological health or characterisation of the Site, and vice versa. Ecological indicators can potentially provide useful data in relation to the long-term impact of changes to the hydrological regime at the Site. However, as discussed in earlier section of this report (Section 9.4), changes to the management of runoff and in turn the hydrological regime at the site will lead to a positive impact overall when compared to the baseline conditions associated with the site e.g. introduction of intermittent buffered outfalls along the length of the drainage network is in contrast to baseline, this will promote a more even distribution runoff, attenuate runoff and reduce the hydrological response to rainfall, enhanced potential for recharge to ground, and in turn raising bog water levels resulting in wetting of blanket peat at the Site.			
MX9	Chapter 9: Hydrology and Hydrogeology	9.5.2.12.2 Monitoring (Grid Connection Route and Turbine Delivery Route)	Monitoring will be carried out at each significant construction location (HDD, any excavation >2.0m, temporary bridge construction) and at significant environmental receptors including the following Environmental Monitoring Locations: • Up stream and down stream of surface water crossings on mapped rivers.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• Operational wells within groundwater buffer zones associated with significant construction locations (namely SW Crossings). • Groundwater abstraction points within buffer zones (mapped wells, source protection areas, and/or associated Regionally Important Karst Aquifer). Monitoring proposed will be specified relative to the particular activity and associated risk at respective locations. **Routine Surface Water Monitoring** Similar to Wind Farm Site baseline monitoring, baseline surface water samples will be obtained at upstream and downstream sampling locations at each significant construction location over mapped rivers. Baseline surface water samples will be obtained at accessible locations such as existing bridges on public roads. Where upstream access is poor, the upstream baseline sampling location will be directly/immediately upstream of the construction location (e.g., existing bridge / culvert). **Routine Groundwater Monitoring** At Horizontal Directional Drilling (HDD) locations, any mapped wells identified in HDD groundwater buffer zones (250m) will be monitored to establish baseline, and routinely monitored during the construction and for a period into the operational phase of the development. All abstraction points associated with groundwater source protection areas and within Regionally Important Karst aquifers associated with the development will be monitored with the same frequency.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Continuous Monitoring of Active Construction Water Management and Discharge At construction areas requiring drilling (HDD) and/or significant excavations (launch pits, cable joint bays), and in the management of general excavations, arisings will be managed carefully with a view to containing and treating all drained water and runoff which will likely be laden with suspended solids. Active continuous monitoring will be required at these locations in line with the conceptual model presented in (**Appendix 9.12**). The monitoring location will be at the outfall or discharge point of the treatment train at any respective location. Continuous monitoring will include telemetry. Continuous Monitoring Locations or Telemetric Monitoring Stations (TMS) will use probes to monitor the following parameters: • Electrical Conductivity • Turbidity (Data obtained can be equated to estimated Total Suspended Solids (TSS) through calibration) • pH • Temperature • Capacity for additional probes. TMSs will be self-powered and will be comprised of the following components at a minimum: • Remote Telemetry Unit (RTU) – Modem / data hub and transmission. • Solar panel • Sensor – pH • Sensor – Turbidity • Sensor – Electrical Conductivity • Sensor Cleaning Device (SCD)(Turbidity probe)			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• Power Management Unit (PMU) • Power Bank (PB) • Website – presenting data trends over time. • Metal stand / frame and protective fencing. • The TMS will have capacity for additional parameters. Telemetric continuous monitoring sampling frequency is generally set at one data point per 15 minutes, however considering the intensive nature of the proposed works, particularly drilling activities, if possible it is recommended that sampling frequency is set at 5 minutes or less with a view to escalating responses to potential discharge quality issues in good time. Data is transmitted to a project website which will display data trends over time. Access to the website can be gained and shared via a website link. In line with monitoring objectives in relation to surface water quality, parameter value thresholds or limits will be established on the telemetry website, text and email alerts will be established which will notify relevant assigned persons of trend anomalies which require investigation, escalation, and corrective mitigation, for example: • A threshold of 25mg/l Total Suspended Solids (TSS) will be applied at treatment train outfalls/discharge points, in line with legislative reference limits for surface water quality. Exceedance of such threshold will trigger further investigation and escalation of responses on site with a view to identifying potential uncontrolled sources of contaminants. Parameter trend analysis will also inform investigations and response, for example, intermittent spikes in concentrations in line with baseline conditions versus continuously elevated concentrations caused by an ongoing environmental incident.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• The website will be periodically checked and maintained on a weekly basis at a minimum. The client will also receive maintenance alerts in relation to the monitoring stations, for example; in the event data is not being received from a particular probe the client / assigned person/s will be notified by the system and maintenance call outs will be conducted.			
MX10	Chapter 9: Hydrology and Hydrogeology	9.5.2.12.3 Active Monitoring on Site	Handheld meters (Turbidity / Total Suspended Solids (TSS)) will used by the ECoW / competent operators during construction works. This will be done with a view to managing water treatment and anticipating potential surcharges in water or TSS loading within the treatment train. Handheld meters will also be used to monitor outfall/discharge quality in the event telemetry systems fail or during system maintenance. Handheld probes will be checked and calibrated regularly.			
MX11	Chapter 9: Hydrology and Hydrogeology	9.5.2.12.4 Monitoring Under Licence	Where a discharge licence is required, the conditions of the licence will stipulate monitoring requirements in line with licence parameters with associated emission limit values. The frequency of sampling will likely be daily or weekly. Sampling will include obtaining physical samples at an agreed discharge sampling point and will be sent an accredited laboratory for analysis. Where discharge licence is required, monitoring in line with the licence will be done in addition to the other monitoring regimes undertaken as described in sections above. Monitoring under licence conditions will not negate the requirement for the other regimes described.			
MX12	Chapter 9: Hydrology and Hydrogeology	9.5.2.12.5 Tailoring of Monitoring Requirements	Monitoring will be tailored at each location in terms of requirements set out in trade effluent discharge licence/s where relevant. • The baseline monitoring undertaken at the proposed site as part of this study will be repeated periodically before, during and after the construction phase of the Development			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			to monitor any deviations from baseline hydrochemistry that occur at the site. This monitoring along with the detailed monitoring outlined below will help to ensure that the mitigation measures that are in place to protect water quality are working. Specifically, a construction period and post construction monitoring programme for the Development site should include the following. - During the construction phase; daily inspection of silt traps, buffered outfalls and drainage channels and daily measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations on the site. Monitoring of same during times when excavations are being dewatered (likely high in solids) should be done in real time. - Post construction: at a reasonable frequency inspection of silt traps, buffered outfalls and drainage channels, measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations at the site. During the operational phase of the project the stilling ponds and buffered outfalls will be periodically inspected during maintenance visits to the site. - During the construction phase of the project, the development areas should be monitored daily for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system so that it does not become blocked, eroded or damaged during the construction process. - During both the construction and operational phases of the project, watercourse crossings should be monitored frequently (daily during construction and intermittently			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			during operational phase). The water course crossings should be monitored in terms of structural integrity and in terms of their impact on respective watercourses. - A detailed inspection and monitoring regime, including frequency has been specified in the Construction and Environmental Management Plan (CEMP, **Appendix 2.1 Management Plan 2**).			
MX13	Chapter 15: Traffic and Transport	15.9 Monitoring	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 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 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 L-3400-79, L-3405-0, L-7405-0, L-3402, L-3405-0 and L-7405-0. 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 civils construction haul route. This will be undertaken through regular tool box talks for drivers during the construction of the Development.			
Operational Phase						
MX14	Chapter 5: Terrestrial Ecology	5.9.2 Bat monitoring	The following monitoring programme will take place to establish bat activity within the operational wind farm and the number of bat collision fatalities at each turbine.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• The static survey should be completed during the spring, summer and autumn of each year for a minimum of three years commencing from year 1 of the operational phase of the wind farm. This will comprise collection of bat activity, fatality and site-specific weather data in each of the three seasons. Each of the turbines will be monitored using specially trained search dogs. • The collision monitoring program will require site-specific data on seasonal scavenger removal rates and on the efficiency of detection of animal carcasses by the dogs used for bat searching. • Modelling / calculation of the level of bat fatality likely to occur over the active season based on the results of the work. • The production of an annual report detailing the approach to, results and conclusions of the work. Statistical analysis of the relationship between weather and fatality levels will be included. The report will be issued to Cork County Council.			
MX15	Chapter 6: Aquatic Ecology	6.7.1 Post-construction phase monitoring	On completion of the construction phase one round of post construction monitoring will be undertaken using the suite of parameters as detailed in the Water Quality Management Plan. During the operational phase of the project the stilling ponds and buffered outfalls will be periodically inspected during maintenance visits to the Site.			
MX16	Chapter 7: Ornithology	7.5.2.3 Post-construction monitoring	**Flight activity surveys** Flight activity surveys will be undertaken using the Vantage Point method (Scottish Natural Heritage 2017). This will use the same 4 no. VPs as used for the baseline EIAR surveys in			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			2020-2021. The surveys will be undertaken monthly in Years 1, 2, 3, 5, 10 and 15 of the lifetime of the project (in accordance with Scottish Natural Heritage Guidance 2009). Usage of the site by White-tailed Eagle, Hen Harrier, Merlin, Kestrel and Golden Plover will be of particular interest. **Distribution and abundance surveys** Distribution and abundance surveys will be undertaken to monitor short-term and long-term effects on bird populations within the site. Survey methodology will be similar to methods employed for baseline EIAR surveys which will allow a comparison of data to be made for each monitoring year. Surveys will be undertaken in the same monitoring years as the vantage point surveys. **Red Grouse survey** Repeat of the pre-construction Red Grouse survey (under licence) in Years 1, 2, 3 and 5 of operation. This will establish whether Red Grouse maintain a presence on site in the area of the wind farm infrastructure. Surveys will follow the standard methodology as used in the baseline EIAR survey. **Collision searches** The objective of collision monitoring and corpse search is to establish whether bird fatalities are occurring as a result of collision with turbine blades. 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.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			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. • 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 will be carried out on a monthly basis in Years 1, 2, 3, & 5 of the operational phase of the wind farm.			
MX17	Chapter 8: Soila and Geology	8.5.3 Operational Phase	Regular monitoring, similar to the construction phase but on a less frequent basis will be required. For example, the Development will be inspected on a routine quarterly basis and following storm events. Any potential issues arising will be noted and remedial action taken in line with construction phase mitigation.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Decommissioning Phase						
MX18	Appendix 2.1 CEMP	Management Plan 6 Decommissioning Plan	The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.	As required	As required	Site Manager