APPENDIX 17.1

MITIGATION MEASURES

Introduction

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

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

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

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

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

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

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

Table 17.1a: Summary of Mitigation Measures

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase						
MM1	Land Use	Chapter 4: Population and Human Health	4.5.5	Mitigation measures for land use have been incorporated into the preliminary design stage. This has allowed for the prevention of unnecessary or inappropriate ground works or land use alterations to occur. In this regard, the construction and operational footprint of the Project has been kept to the minimum necessary to avoid impact on existing land uses. Furthermore, 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.		
MM2	Tourism	Chapter 4: Population and Human Health	4.5.6	Mitigation measures for recreation, amenity and tourism are primarily related to the preliminary design stage of the Project, which has allowed for the prevention of unnecessary or inappropriate development to occur that will significantly affect any recreational or tourist amenity. In designing the Development, careful consideration was given to the potential impact on landscape amenity.		
MM3	Protection of Bats-Mitigation by Design	Chapter 5: Terrestrial Ecology	5.5.2.1.1	In order to avoid the potential for future interactions between the now proposed amended Letter Wind Farm and local bat populations all structures associated with the proposed Letter Wind Farm such as the substation will be built in a manner to ensure no roosting opportunities are present to bats. Also, no structured vegetation will be permitted to establish at these locations during the operational phase of the turbines. Turbines will operate in a manner which restricts the rotation of the blades as far as is practicably possible below the		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				manufacturer's specified cut-in speed. This is usually achieved by feathering the blades during low wind speeds; the angle of the blades is rotated to present the slimmest profile possible towards the wind, ensuring they do not rotate or 'idle' when not generating power. The feathering of blades to prevent 'idling' during low wind speeds is proposed for all turbines.		
MM4	Construction Phase-Mitigation by Avoidance-Protection of Watercourses	Chapter 6: Aquatic Ecology	6.1.1.1.1	The Project has been designed to ensure that an adequate buffer zone is provided for between this infrastructure and watercourses. In addition, the design has sought to minimise the requirement for new watercourse crossings. This has been achieved by restricting the need for a total of one new crossing of the upper Owengar River within the proposed wind farm site, and no new crossings along the proposed grid connection route or at the proposed turbine delivery route widening locations. The buffer zone implemented between all large-scale infrastructure associated with the wind farm site, such as turbines, hardstand, and access tracks has provided for a set-back of a minimum distance of 50m from any watercourses, except for where the access track crosses the Owengar River. In addition, the best practice construction measures that are described above are designed to avoid impacts on areas that are outside the site including watercourses. A Surface Water Management Plan (**Management Plan 3** of **Appendix 2.1**) has been prepared for the proposed wind farm and this plan ensures the implementation of a suite of measures that will avoid negative impacts to water quality and the hydrological regime of the Owengar River.		
MM5	Operational Phase-Mitigation by Design	Chapter 7: Ornithology	7.6.2.1	In order to eliminate the potential for significant negative effects to bird species the Development has been designed to minimise the footprint of the proposed wind farm layout. This has been		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				achieved by using existing infrastructure such as the existing access tracks on site as well as minimising the footprint of the proposed access track and hardstand areas.		
MM6	Mitigation by Avoidance	Chapter 8: Soils and Geology	8.5.1.1	The opportunity to mitigate any effect is greatest at the design period. In this respect, a detailed Site selection process was carried out by the Developer. This process identified deep peat and potentially deep bedrock as specific geotechnical constraints. In order to mitigate against the risk of landslide associated with the construction and operation of floating roads, areas of deep peat have been avoided wherever possible. Floated roads will only be constructed in areas of deeper peat (>1.5m depth with a crossfall of less than 1 in 10). The floated roads will be laid directly on the existing peat using geogrid and crushed stone. Pipes will be installed at intervals to allow the existing runoff regime on the site to continue.		
MM7	Pre-Construction Phase Ground Investigation Works	Chapter 8: Soils and Geology	8.5.1.2	Prior to the Construction Phase it will be necessary to undertake Pre-construction phase ground investigation works to inform design. The works are required for this ground investigation contain both intrusive and non-invasive elements. The intrusive investigative works will consist of the following main elements: • Excavation and sampling of trial holes within soils to depths of up to 5m below existing ground level. • Drilling and sampling of boreholes within soils and bedrock to depths of up to 30m below existing ground level. • Carrying out of in-situ testing using mechanical and man-portable equipment to depths of up to 20m below existing ground level.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				These works, although of lesser significance are similar to the type of activities undertaken during the Construction Phase. As such mitigation as detailed in Section 8.6.2 will be applied to reduce the effect from these activities to slight impact. The non-invasive investigative works will consist of the following main elements: - • Geophysical Surveys • Topographic Surveys • Laboratory Testing These non-invasive activities will have a much lesser effect on soils and geology, based on the lack of requirement for heavy plant and machinery. Where possible the pre-construction Ground Investigation will prioritise the use of non-invasive methods over intrusive methods. The pre-construction Ground Investigation programme will be designed so as to collect sufficient information on soils and geology across the entire development area in order to mitigate against adverse impact at Construction Phase, as follows: • Determine ground water table at the location of significant excavations. This will allow appropriate design of excavations and groundwater control ahead of construction. • Assess soil thickness, type and competence to inform excavation stability, suitable methods for protecting soil structure and permeability and minimise excavation for foundations. • Test soils and subsoils to determine reusability of soils on site for "cut" and "fill" purposes. • Assess the suitability of existing roads, footpaths and		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				hardstanding areas for re-use and / or inclusion in the proposed design, without the need for removal and new construction.		
MM8	Construction Mitigation of Risk-General Constraints and Anecdotal Evidence	Chapter 8: Soils and Geology	8.5.2.7	Analysis of the historic conditions following peat slides indicates that the following main factors generally trigger slope failures: • Excessive quantities of spoil loaded onto sensitive peat covered sloping ground. (In such cases the gradient of the slope should be no more than an average of 5 degrees to the horizontal). Where peat is not of a sensitive nature, it will be possible to load spoil onto slopes up to a maximum of 10 degrees to the horizontal. • The angle of repose of the cut face of excavations is all too often found to be too high, sometimes 70 – 80 degrees to the horizontal. Battering back the sides of an excavation to approx. 45 degrees helps to reduce the potential for slippage, which will significantly reduce the potential for peat movement. • The consequences of peat slide can be identified as Damage to Machinery, Damage or Loss of Access Track, Damage to Site Drainage, Site Works Damaged, Death or Injury to Personnel or Degradation to the Environment. • A contingency plan is to be compiled and will be enacted should peat movement occur.		
MM9	Mitigation by Avoidance	Chapter 9: Hydrology and Hydrogeology	9.5.1.1	The fundamental mitigation measure to be implemented during each stage of the Project will be avoidance of sensitive hydrological or hydrogeological receptors wherever possible, this key principle is referred to as "mitigation by avoidance". This principle has been adopted during the design of the turbine and associated infrastructure layout across multiple design iterations. Hydrological constraints maps have been developed which identified areas of the Site where surface water and drainage		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				constraints resulted in areas of the Site being deemed less suitable for development. The constraints map is presented in **Figure 9.13a, 9.13b**.		
MM10	Mitigation by Design	Chapter 9: Hydrology and Hydrogeology	9.5.1.2	The descriptive mitigation measures outlined in this report will be applied to the development design and construction methodologies with a view to avoiding and/or minimising any potential adverse effects to water quality in the receiving surface water network. Details on how such measures will be applied (objectives, design considerations, layout) will be contained in a Surface Water Management Plan (SWMP) (see Management Plan 3 appended to the CEMP, EIAR **Appendix 2.1**).		
MM11	Nature Based Solutions	Chapter 9: Hydrology and Hydrogeology	9.5.1.3	Nature Based Solutions (NBS) will be adopted at the Wind Farm site where possible, Refer to **EIAR Chapter 7: Biodiversity** for additional information. NBS include Sustainable Drainage Systems (SuDS), which will be employed to attenuate runoff and reduce the hydrological response to rainfall at the Site. Extending or maximising this approach sufficiently has the potential to attain net beneficial effects i.e., a net reduction in runoff rates at the Site, beneficial effects to water quality and reducing flood risk to downstream flood risk areas. Coupling SuDS with ecology and biodiversity mitigation can also provide opportunities to attain net biodiversity gain.		
MM12	Constructed Drainage	Chapter 9: Hydrology and Hydrogeology	9.5.1.4	The drainage design for the proposed site (**Surface Water Management Plan, Appendix 2.1**) will be such that drains are positioned adjacent to the footprint of the development, therefore the proposed drainage infrastructure can be considered part of the Development footprint. The scale of the impact a shallow drain poses on the surrounding peatland area is minor particularly in areas impacted as baseline. Therefore, the potential magnitude or scale of impact to waters posed by the introduction of the proposed drainage extends to a minor extent beyond the footprint of the development. However, it is important		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				to consider the gradual degradation over time. The design of the proposed drainage network will facilitate: • The collection of surface water runoff from upgradient of the development footprint (clean runoff interceptor drains) and the buffered redistribution of clean runoff downgradient of the development footprint by means of culverts and buffered outfalls to vegetated areas with a view to maintaining or improving the hydrological regime at the site. • The collection of surface water runoff from the footprint of the development i.e., the construction area (construction runoff interceptor drains) and management of potentially contaminated runoff in the constructed treatment train. Where possible the buffered outfalls from the treatment train / stilling ponds will be redistributed with a view to maintaining or improving the hydrological regime at the site. • To achieve separation, clean water infiltration collector drains or silt fences are positioned on the upslope and dirty water v-drains positioned along the verge, with site surfaces sloped towards dirty water v-drains. • Where extensive drainage networks exist, collected / diverted runoff will likely be diverted back into the existing network. In such instances it is important to include the existing drainage network in designing and specifying the treatment train and attenuation features, including improving, modifying, and constructing attenuation features in drainage channels. Similar to considerations for newly constructed drainage channels, the modification and/or improvements of existing drainage will be designed with a view to maintaining or improving the hydrological regime at the site. Maintaining or improving the hydrological regime at the site implies achieving the objectives of the development Surface		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Water Management Plan (SWMP) (**Appendix 2.1**); i.e., mitigating against potential adverse effects to the hydrological response to rainfall at the site (related to flood risk), and water quality in the receiving surface water network.		
MM13	Attenuation Features	Chapter 9: Hydrology and Hydrogeology	9.5.1.5	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 effects 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. Attenuation features have been designed to take account of a 1 in 100 year rainfall event and additional 20% for Climate Change.		
MM14	Check Dams	Chapter 9: Hydrology and Hydrogeology	9.5.1.6	Check dams will be constructed along the length of constructed drainage at regular intervals in line with relevant guidance (**Section 9.2.2)**. Check dams (**Appendix 9.5.– Tiles 3-6**), will be permanent (for the life of the project / drainage network), made of suitable locally sourced coarse aggregate (similar geology), and are intended to attenuate (impede) surface water runoff in the drainage channel, therefore slowing the velocity of the runoff in turn reducing the potential for erosion in the channel and allowing suspended solids to settle out if present. At low velocity, the runoff has increased opportunity to percolate through the coarse aggregate and into the surrounding peat area, effectively contributing to bog water levels at that location.		
MM15	Stilling Ponds	Chapter 9: Hydrology and Hydrogeology	9.5.1.7	Stilling ponds with buffered outfalls will be constructed at drainage outfalls associated with the construction runoff drainage network (**Figure 9.6a**). Buffered outfalls (**Appendix 9.5– Tiles 3-6, 15**), will be established at intervals along the clean runoff drainage network. Multiple outfalls along the drainage routes facilitates the strategic management of runoff		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				with a view to maintaining the baseline hydrological regime in so far as possible. Similar to check dams; stilling ponds will be permanent (for the life of the projects / drainage network), made of suitable coarse aggregate, and are intended to attenuate surface water runoff in the drainage channel, slowing the velocity of the runoff before discharging to vegetated areas (buffered outfall). Slowing the water velocity allows suspended solids to settle out if present. At low velocity the runoff has increased opportunity to percolate through the coarse aggregate and into the surrounding landscape.		
MM16	Watercourse Crossings	Chapter 9: Hydrology and Hydrogeology	9.5.1.8	The Bottomless bride design will ensure the protection of the riparian bank structure, minimisation of sedimentation to the watercourse by use of silt fencing, sandbags or other sediment reducing measures, and minimisation of instream activity. All mitigation measures are in line with IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, Section 6 – River and Stream Permanent Crossing Structures. More details on this Watercourse crossing can be found in **Section 9.5.2.10.**		
MM17	Constraints	Chapter 9: Hydrology and Hydrogeology	9.5.1.9	As part of mitigation by avoidance during the design phase of the Development, groundwater, surface water, and drainage buffer zones were established where applicable. Buffer zones are intended to drive the design process by minimising or avoiding the risk to surface water features by restricting construction disturbance to outside these zones, in turn protecting riparian vegetation and providing potential for filtering of runoff from the Site and maintaining the baseline hydrological and drainage regime at the Site. The prescription of surface water and groundwater buffer zones (sometimes referred to as setback distances), is in line with relevant guidance relating to forestry, agriculture, water resources, direct discharges and wind farm development guidance documents **(Section 9.2.2)**.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				The available guidance stipulates varying surface water buffer widths depending on type of activity, receptor type and sensitivity, and riparian zone characteristics including topography (steepness). Recommended surface water buffer widths range from 5m to 50m depending on Site specific and activity specific characteristics. For the purposes of this assessment the following conservative approach has been applied: • 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. Source for non-mapped surface water features desk study and aerial photography assessment, Lidar topographic data and field observations. Wind Farm Surface Water Buffers are presented in **Figure 9.13a**. Grid Connection Route Surface Water Buffers are presented in **Figure 9.13b.** Significant drainage features have been identified and mapped in so far as practical. Such drainage features, while not mapped or prescribed buffer zones, will be treated with the same consideration as mapped drainage during the design and construction phase of the development i.e., mitigating for the potential for drainage connection to receiving surface water network. Groundwater buffer zones are dependent on the characteristics of the receptor e.g., private well, or public supply source protection zone, and the characteristics of the underlying geology and associated aquifer e.g., poor unproductive aquifer, or regionally important karstified aquifer. Recommended groundwater buffer zones range from e.g., 15m (exclusion zone		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				karst swallow holes) to entire catchments, depending on site specific characteristics. For the purpose of this assessment the following conservative approach has been applied: • 250m Groundwater Buffer Zone – Groundwater abstraction points in relation to foundations, proposed access tracks and cable trenches. Source for mapped abstraction points: GSI. Not applicable, none within 250m of the Site (**Section 9.3.13, Figure 9.10b**) • Source Protection Areas – The entire area mapped as a public or group groundwater supply protection area. Source: EPA. This is applicable. • Entire Catchment (poor aquifer) – The entire catchment associated with a public or groundwater supply protection area which is underlain with a poor aquifer. This will be assessed in detail as applicable. Not applicable. • Karst Features – Not applicable. No karst features were identified on Site. Following site surveys significant natural and artificial drainage features observed which are relatively well connected to the mapped surface water network have been included in considering constraints. Given the extensive drainage network existing at the Site the construction activities associated with the development will invariably be in close proximity to surface water / drainage features, including within the buffer zones such that there will be a requirement for further mitigation measures. No groundwater buffer zones are required for the proposed Letter Development, refer to the baseline **Section 9.3** of this report. **NOTE:** With reference to **Chapter 8 Soils and Geology** areas have been identified as Geo-Hazards and an effective drainage buffer zone will be applied whereby it is intended to divert runoff away from those areas. The areas in question are		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				characterised as having steep incline, potential for deep till deposits and iron pan. These have elevated stability risk particularly in potential instances where hydrogeological conditions are adversely impacted, i.e., where the enhancement of recharge of groundwater and the perching of groundwater occurs in higher risk areas increasing pore water pressure against potentially parallel failure planes. Particular areas are discussed in **Chapter 8: Soils and Geology**, however in terms of drainage constraints, mapped High Landslide Susceptibility (GSI) **(EIAR Figure 8.6).** For example, areas which are particularly sensitive include: • One mapped extent for a landslide is recorded within the landholding of Letter Wind Farm. The location of this mapped landslide is highlighted on the drawings contained in the appendix. The following details are recorded by GSI for this feature: • The south portion of the site (T3 and T4). This area possesses high landslide susceptibility (GSI), extensive existing drainage channels. • The Northern portion of the site has evidence of deeply eroded drainage channels in till with evidence of iron pan **(Appendix 9.2 – Tile 7).** In the scenarios above, the Turbine Hardstands and associated drainage will divert runoff away from these higher risk areas and design the drainage network to place buffered outfalls in more favourable areas adjacent to the Development footprint. Some of the Development footprint will fall within buffer zones due to the unique and limiting circumstances associated with the Site and the Development, including; the proposed infrastructure itself whereby the Grid Connection Route is limited to local road networks.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Portions of the Grid Connection Route pass through numerous surface water and 1 no. groundwater buffers **(Figure 9.13b).** Of note are the several watercourse crossings, which by their nature will be within surface water buffer zones. Given the extensive drainage network existing at the Site the construction activities associated with the development will invariably be in close proximity to surface water / drainage features, including within the buffer zones. Careful consideration and special attention to planning is required for the identified locations within the surface water buffer zones. The Surface Water Management Plan **(Appendix 2.1)** details multiple mitigation measures for works proposed within buffer zones. Each proposed construction location will possess unique characteristics and will require assessment on a case by case basis to ensure adequate measures are implemented. Method statements and the proposed design of any road crossings will also require agreement from Inland Fisheries Ireland (IFI) in advance of construction which invariably must be constructed within the buffer zones. The mitigation measures described in the following sections will also be applied.		
MM18	Agriculture	Chapter 13: Material Assets and Other Issues	13.4.3	A process of "Mitigation by Avoidance" to avoid or minimise impacts on agricultural land use has been incorporated into the design stage. The construction and operational footprint of the Project has been kept to the minimum necessary to avoid impact on existing land uses and existing tracks have been used where possible. These mitigation measures will allow for the prevention of unnecessary or inappropriate ground works or land use alterations to occur and will avoid unnecessary soil compaction.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM19	Forestry	Chapter 13: Material Assets and Other Issues	13.5.3	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.		
Construction Phase						
MM20	Land Use	Chapter 4: Population and Human Health	4.5.5	The construction 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.		
MM21	Human Health and Safety	Chapter 4: Population and Human Health	4.5.7	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 will be followed. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 construction site during construction and decommissioning 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 and decommissioning stage. This measure aims to avoid potential injury to members of the public as a result of construction activities. 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 traffic management plan has been developed (**Appendix 2.1)** in discussion with locals who will be directly impacted by the		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				works, and in agreement with the Local Authority. Public consultation will be conducted along the grid cable route to inform local residents ahead of construction and decommissioning works.		
MM22	Major Accidents and Natural Disasters	Chapter 4: Population and Human Health	4.5.8	The proposed site drainage will mitigate against any potential flooding risk due to run off with the use of Sustainable Drainage Systems (SuDS). Construction drainage will be left in-situ for the lifespan of the project through to decommissioning. 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.		
MM23	Shadow Flicker	Chapter 4: Population and Human Health	4.9	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 • The turbine will automatically shut down safely during periods when shadow flicker exceeds the thresholds as set out in the WEDG (2006); and will restart when the potential for shadow flicker ceases at the affected properties.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM24	Protection of Important Habitats-Mitigation by Avoidance	Chapter 5: Terrestrial Ecology	5.5.1.1.2	Mitigation in this respect is: • The full extent of the infrastructure footprint will be marked out prior to the commencement of works, with an appropriately robust and visible fencing / marker system. Where this meets Annex I habitats, this will also be the full extent of the works corridor, with no machinery access (access will only be allowed on foot and only for the purposes of silt / pollution control if required), storage or other works allowed outside this area. • The efficacy and coherence of the marker system (and required remediation) will form an essential part of the Site operations. • A pre-construction Invasive Species Survey will be conducted during the optimal growing season (May to August immediately prior to works occurring at this site for the Development) and shall include data on all locations, extents and potential construction impacts in relation to scheduled and non-scheduled Alien Invasive Species (IAS). This survey will be completed along with reporting on the best course of action to be implemented to avoid the spread of such IAS on the Site or further afield. The management of IAS identified as occurring within the proposed development site will be undertaken in accordance with best practice management guidelines as set out in the TII guidelines "The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads" (2010).		
MM25	Protection of Non-volant Mammals	Chapter 5: Terrestrial Ecology	5.5.1.1.3	• The Ecological Clerk of Works for the construction phase will complete a pre-construction survey of the construction footprint in order to confirm the continued absence of mammal breeding and resting places within the construction footprint and within 50m of the construction footprint or identify the presence of newly established breeding/resting		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				places. • Based upon the results of these surveys, the ECoW will establish whether or not there is a need at that stage for the implementation of further mitigation measures and the requirement for protected species licences. that will be intersected by the proposed access track.		
MM26	Protection of Bats	Chapter 5: Terrestrial Ecology	5.5.1.1.4	• Any trees and treelines along approach roads and planned site access tracks will be retained unless felling is unavoidable. Retained trees should be protected from root damage by an exclusion zone of at least 7 metres or equivalent to canopy height. Such protected trees will be fenced off by adequate temporary fencing prior to other works commencing. • No structures will be demolished as part of the construction phase of the proposed development and there will be no disturbance to confirmed bat roost structures occurring within and adjacent to the proposed wind farm site boundary.		
MM27	Protection of Herpetofauna	Chapter 5: Terrestrial Ecology	5.5.1.1.5	The Ecological Clerk of Works for the construction phase will complete a survey of the construction footprint during spring (late February / March / early April) ahead of the proposed works in order to identify any key amphibian breeding areas. This will allow wildlife barriers to be installed where necessary to minimise impacts upon such features where these are likely to be indirectly affected by the works.		
MM28	Prevention of Spread of Invasive Alien Species	Chapter 5: Terrestrial Ecology	5.5.1.2.1	The following biosecurity measures will be implemented to prevent the introduction and spread of IAS during the operation phase of the project. • All vehicles or personnel that will be required to undertake work will be cleaned before being used at the wind farm site. The cleaning will include the following:		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• All plant material and soil will be removed from the vehicles using shovels and brushes. Special attention shall be paid to tracks and prior to arrival on site, the Contractor's vehicles and equipment must be thoroughly cleaned. High-pressure steam cleaning, with water > 40 degrees C, is recommended for vehicles and equipment where reasonably feasible. Many roadside garages provide these facilities. If it is not possible to steam clean the equipment, a normal power hose must be used. After cleaning, a visual inspection of the equipment will be carried out to ensure that all adherent material and debris has been removed. • Vehicles shall only leave the wind farm site and be re-used for other construction work when they have been properly cleaned, in line with the approached set out in Point No. 1 above.		
MM29	Protection of Important Habitats-Mitigation by Reduction	Chapter 5: Terrestrial Ecology	5.5.1.3.1	A site-specific CEMP will be implemented to ensure that potential adverse impacts to upland watercourses flowing through the site are avoided. Minimum buffer zones will be implemented between areas associated with the construction of Turbine Foundations and streams/eroding gullies, except where stream crossings are required. Within the peatland habitats of the wind farm site, site operatives, plant and machinery will be restricted to the footprint of the proposed wind farm site construction boundary and will not be permitted to encroach upon adjacent lands. This will reduce the potential for damage and disturbance to important peatland, woodland and grassland habitats.		
MM30	Offsetting	Chapter 5: Terrestrial Ecology	5.5.1.4	A Habitat Management Plan is provided as **Appendix 5.4** and all measures set out in this plan will be implemented as part of the project. The restoration of areas of peatland and the implementation of measures such as the control of drainage and		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				grazing will aim to achieve the restoration and enhancement of an area of approximately 19 ha of peatland habitat.		
MM31	Wind Farm Earthworks	Chapter 6: Aquatic Ecology	6.1.1.2.1	Mitigation measures to avoid the potential for adverse impacts arising from earthworks and management of spoil will comprise: • Management of excavated material will adhere to the measures related to the management of temporary stockpiles. • No permanent or semi-permanent stockpiles will remain on the Site during the construction, operational, or decommissioning phase of the Development. Any surplus spoil remaining at the end of the construction phase will be taken off site and disposed of at a licenced waste facility. • Construction activities will not be carried out during periods of sustained heavy rainfall events[1], or directly after such events. This will allow sufficient time for work areas to drain excessive surface water loading and discharge rates to be reduced. • Following heavy rainfall events, and before construction works recommence, the Site will be inspected to confirm that conditions are suitable for construction activities to recommence. • An emergency response plan (ERP) has been prepared as part of the CEMP and SWMP (**Appendix 2.1**) for the Project, both of which are provided under separate cover as part of the planning application documentation associated with the EIAR. All measures outlined in the ERP will be implemented throughout the construction phase of the project. This plan includes for 24-hour advance meteorological forecasting linked to a trigger-response		

[1] As per the Met Office National Meteorological Library and Archive Fact Sheet 3 – Water in the atmosphere (Met Office, 2012) a heavy rainfall event for: rain (other than in showers) is assigned to an event where rates of accumulation are greater than 4mm/hour; and for rain showers is assigned to an event where rates of accumulation are >10mm/hour.

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				system. When a pre-determined rainfall trigger level is exceeded such as a 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 ceased. • Sediment fencing will be erected along proximal and paralleling areas of watercourses, such as along the upper Owengar River and drainage channels occurring within the proposed Site, channels and drains spanned by the works to reduce the potential for sediment laden run-off to reach sensitive receptors. • No direct flow paths between stockpiles and watercourses will be permitted at the Site. • Excavated material will be backfilled and transported to the spoil storage area as soon as is reasonably practicable to prevent long duration storage at the Site which increases the risk of adverse effects on aquatic environments. • All mitigation measures related to surface water quality will be implemented before excavation works commence.		
MM32	Temporary Stockpile Management for Wind Farm Site Works	Chapter 6: Aquatic Ecology	6.1.1.2.2	Whenever possible, soil and rock will be re-used on the Site immediately, thereby reducing the need for double handling, which will also reduce the requirement to stockpile soils. Generally excavated rock will be used immediately for Site Access Track construction. Whenever possible stockpiles will be avoided. Where stockpiling is required, it will be stored in the designated temporary spoil stockpile area. Temporary stockpile locations will be situated outside of Surface Water Buffer Zones. 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM33	Excavation Requirements for the Proposed Grid Connection Route	Chapter 6: Aquatic Ecology	6.1.1.2.3	The following mitigation measures will be implemented during excavations for the proposed grid connection route: • The timing of grid connection cable laying will be carried out during metrologically dry seasons/periods. • An Ecological Clerk of Works (ECoW) will be onsite in order to lessen environmental disruption and confirm site integrity is maintained. The ECoW will also be responsible for routine environmental monitoring and report writing. • Excavated material will be temporarily stockpiled adjacent to the section of trench, with appropriate material used as backfill. • Excess/unsuitable material will be immediately removed and disposed of at a licenced waste disposal facility. • Appropriate siltation measures, as per the measures set out in the subsequent sections below will be put in place prior to excavations. • Stockpiles will be temporarily stored a minimum of 25m back from rivers/streams on level ground with a silt barrier installed at the base. For all grid connection trenching along the local road, any unsuitable backfill material excavated will be immediately taken away from the works area in trucks and disposed of under license to an authorised waste disposal facility. This will prevent any contaminated run-off to roadside drains during heavy rainfall.		
MM34	Excavation Dewatering Requirements for the Wind Farm Site	Chapter 6: Aquatic Ecology	6.1.1.2.4	The following mitigation measures will be implemented for dewatering activities at the Site: • Areas of subsoils to be excavated will be drained ahead of excavation works. This will reduce the volumes of water encountered during excavation works and will therefore reduce the volume of water that is required to be dewatered		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				whilst excavations are being carried out. • Engineered drainage and attenuation features outlined in the Surface Water Management Plan (**Appendix 2.1**) will be established ahead of excavation works. • Dewatering pumping rates will be controlled by an inline gate valve or similar infrastructure which will facilitate a reduction of loading on the receiving environment, thus enhancing the attenuation and settlement of suspended solids. • The direct discharge of dewatered loads to surface waters will not be permitted under any circumstances. • All dewatering will follow a strict procedure of pumping to a settlement tank and then to a dewatering bag, or settlement ponds prior to discharging to receiving environment for overland flow. • Geofabric lined settlement ponds will buffer the run-off discharging from the drainage system which will reduce the hydraulic loading to watercourses. Settlement ponds will be designed to reduce flow velocity to 0.3 m/s at which velocity silt settlement generally occurs. In areas of the Site where the placement of settlement ponds is not feasible, other mitigation measures described below will be implemented. • Check Dams will be constructed across drains and will reduce the velocity of run-off which will, in turn, promote settlement of solids upstream of potential surface water receivers. An additional benefit of check dams is that they will reduce the potential for erosion of drains. Rock filter bunds may be used for check dams, wood or hay bales can also be used if properly anchored. It is recommended that multiple check dams are installed, particularly in areas immediately down gradient of construction areas. • Overland flow paths of the final dewatered discharge will be		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				maximised to the greatest practical extent to avoid prematurely draining to drainage channels or surface waters. This approach will allow for enhanced settling out of suspended solids entrained in the run-off. • All pumps, tanks, settlement ponds, dewatering bags and check dams used in the dewatering process will be regularly inspected and maintained as necessary to ensure surface water run-off is appropriately treated. • Sediment fencing will be installed up gradient of water courses which may receive the final overland flow. • The final treated dewatered discharge will be directed towards heavily vegetated areas to allow for further natural filtration of suspended solids. • A programme of water quality monitoring will be implemented during the construction phase which is outlined in detail in CEMP (**Appendix 2.1**). • No extracted or pumped water 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). • Any discharges of sediment treated water will meet the requirements of the Surface Water Regulations 2009, as amended.		
MM35	Watercourse Crossings- Wind Farm Site	Chapter 6: Aquatic Ecology	6.1.1.2.5.1	At the wind farm site, one new watercourse crossing will be constructed. The required crossing will be a crossing of a small stream that is representative of the headwater of the Owengar River. The following measures provide for the planning and consideration of this watercourse as part of the overall approach to watercourse crossing to ensure potential impacts are adequately mitigated. • The design of the proposed crossing and a method		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				statement for the proposed construction will be agreed in advance with Inland Fisheries Ireland (IFI) • Crossings have been designed to minimise, in so far as practical, the disturbance or alteration of water flow, erosion and sedimentation patterns and rates • Vehicles and plant used in the construction of the proposed crossing will only be refuelled at the Site's bunded and designated refuelling area, no refuelling will be permitted within 50m of any watercourse at the Site • To mitigate against the potential risk of accidental leaks or spillages from plant and equipment, the following measures will be implemented: Multiple spill kits will be maintained on the Site at all times within the cabs of vehicles and placed strategically at environmentally sensitive locations across the Site. Spill kits will be routinely inspected to ensure that they are fully stocked with oil absorbent booms and pads at all times. Oil absorbent booms will be installed downstream of channel crossing work areas within 25m of the works location prior to the commencement of works.		
MM36	Watercourse Crossings-Proposed Grid Connection Route	Chapter 6: Aquatic Ecology	6.1.1.2.5.2	The following mitigation measures will be implemented during the installation of the grid connection route over the existing bridge formation: • Excavated road and soil will be stored in an area at least 10m from the crossing structure and watercourse, and preferably down gradient of the watercourse crossing but up-gradient of the excavated trench so that, after rainfall, material in run-off is contained in the trench. • Silt fencing and silt capture structures such as straw bales will be deployed along either side of a watercourse crossing beyond the full width of the pipe, culvert or bridge structure. Silt fencing will be installed so that the wooden posts and		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				attached fence is buried at least 300mm below the surface of road-side vegetation. • Gullies that lead directly to a watercourse either side of a structure are key pathways for run-off conveyance, and these will be blocked to ensure that the direction of potential run-off is conveyed to vegetated verges to allow for infiltration and trapping. • A pre-emptive site drainage management plan will be applied to take account of predicted rainfall so that large excavations adjacent to watercourse crossing can be suspended or scaled back when heavy rain is forecast. These measures will prevent the run-off of excess sediments via the key watercourses intersecting the cable route to key adjoining downstream watercourses that connect the crossing points to watercourse and sensitive rivers and lakes downstream such as the Greagh River, Diffagher River, Owengar River, Belhavel Lough, Lough Gill and Lough Allen. The mitigation measures also will apply to any small drains that represent a pathway for conveyance of sediment to watercourses to these waterbodies.		
MM37	Release & Transport of Suspended Solids	Chapter 6: Aquatic Ecology	6.1.1.2.6	The following mitigation measures will be implemented at the wind farm site during the construction and decommissioning phase to prevent the release and transport of silt-laden surface water runoff: • Collector drains and soil berms will be implemented to direct and divert surface water runoff from construction areas such as temporary stockpiles into established settlement ponds, buffered discharge points and other surface water runoff control infrastructure. This planning and placement of these control measures will be of fundamental importance,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				especially for the areas where works within the 50m buffer zone of surface waters and significant drainage features. • Sediment control fences will be implemented significantly upgradient of potential receiving waters and as part of the drainage network. Sediment control fences will also be established upgradient of the Site's pre-existing natural and artificial drains in addition to degraded areas of peat that are likely to receive surface water runoff. This practice will reduce the potential for elevated suspended solids entrained in surface water runoff to discharge to surface waters. • Multiple silt fences will be used in drains discharging to the surface water network. This will be especially important for the areas where works occur within the 50m buffer zone of surface waters and significant drainage features. • A dedicated silt fence will be established along all sections of the wind farm access track that are within the 50m buffer zone of the Owengar River and all other small streams or drainage channels occurring at the wind farm site. • The drainage, attenuation and other surface water runoff management systems will be installed prior to the commencement of construction activities. Whenever possible, drainage and attenuation control measures will be installed during seasonally dry conditions to limit the potential for sediment laden run-off to discharge to surface waters during the installation of these measures. • Surface water runoff will be discharged to land via buffered drainage outfalls that will contain hardcore material of similar composition to the geology of the bedrock at the Site. This mitigation measure will promote the capture and retention of suspended sediment. • Buffered drainage outfalls also promote sediment percolation through vegetation in the buffer zone, reducing		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				sediment loading to adjacent watercourses and avoiding direct discharge to the watercourse. • Buffered drainage outfalls will be placed outside of the 50m buffer zone and will not be positioned in areas with extensive erosion and degradation. • A high number of discharge points will be established to decrease the loading on any one particular outfall. Discharging at regular intervals mimics the natural hydrology by encouraging percolation and by decreasing individual hydraulic loadings from discharge points. • A CEMP (**Appendix 2.1**) has been developed which will mandate regular inspections and maintenance of pollution control measures. Contingency measures outlining urgent protocols to repair or backup any breaches of designed mitigation measures are also incorporated into the CEMP. • In the event that mitigation measures are failing to reduce suspended solids to acceptable levels, construction works will cease until remediation works are completed. • Fine solids or colloidal particles are very slow to settle out of waters. Therefore, coagulant or flocculant will be used as appropriate to promote the settlement of finer solids prior to discharging to surface water networks. Flocculant gel blocks can be placed in drainage channels. These are passive systems that are self-dosing, self-limiting and are environmentally friendly. Flocculant gel blocks bind elevated levels of silt and associated contaminants into masses that are easily separated, captured and then removed from the water. • Surface water runoff controls will be checked and maintained on a daily basis. Check dams and settlement ponds will be maintained and emptied prior to the build-up of excessive sediment. The frequency of maintenance and		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				emptying will be dictated by levels of sediment accumulation. The adoption of precautionary principles and the implementation of mitigation measures listed above will ensure that the risk of elevated suspended solids to surface waters is low. This in turn will ensure that potential risks to sensitive receptors is also low. Nevertheless, should a significant discharge of suspended solids to surface waters occur, the absence of immediate proximity to designated sites and the assimilative capacity of the localised surface waters will act as a natural hydrological buffer in terms of suspended solids loading. Should such a discharge occur, the dilution and retention time of suspended solids in the localised surface water network will reduce potential impacts on highly sensitive downstream designated sites. It should be noted that this natural mitigation measure is not to be adopted as a first principle and will not be relied upon to prevent adverse impacts on designated sites. A detailed design of required drainage, collector drainage, stilling ponds and other listed mitigation infrastructure is contained in the Surface Water Management Plan contained in the CEMP (**Appendix 2.1**).		
MM38	Release of Hydrocarbons	Chapter 6: Aquatic Ecology	6.1.1.2.7	The following mitigation measures will be implemented during all construction and decommissioning phase works for the proposed development to prevent the release and transport of hydrocarbons to receiving surface waters: • Refuelling of vehicles will be carried out off site to the greatest practical extent. This refuelling policy will mitigate the potential for impacts by avoidance. Due to the remote location nature of the Site, it is unlikely that implementation		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				of this refuelling policy will be practical in all circumstances. In instances where refuelling of vehicles on Site is unavoidable, a designated and controlled refuelling area will be established at the Site. The designated refuelling area will enable low risk refuelling and storage practices to be carried out during the works. The designated refuelling area will contain the following attributes and mitigation measures as a minimum requirement: ○ The designated refuelling area will be located a minimum distance of 50m from any surface waters or Site drainage features. ○ The designated refuelling area will be bunded to 110% volume capacity of fuels stored at the Site. ○ The bunded area will be drained by an oil interceptor that will be controlled by a pent stock valve that will be opened to discharge storm water from the bund. ○ Management and maintenance of the oil interceptor and associated drainage will be carried out by a suitably licensed contractor on a regular basis. ○ Any oil contaminated water will be disposed of at an appropriate oil recovery plant or licensed tip site. ○ Any minor spillage during this process will be cleaned up immediately. ○ Vehicles will not be left unattended whilst refuelling. ○ All machinery will be checked regularly for any leaks or signs of wear and tear. ○ Containers will be properly secured to prevent unauthorised access and misuse. An effective spillage procedure will be put in place with all staff properly briefed. Any waste oils or hydraulic fluids will be collected, stored in appropriate containers and disposed of offsite in an appropriate manner.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Notwithstanding the management of refuelling and fuel storage at the designated refuelling area, the potential risk of hydrocarbon spills from plant and equipment or other general chemical spills at other areas of the Site remains. To mitigate against potential spills at other areas of the Site, the following mitigation measures will be implemented: • Oil absorbent booms and spill kits will be available adjacent to all surface water features associated with the Development. The controls will be positioned downstream of each construction area and at principal surface water drainage features. Oil booms deployed will have sufficient absorbency relative to the potential hazard. • Spill kits will also be available at construction areas such as at turbine erection locations, the temporary site compound, on-site substation, spoils storage areas and met mast location etc. • Spill kits will contain a minimum of oil absorbent pads, oil absorbent booms, oil absorbent granules, and heavy-duty refuse bags for collection and appropriate disposal of contaminated matter. • Should an accidental spill occur during the construction or operational phase of the Development, such incidents will be addressed immediately. This will include the cessation of works in the area of the spillage until the issue has been resolved. • Spill kits will be kept in each vehicle at the Site and will be readily available to all operators. • No materials, contaminated or otherwise will be left on the Site. • Suitable receptacles for hydrocarbon contaminated materials will also be available at the Site.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• A detailed spill response plan is provided as part of the CEMP (**Appendix 2.1**). Implementation of the above mitigation measures will significantly reduce the risk of hydrocarbon contamination being released to the surface water network. Nevertheless, the potential risk cannot be entirely eradicated. Therefore, precautionary measures and emergency response protocols have been prepared and are provided as part of the CEMP.		
MM39	Release of Cementitious Materials	Chapter 6: Aquatic Ecology	6.1.1.2.8	The following mitigation measures will be implemented during all construction and decommissioning phase works for the proposed development to prevent the release and transport of cementitious material to receiving surface waters: • The procurement, transport and use of any cement or concrete will be planned fully in advance and supervised by appropriately qualified personnel at all times. • Vehicles transporting cement or concrete to the Site will be visually inspected for signs of excess cementitious material prior to being granted access to the Site. This will prevent the likelihood of cementitious material being accidentally deposited on the Site Access Tracks or elsewhere at the Site. • Drivers of such vehicles will be instructed to ensure that all vehicles are washed down in a controlled environment prior to the departure of the source site, such as at concrete batching plants. • Precast concrete will be used wherever possible. However, the use of pre-cast concrete is not viable option for large structures such as Turbine foundations and so concrete will be delivered to the Site.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Concrete will not be poured during periods of rainfall or if any kind of precipitation is forecast. This policy will limit the potential for freshly poured concrete to adversely impact on surface water runoff. • Raw or uncured waste concrete will be disposed of by removal from the Site. • Washout of concrete trucks shall be strictly confined to the batching facility and shall not be located within the vicinity of watercourses or drainage channels. Only the chutes will be cleaned prior to departure from Site and this will take place at a designated area at the Temporary Site Compound. • Spill kits will be readily available to Site personnel, and any spillages or deposits will be cleaned up 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. • Any surplus concrete will not be stored or deposited anywhere on Site and will be returned to the source location or disposed of appropriately at a suitably licensed facility. • Any required shuttering installed to contain the concrete during pouring will be fully secured around its perimeter to minimise any potential for leaks.		

MM40	Emergency Response	Chapter 6: Aquatic Ecology	6.1.1.2.11	The following is a non-exhaustive list of potential emergencies and respective emergency responses:
				• Spill or leak of hazardous substances (less than 20 litres);
				  ○ All spill incidents will be dealt with immediately as they arise
				  ○ Spill kits will be prepared and available in vehicles		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				associated with the construction phase of the Project ○ Spill kits will also be prepared and made available at primary work areas such as at proposed turbine, hardstand, substation, met mast and construction compound locations ○ Disposal receptacles for hydrocarbon contaminated materials will also be available at the Site • Major spill of hazardous or toxic substance off Site or to environmentally sensitive areas: ○ Immediate escalation measures will be implemented for all major spill events ○ Escalation measures may include installation of temporary sumps or drains to control the flow or migration of hydrocarbons or other chemicals ○ Attempts to be made to limit or contain the spill using sandbags to construct a bund wall, use of absorbent material, temporary sealing of cracks or leaks in containers, use of geotextile or silt fencing to contain the spill ○ Excavation and disposal of contaminated material will be immediately carried out following any such incidents ○ Evacuation procedures will be implemented to remove non-essential personnel from the area ○ Data gathering and an investigation will commence immediately after the emergency is contained ○ 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 ○ All major spills of this nature will be reported to Leitrim		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				County Council immediately following such instances. • Flooding of low-lying areas of the Site: ○ Immediately remove all chemicals, fuels and other hazardous substances from low lying areas of the Site ○ Immediately remove plant and equipment from low lying areas ○ Recover materials washed from Site including sediment and other waste ○ Review and address the potential for excess water entering the Site ○ Review and maintain erosion and sedimentation controls. • Spills of cementitious material: ○ Cement / concrete contamination incidents will be cleaned up immediately as they arise ○ Spill kits will also be established at key construction areas and they will also be readily available in the cabs of plant and equipment ○ Suitable receptacles for cementitious materials will also be available at the Site.		
MM41	Ecological Clerk of Works	Chapter 7: Ornithology	7.6.1.1	An Ecological Clerk of Works (ECoW) will be appointed for the duration of construction works to advise the contractor and will visit as necessary (minimum once per week) when works are in progress to ensure that the mitigation measures are adhered to. The ECoW will be responsible for completing pre-construction transect/walkover surveys over the Site to ensure that disturbance to breeding birds is avoided. The ECoW will be responsible for undertaking ongoing ornithological monitoring during periods of the construction		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				phase that overlap with the breeding bird season. The ornithological monitoring will focus on identifying the presence of primary and/or secondary target species within the vicinity of the construction footprint. Where evidence of breeding pairs of primary and/or secondary species are identified a buffer distance of 500m will be established around the nest site in which no construction activity will be permitted until it is confirmed that breeding has terminated.		
MM42	Pre-Construction Confirmatory Surveys	Chapter 7: Ornithology	7.6.1.2	Pre-construction surveys, completed by suitably experienced ornithologists, will be completed in order to help inform the approach to the construction works associated with the proposed wind farm so that the presence/absence of any breeding key ornithological receptors identified is confirmed. In the spring / summer prior to any construction works being undertaken (including enabling works and ground investigations) surveys would be undertaken to identify any breeding activity associated with key ornithological receptors identified in **Chapter 7: Ornithology.** Where breeding activity by such species is identified the breeding sites will be identified and will be demarcated so as to avoid disturbance to their breeding sites. The Applicant would appoint a suitably experienced ECoW to oversee the works and help ensure that suitable protection zones are established and adhered to during the works. Species and site-specific buffer zones, following current best practice, would be established, appropriate to the specific circumstances, under the advice of a suitably experienced ornithologist. In addition to the pre-construction surveys, all works areas would be checked by a suitably experienced ecologist/ornithologist or the ECoW for the presence of any nesting birds in advance of works commencing during the main bird breeding season.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Should any active nest sites be found in areas where construction works are proposed, the location of the nest would be protected from damage and disturbance. All works would be monitored by a suitably experienced ecologist / ornithologist or the ECoW to help ensure that protection measures are properly implemented and maintained and that works proceed in accordance with best practice and the requirements of the legislation protecting breeding birds. The ECoW would provide a toolbox talk before any personnel start on site which will cover the issue of breeding birds, their legal protections, what to look for and what to do should breeding bird behaviour or a potential nest site be found.		
MM43	Earthworks Activities	Chapter 8: Soils and Geology	8.5.2.1	Appropriate engineering controls, such as the installation of a drainage system with settlement / stilling ponds, silt traps, check dams and interceptor drains, will be carried out in tandem with, and where possible, prior to, any excavation work to mitigate potential impacts. In relation to construction works, the most important aspects of these recommendations involve: • Deep excavations at turbine base locations in order to construct turbine foundations and hard-standings to support crane loadings. • Construction of new site roads, the upgrade of existing site roads and construction on new road surface at locations along the turbine delivery haul route where widening is required. • Construction of new sections of "floated road" (where recommended to fulfil a geotechnical requirement) where excess peat depth is present. • Removal / transport of "waste" peat and glacial spoil and disposal within designated zones.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Construction of a new grid connection between the Letter Wind Farm Substation and Corderry 110kV Substation, approximately 6.4km. In addition to standard ground investigation works carried out prior to construction additional, supplementary investigations may be undertaken during the construction phase to assess the integrity of the rock formation beneath critical infrastructure.		
MM44	Soils and Bedrock Removal	Chapter 8: Soils and Geology	8.5.2.2	The following mitigation measures will be implemented to minimise potential impacts on soils and geology during the construction phase: • Prior to commencement of construction works all-natural organic topsoil will be stripped from the footprint of the proposed development and stored temporary in a series of stockpiles • Surface water runoff will be intercepted and diverted away from open excavations towards the nearest gulley (on roadways) or to a temporary holding pond/tank (near river/stream) crossings • For off- sections, granular material will be placed over exposed clayey subsoil or made ground, to prevent erosion of fines and/or rutting • Minimal bedrock excavations are expected and where these are undertaken will be shallow in penetration. During construction any exposure of bedrock surfaces will be minimised. Following uncovering of the bedrock surface and excavation to the required level, the exposed formation will be quickly covered by a non permeable barrier material until construction work can be completed in a timely manner and then reinstated.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM45	Degradation of Soil and / or Subsoil	Chapter 8: Soils and Geology	8.5.2.3	The following mitigation measures will be implemented to minimise potential impacts on soils and geology during the construction phase: • Surface water runoff will be intercepted and diverted away from open excavations towards the nearest gulley (on roadways) or to a temporary holding pond/tank (near river/stream) crossings. • Within the fields or other off-road areas, granular material will be placed over exposed clayey subsoil or made ground, to prevent erosion of fines and/or rutting and to provide a temporary trafficable surface. • There will be limited stockpiling of material on-site. Excavated soil / material will be removed directly onto an awaiting truck for removal off site for recovery or re-use at an appropriate destination within the Site. Any stockpiles will be small in size and covered with appropriate waterproofed material where fine content exceeds 5%. • Open excavations, where practical, will be covered and sidewalls supported, if these are to remain open for periods in excess of one day. • Regular site audits will be undertaken to ensure compliance with this mitigation and to provide active management of surface groundwater runoff.		
MM46	Geological Heritage	Chapter 8: Soils and Geology	8.5.2.5	The site is not located within an area of geological heritage. Should sensitive aspects of the local geology be exposed within the infrastructure footprint during the construction phase these will be documented and recorded by a suitably qualified geologist and a combined factual and interpretative report produced.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM47	Contamination of Overburden and Groundwater	Chapter 8: Soils and Geology	8.5.2.6	Where contaminated material is encountered, it will be left in-situ while testing to determine its characteristics is carried out. This material will be covered to minimise rainfall ingress. The material will be excavated and either retained on site or transported by a permitted waste contractor to an appropriate facility for treatment or disposal. All contaminated materials encountered within the Site will be excavated, stored, moved, disposed of or recovered in accordance with the requirements of the Waste Management Act 1996 as amended and the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. To reduce the risk of soil, subsoil, made ground and/or groundwater contamination arising as a result of spills or leakages, a number of measures will be implemented during the construction phase of the Development to control the storage and handling of fuels, lubricants and waste. These measures include, but are not limited to, the following: • Storing fuels, chemicals, liquid and solid wastes in appropriately bunded areas within the temporary compound(s) • Removal of all potentially contaminating materials as well as plant and machinery away from rivers/stream crossings to the temporary compound(s) at the end of each working day • Undertaking refuelling of plant, equipment and vehicles within the temporary compound(s) • Provision of spill kits at high risk sites.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM48	Potential for Bog Failure-Prevention of Peat Slide and Bog Burst	Chapter 8: Soils and Geology	8.5.2.7	Application of the following procedures will have the effect of reducing the Hazard Ranking associated with Peat Instability: • Excavated spoil will not be deposited on the down slope or up slope edges of the adjacent peat. This spoil will instead be deposited on the two flanks either side of the excavation (where gradient is least) and spread in such a way as to limit the surcharge pressure on sensitive peat. • Bog Burst is recognised to be a difficult condition to mitigate against. Bog Burst tends to occur within deep peat (> 3.00m) after very heavy or prolonged precipitation. To ward against this possibility the design of turbine bases should be engineered to ensure that excavations do not cut into deep peat (>2.50m). It is however considered acceptable, where slopes are less than 5 degrees, that floating roads may be placed within peat cover exceeding 2.50m depth. • The hardstanding areas surrounding the turbine bases will be designed in a manner such that crane loadings can be transferred directly onto the competent strata underlying the peat. In order to facilitate these works it will be necessary to undertake limited excavations. To ensure effective sidewall support during these operations the contractor will adopt an approved engineering solution (such as sheet piling) to maintain sidewall stability at all times. • Movement can often occur during or following severe rainstorm events, particularly when following a prolonged dry spell. Extra vigilance will be maintained at such times, during construction. • All slopes are to be regularly checked for development of tension cracks (caused by desiccation), indicative of slope movement. • Extra care will be taken where the peat has previously been		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				tilled. Attention should be paid to any historic turbary nature of a site. • Method statements will be followed at all times. Where modification is required, this will be agreed by the supervising engineer. • Slopes will not be undercut, or excavations left unsupported for periods in excess of 24 hours. Excavations are to be backfilled as soon as practicable. Excavation and filling operations shall be coordinated to minimise the time an excavation remains opened. • Pore water pressure within excavations should be kept low at all times by draining deliberate or intentional sumps at regular intervals. This is to prevent ponding of water within excavations which can in turn increase hydraulic heads locally and potentially lead to instability. • The potential for Peat Slide will be monitored regularly during the construction works, by means of regular site visits and assessments, by a suitably qualified and experienced professional. • Only experienced and competent contractors will be appointed to carry out the construction works. Low ground bearing pressure machinery shall be used for transport of construction materials in sensitive areas. It is also recommended that the less sensitive areas are completed first to allow suitable construction practices to be established before works commence in the more difficult areas. • Site staff will also undergo induction training to learn about the risks associated with working on "upland environments" and procedures aimed at reducing Peat Slide risk. • Sufficient time should be allowed to carry out the works in a safe and timely manner.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM49	Potential for Bog Failure- Spoil Disposal	Chapter 8: Soils and Geology	8.5.2.7	Spoil will invariably be generated during excavations for foundations at turbines and along new access roads. • Glacial spoil disposal will take place within a 100m radius of each structure. • It is intended that spoil movements will be minimised by disposing of the material within or immediately adjacent to the construction footprint of the structure from whence it was excavated. • Preparation of the Spoil Disposal site will involve the removal of the "Top Mat" which will be transplanted to an area of inactive bog and maintained for re-use during restoration operations. • Spoil will be deposited, in layers of 0.50m and will not exceed a total thickness of 1.50m. • Spoil will only be deposited on slopes of < 10 degrees to the horizontal and greater than 10m from the top of a cutting. The exact location of such areas will be determined on consultation with the geotechnical specialist. • A Peat Stability Register will record the location of each Spoil Disposal Site used and regular weekly assessment will be made by the construction manager or other suitably qualified individual. • Once disposal is complete the disposal sites will be re-vegetated with the "Top Mat" removed at the commencement of disposal operations. Upon commencement of the restoration phase guidance from a suitably qualified ecologist will be sought to provide a suitable methodology and programme of maintenance for the restored areas.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM50	Management Driven Procedures and Protocols	Chapter 8: Soils and Geology	8.6.2.8	The contractor's methodology statement should be reviewed and approved by a suitably qualified geotechnical engineer with experience in peat environments prior to site operations. • Any excavations that may tend to undermine the up-slope component of a peat and / or unstable sub-soils slope should be sufficiently supported by buttress, frame or rampart to resist lateral slippage. • In areas where peat soils are to be excavated, machinery of a sufficient size to complete the works will be employed. Excessively heavy plant machinery will not be used in these areas. This measure is intended to avoid large vibrations disturbing the peat substrate. • Drainage management measures will be installed to effectively drain grounds in tandem with access track construction. Such drains should 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 can be positioned at a more acute angle to the slope contour in order to reduce the velocity of surface water drainage. • Due to peat's fluid-like properties, all peat excavated should be immediately removed from sloping sites. If peat is required for reinstatement, then acrotelm peat (<0.3m shallow, living layer) should be moved to a lower elevation part of the site that is characterised by near-horizontal slopes, is >100m away from any significant break of slope and is >50m away from drains and streams. • If additional materials are required for the construction process, after exhausting excavated materials during road and infrastructure construction, additional materials may be acquired from external sources. Wherever possible any		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				imported aggregates should consist of a similar geo-chemistry to the local geology of the site. It should be noted that this is dependent on the quality and variety of aggregate supplied by available quarries. • From evidence (landslides in Mayo and Galway), excessively wet periods should be avoided in terms of scheduling significant excavations in peat substrates. • Adherence to additional site-specific mitigation		
MM51	Additional Risk Reduction Enabling Works	Chapter 8: Soils and Geology	8.6.2.9	The zone of historic peat landslide movement to the western side of access track and infrastructure at turbine T4, will be stabilised so as to prevent the continued natural loss of peat and / or mineral soils into the adjacent watercourse. Such naturally induced migration of organic or mineral soils into watercourses has the effect of diminishing water quality and negatively impacting the associated flora and fauna. To achieve this the watercourse will be culverted along the entire length of the recorded landslide zone. This will have the effect of stopping any subsequent soil movements from entering the water course and therefore negate further impact on the downstream watercourse.		
MM52	Groundwater Dewatering	Chapter 8: Soils and Geology	8.6.2.11	Any water ingress that may be encountered in the upper weathered zone of the bedrock during the construction phase should be intercepted by a toe drain and diverted to an existing artificial drainage channel and attenuation before release. The design of the drainage takes into account factors of slope stability and where possible should be sealed at the base.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM53	Ground Disturbance and Diffuse sediment laden run-off Proposed Mitigation Measures – Wind Farm	Chapter 9: Hydrology and Hydrogeology	9.5.2.1	• Management and mitigation for earthworks is covered in further detail in **Chapter 8: Soils and Geology**. Mitigation measures to reduce the potential for adverse effects arising from earth works and management of excavated material . A Spoil Management Plan has been prepared and forms **Management Plan 4** of the CEMP (**Appendix 2.1**) which adopts the mitigation measures outlined below. • No permanent stockpile will remain on the site during the construction or operational phase of the Development. Excavated materials will be stored temporarily at designated spoil areas. • Temporary stockpile locations have been identified and will be used to avoid the temporary placement of any excavation arisings outside of the footprint of the development. Temporary stockpile areas will be managed to facilitate the orderly segregation of material types, be isolated from the receiving surface water network by the use of silt screens etc., and are limited in height (1m). • 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 the construction phase of the project (see **Management Plan 1 – Emergency Response Plan** and **Section 5.10 of Management Plan 3, 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 in 24 hour) issued by Met Éireann), planned responses will be undertaken. These responses will		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 construction areas and infrastructure will be inspected by and Environmental Clerk of Works to confirm no additional escalation of response is required; 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 (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). • Sediment fencing will be erected along proximal and paralleling areas of watercourses, channels and drains spanned by the works to reduce the potential for sediment laden run-off to reach sensitive receptors. • No direct flow paths between stockpiles and watercourses will be permitted at the Site. • All drainage infrastructure required for the management of surface water runoff will be established 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 9.5 – Tile no. 8 - 9** present indicative layout and specification for both passive treatment trains (clean water		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				interceptor drains), active management treatment trains (management and treatment of construction water) and emergency response and intervention.		
MM54	Disturbance and Diffuse sediment laden run-off Mitigation Measures – Grid Connection Route	Chapter 9: Hydrology and Hydrogeology	9.5.2.2	Mitigation measures to reduce the potential for adverse effects 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 9.12b and 9.13b)**. Excavated soil will be removed to temporary storage areas. • Management of excavated material will adhere to the 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. • Temporary stockpile locations will be situated outside of Surface Water Buffer Zones (as seen in **Figure 9.13b)**. Temporary Soil stockpiles shall have side slopes battered back to a safe angle of repose, e.g., 1:1. Silt fencing is to be		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 9.5 – Tile 8**). • All unused spoil from trenches in public roadways will be removed from Site as it is excavated and transported to a licenced facility for soil and stones. • 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 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 in 24 hours), 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	Release and Transport of Suspended Solids Proposed Mitigation Measures	Chapter 9: Hydrology and Hydrogeology	9.5.2.3	Conceptual and information graphics associated with mitigating runoff quality are presented in **Appendix 9.5 – Tiles 8 - 9.** In order to mitigate the impact posed by release of suspended solids to the surface water environment, the following mitigation		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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. 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. Drainage infrastructure will be installed during meteorologically dry ground conditions **(Section 9.5.2.1**). Diffuse surface water runoff will be managed as follows: • Collector drains and/or soil berms **Appendix 9.5 – Tile 7,** 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 **Appendix 9.5 – Tiles 8 - 9**, buffered discharge points **Appendix 9.5 – Tiles 8 – 9,** 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. • Silt fences will be established along the perimeter of source areas e.g., stockpiles, within the drainage network, and in existing natural drains which are likely to receive surface water runoff, **Appendix 9.5 – Tiles 12 & 13.** This will reduce the potential for surface water runoff loaded with		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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. multiple silt fences / screens will be deployed at drains/outfalls discharging to surface waters. 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 **Appendix 9.5 – Tiles 8 – 9,** followed by buffered outfalls, **Appendix 9.5 – Tiles 8 – 9,** 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 (**Appendix 9.5 – Tile 8 and 9).** 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: • In line Stilling Ponds **Appendix 9.5 – Tiles 8 – 9, Tile - 16,** 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				permanent (life of development at minimum). The locations of stilling pond have not been chosen as a part of the drainage design at this time**.** 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 (**Appendix 9.5 - Tiles 3 – 6)**. Check dams will reduce the velocity of run-off in turn facilitating the 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 (**Appendix 9.5 – Tile 14**) 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. • 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, refer to **Appendix 9.5 – Tile no. 3**. • Check dams will include a small orifice / pipe at the base to allow the flow of water during low flow conditions i.e.,		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 (**Appendix 9.5 – Tile no. 3 and 4)**. • Check dams will be constructed as part of the drain i.e., reduce the potential for bypassing between the drain wall and check dam. • Further details and design considerations are presented in **Appendix 9.5 – Tile no. 3 to 6.** • Surface water runoff will be discharged to land via buffered drainage outfalls (refer to **Appendix 9.5 - Tiles 7 -8 and 15**. 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 will be 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. • Buffered drainage outfalls will be located outside of surface water buffer zones **(Appendix 9.5 – Tile 15)**. 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) (**Appendix 9.5 – Tile 11**). These structures will be akin to rip raps (coastal erosion defences/ outfall erosion		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				defences). Silt fences **Appendix 9.5 – Tiles 12 – 13**, 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 Environmental Clerk of Works (EnvCoW)), 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 (adverse charge) are also effective flocculants, and are not toxic i.e., environmentally friendly[2]. Therefore, 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) (**Appendix 9.5 - Tile 14**), 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		

[2] USEPA (2013) Stormwater Best Management Practice – Polymer Flocculation (Available at: http://www.siltstop.com/pictures/US_EPA_Polymer_Flocculant_Handout__3-14.pdf)

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 **Sections 9.5.2.9-10**). 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 Environmental Clerk of Works (EnvCoW) 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 effects to water quality and on plant and animal ecologies downstream of the site. The precautionary and mitigation measures listed here will avoid, reduce or remedy all potential effects 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.		
MM56	Reduction in Site Stability Proposed Mitigation Measures	Chapter 9: Hydrology and Hydrogeology	9.5.2.4	Mitigation measures for Vehicular Movements are mitigation measures by avoidance and good practices. These are previously detailed in **Appendix 2.1 CEMP.**		
MM57	Release of Hydrocarbons Proposed Mitigation	Chapter 9: Hydrology and Hydrogeology	9.5.2.5	The following mitigation measures to reduce potential effects from the environmental release of hydrocarbons and other harmful chemicals to the surface waters will be implemented:		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
	Measures			• Refuelling of vehicles will be carried out off Site to the greatest practical extent. This refuelling policy will mitigate the potential for effects by avoidance. Due to the remote location nature of the Site, it is unlikely that implementation of this refuelling policy will be practical in all circumstances (e.g., bulldozers, cranes, etc.). In instances where refuelling of vehicles on Site is unavoidable, a designated and controlled refuelling area will be established at the Site. The designated refuelling area will enable low risk refuelling and storage practices to be carried out during the works. The designated refuelling area will contain the following attributes and mitigation measures as a minimum requirement: • The designated refuelling area will be located a minimum distance of 50m from any surface waters or Site drainage features • The designated refuelling area will be bunded to 110% volume capacity of fuels stored at the Site • The bunded area will be drained by an oil interceptor that will be controlled by a pent stock valve that will be opened to discharge storm water from the bund • Management and maintenance of the oil interceptor and associated drainage will be carried out by a suitably licensed contractor on a regular basis, including Decommissioning following construction. • Any oil contaminated water will be disposed of at an appropriate Licensed wate disposal site. • Any minor spillage during this process will be cleaned up immediately • Vehicles will not be left unattended whilst refuelling • All machinery will be checked regularly for any leaks or		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				signs of wear and tear • Containers will be properly secured to prevent unauthorised access and misuse. An effective spillage procedure will be put in place with all staff properly briefed. Any waste will be collected, stored in appropriate containers and disposed of offsite in an appropriate manner. Notwithstanding the management of refuelling and fuel storage at the designated refuelling area, the potential risk of hydrocarbon spills from plant and equipment or other general chemical spills at other areas of the Site remains. As a precautionary measure, to mitigate against potential spills at other areas of the Site, the following mitigation measures will be implemented: • Oil absorbent booms and spill kits will be available adjacent to all surface water features associated with the Development. The controls will be positioned downstream of each construction area and at principal surface water drainage features. Oil booms deployed will have sufficient absorbency relative to the potential hazard • Spill kits will also be available at construction areas such as at turbine erection locations, the Temporary Construction Compound, On site Substation, spoils storage areas and Mast location etc. • Spill kits will contain a minimum of oil absorbent pads, oil absorbent booms, oil absorbent granules, and heavy-duty refuse bags for collection and appropriate disposal of contaminated matter • Should an accidental spill occur during the construction or operational phase of the Development, such incidents will be addressed immediately, this will include the cessation of works in the area of the spillage until the issue has been		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				resolved. • Spill kits will be kept in each vehicle at the Site and will be readily available to all operators • No materials, contaminated or otherwise will be left on the Site • Suitable receptacles for hydrocarbon contaminated materials will also be available at the Site • A detailed spill response plan will be prepared as part of the Site specific CEMP. Implementation of the above mitigation measures will significantly reduce the risk of hydrocarbon contamination being released to the surface water network. Nevertheless, the potential risk cannot be entirely eradicated. Therefore, precautionary measures and emergency response protocols will be established and outlined in the Site specific CEMP. General Overview of Works Mitigation Measures • The timing of grid connection cable laying will be carried out during metrologically dry seasons/periods. • An Environmental Clerk of Works (EnvCoW)) will be onsite in order to lessen environmental disruption and ensure site integrity is maintained. The Environmental Clerk of Works (EnvCoW) 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 with the Environmental Clerk of Works (EnvCoW) and the site will be fully restored post grid route connection (GRC)		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				works. Good Practice of Plant Machinery • 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 • The method statements produced by the Contractors(s) will be reviewed by the Environmental Clerk of Works (EnvCoW) and will be agreed with the appropriate parties, including Leitrim County Council. The developer will employ a project manager to monitor the construction phase of the project and ensure works are being carried out in accordance with the agreed method statements, safety procedures and pollution control measures. • 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.		
MM58	Release of Wastewater Sanitation Contaminants	Chapter 9: Hydrology and Hydrogeology	9.5.2.6	A temporary compound area will be constructed on-site to contain temporary facilities for the construction phase including welfare facilities **Chapter 2, Section 2.6.6**. This will be stabilized with the laying of hardcore material on top. During the construction phase, foul effluent will be periodically removed for offsite disposal. Wastewater/sewerage from the staff welfare facilities located in		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				the Temporary Construction Compound will be collected and held in a sealed storage holding tank, fitted with a high-level alarm. The high-level alarm is a device installed in the storage tank that is capable of sounding an alarm during a filling operation when the liquid level nears the top of the tank. Chemicals are likely to be used to reduce odours. All wastewater will be emptied periodically, tankered off-site by a licensed waste collector to the local wastewater sanitation plant in Drumkeeran for treatment. There will be no onsite treatment of wastewater. A wastewater or sewerage leakage is not anticipated in a properly managed Site.		
MM59	Release of Construction and Cementitious Materials Proposed Mitigation Measures	Chapter 9: Hydrology and Hydrogeology	9.5.2.7	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: • A dedicated, bunded area will be created to cater for concrete wash-out and this will be within the temporary construction compound located to the south of T4. This will be for the wash-out of the chutes only after the pour. Concrete trucks will then exit the Site and return to the supply plant to wash out the mixer itself. • The procurement, transport and use of any cement or concrete will be planned fully in advance of commencing works by the Contractor's Environmental Manager and supervised at all times by the Developer appointed Environmental Clerk of Works (EnvCoW). This entails minimising quantities on Site, planning delivery routes and washout stations. • Precast concrete will be used wherever possible i.e., formed offsite. Elements of the Development where the use of precast concrete will be used include structural elements of watercourse crossings (closed culverts) as well as Cable		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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. • Vehicles transporting cement or concrete to the Site will pass through a designated wash out station **Appendix 9.5 - Tile 11** and be visually inspected for signs of excess cementitious material prior to being granted access to the Site. The wheel wash facility will be provided near the Site entrance so that the wheels of vehicles entering or exiting the Site can be cleaned prior to entering or exiting the Site.This will prevent the likelihood of cementitious material being accidentally deposited on the site access tracks or elsewhere at the Site or on the public road network. • Drivers of such vehicles will be instructed to ensure that all vehicles are washed down in a controlled environment prior to the departure of the source site, such as at concrete batching plants. • 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				duration) and/or any foreseen intense rainfall event (25mm in a 24 hour period, 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. • 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. • 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. • 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. • Raw or uncured waste concrete will be disposed of by removal from the Site and returned to the source location or disposed of appropriately at a suitably licensed facility. • Designated washout of concrete trucks shall be strictly confined to the batching facility and will not be located within the vicinity of watercourses or drainage channels. Only the chutes will be cleaned prior to departure from Site and this will take place at a designated area at the Temporary Construction Compound. 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Temporary storage of cement bound sand (if required for construction of the substation building) 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. • 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.		
MM60	Excavation Dewatering Proposed Mitigation Measures - Active Construction Water Management	Chapter 9: Hydrology and Hydrogeology	9.5.2.8	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 (**Appendix 9.5 Tiles 7-9**). Contaminated water arising from construction works, namely, excavations, 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 (Letter headings align with **Appendix 9.5 – Tile 8**): 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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., 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 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, 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 the Redline 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. The discharge points will be identified during the licence application process. As discussed previously, the main		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				components of the treatment will be positioned outside of the 50m surface water buffer zone where possible (**Figure 9.13a Figure 9.13b**). The Developer will identify suitable locations for the establishment of temporary infrastructure considering other variable such as traffic and access management. Similarly, the location of discharge points will be outside of buffer zones and into minor or 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, **Appendix 9.5 Tiles 8-9**). Collected and treated construction water will be discharged by gravity / pump to a vegetated area of ground within the Site, **Appendix 9.5 Tiles 8-9**). Silt fences will be established at the discharge area to ensure potential residual suspended solids are attenuated and the potential for erosion is reduced, **Appendix 9.5 Tiles 8-9**). The discharge area will be outside of 65m 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).		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM61	Excavation Dewatering Proposed Mitigation Measures - Passive Construction Water Management	Chapter 9: Hydrology and Hydrogeology	9.5.2.9	Passive management systems (**Appendix 9.5 – Tile 8**) include some of the features described in active management treatment trains. These include; • Spoil bunds and/or temporary berms. Spoil bunds and/or 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., 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, (**Appendix 9.5 -Tile 12 & 13**). 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 the Site boundary). ○ Along the perimeter 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Passive systems are intended to function with minimal supervision, however in the management of construction water on this Site, in many cases the diverted water 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.		
MM62	Watercourse Crossings Proposed Mitigation Measures	Chapter 9: Hydrology and Hydrogeology	9.5.2.10	The following mitigation is proposed and is in line with IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, in particular Section 6 – River and Stream Permanent Crossing Structures. During the construction phase the appointed Contractor(s) shall ensure that: • No works will take place within the 50m buffer zone of watercourses except for the bottomless bridge culvert, road development and drainage measures as detailed. • Site compounds and temporary excavation areas will be located at a minimum distance of 50m 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 **Management Plan 3: 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• In areas of the site where works will take place (example hardstands) the area will be required to be isolated from intercepting drains and drains diverted alternative route while maintaining the same hydrological flow/levels (example ensuring no pinch points). • Daily monitoring of all sediment traps and settlement ponds will be undertaken by the Environmental Clerk of Works to ensure satisfactory operation and/or maintenance requirements. • The design minimises the potential for localised bank and bed erosion, refer to **Planning Drawing 5969-PL-500-01**. In regard to the Grid Connection Route: **There are 7 culvert crossings proposed for the Grid Connection Route.** (*** Note:** Likely to be additional minor culverts). • With reference to **Section 9.3.9** 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 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 effects on the receiving watercourse/s through general construction activities such as those outlined in **Section 9.4.4** i.e., the release of suspended solids and hydrocarbons for example. Relevant guidance		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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.		
MM63	Instream Works Proposed Mitigation Measures	Chapter 9: Hydrology and Hydrogeology	9.5.2.12	Infrastructure such as culverts over natural or artificial drainage channels and non-mapped rivers will require instream works. Where culverts are required and the subsequent in-stream works are necessary, 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 is presented in **Section 9.2.2**. Method statements will be included in the CEMP. • 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, **Appendix 9.5 – Tile 1**) 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. **Appendix 9.5 – Tile 1** presents a conceptual plan view of an isolated construction area within a surface water feature. Over pumping of a surface water feature is considered diversion of water runoff only and therefore considered similar to discharge of storm water runoff only to sewer (exempt from licensing), however it is imperative that		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				controls are in place to ensure environmental effects are minimised, particularly in relation to ecological sensitivities (for further information refer to EIAR Chapter's 5, 6 and 7), 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. • Water ingress into the construction area will be managed and collected by established sumps immediately downstream of the works (upstream of the downstream barrier) (**Appendix 9.5 – Tile no. 1**). Runoff within the construction area will likely be heavily laden with suspended solids. Where required, dewatering (pumping out or extracting) of such waters will be discharged to an inline settlement tank **Appendix 9.5 – Tile no. 1**, or preestablished stilling pond **Appendix 9.5 – Tile no. 1** to remove suspended solids before being discharged (**Appendix 9.5 Tiles 8 and 9**). 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				treated construction water will be discharged by gravity / pump to a vegetated area of ground within the Site (an example is provided in **Appendix 9.5 – Tile 11**). Silt fences (**Appendix 9.5 – Tile 12 & 13**), 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 of excavations). • 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. • Works in relation to in stream works 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Precautions will be made to mitigate the potential risk of a hydrocarbon spill. Further to measures outlined in **Section 9.5.2.6**, 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, should they become necessary **(Appendix 9.5 – Tile 10 &11).**		
MM64	Groundwater Contamination Proposed Mitigation Measures	Chapter 9: Hydrology and Hydrogeology	9.5.2.13	In order to mitigate against potential groundwater contamination by hydrocarbons, implementation of the following mitigation measures is recommended: • In the first instance, no fuel storage should occur at the Site whenever feasible and refuelling of plant and equipment should occur off Site at a controlled fuelling station. • In instances where on Site refuelling is unavoidable, then the bunded on Site designated refuelling area must be used. The designated refuelling area must be bunded to 110% volume capacity of fuels stored at the Site. • The bunded area will be drained by an oil interceptor that will be controlled by a pent stock valve that will be opened to discharge storm water from the bund. • Management and maintenance of the oil interceptor and associated drainage will be carried out by a suitably licensed contractor on a regular basis. • Any oil contaminated water will be disposed of at an appropriate oil recovery plant. • Any minor spillage during this process will be cleaned up immediately. • Vehicles will not be left unattended whilst refuelling. • For large machinery such as cranes, a drip tray will be used		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				and spill kits will be on hand. • A Site specific CEMP will be enforced to ensure that equipment, materials and chemical storage areas are inspected and maintained as required on a regular basis. The following mitigation measures are recommended in relation to non-hydrocarbon potential contamination of groundwater: • All other liquid-based chemicals such as paints, thinners, primers and cleaning products etc. will be stored in locked and labelled bunded chemical storage units. • Sanitation facilities used during the construction phase will be self-contained and supplied with water by tank trucks. These facilities will not interact with the existing hydrological environment in any way and they will be maintained and serviced throughout the construction phase. • The controlled attenuation of suspended solids in settlement ponds and check dams etc. will result in inorganic nutrients (if present in elevated concentrations) such as phosphorus and nitrogen being absorbed and retained by the solids in the water column. This will allow for a reduction of peak inorganic discharges in a controlled and stable run off rate. It is noted that the presence of elevated contaminants were detected during the four surface water quality monitoring rounds. • It is considered that there is a low risk of mobilising trace metals that may naturally be present in low concentrations in the baseline environment. The potential for mobilising trace metals is most likely to result from enhanced water percolation associated with excavated bedrock substrate. To mitigate against this potential impact, water quality should be monitored for trace metal concentrations prior to, during and after the construction phase.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• The potential for livestock such as cattle and sheep which have been observed grazing in the vicinity of the Site to cause bacteriological contamination of groundwater will be controlled through the implementation of strict grazing control zones, Site perimeter fencing and exclusion zones around all open excavations.		
MM65	Clear Fell of Forestry	Chapter 9: Hydrology and Hydrogeology	9.5.2.16	No new impacts or remediation measures are associated with forestry activities. More details on clear felling at the Site is outlined in the **Forestry Report (Appendix 2.4).** However, 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 include: • 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 (2002) ○ Forestry and Water Quality Guidelines (2000) ○ Forest Harvesting and Environmental Guidelines (2000) ○ Forestry and Freshwater Pearl Mussel Requirements - Site Assessment and Mitigation Measures (2018) ○ Forest Biodiversity Guidelines (2000) ○ Forestry and The Landscape Guidelines (2000) ○ Forestry and Archaeology Guidelines (2000)		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• The permanent felling of 2ha of forestry is subject to replacement obligations. All felling in State requires a licence. • Harvest site plans including extraction routes, fuelling areas, stacking areas, turning areas and drain crossings etc. and Hazard Identification and Risk Assessment will be designed and implemented during all harvesting operations. • 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 clear felled 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				bridges, pipes etc) to avoid machines entering the water; ○ Establishing buffer zones around waterways from which machines are excluded.		
MM66	Emergency Response	Chapter 9: Hydrology and Hydrogeology	9.5.2.17	Emergency response procedures to potential contamination incidents have been prepared as part of the Emergency Response Plan (**Management Plan 1** of **Appendix 2.1**) will be implemented at the Site prior to the commencement of the construction phase. The following is a non-exhaustive list of potential emergency scenarios where corrective action may be required, and proposed corrective mitigation measures are included: • 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 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 (**Appendix 9.5 – Tile no. 8 to 9**).		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• Potential issue; Management of unexpected runoff patterns leading to excessive drying or wetting in a particular area, potentially leading to enhanced erosion. 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 effects to ecological sensitivities will become apparent relatively slowly in comparison. It is noted that much of the Site is impacted as part of baseline in this regard e.g. existing artificial drainage networks. Prior to commencement of construction, the ECoW 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 contaminants, and excessive loading of surface water mitigation infrastructure. Emergency responses to potential contamination incidents will be established and form part of the CEMP (**Management Plan 1, Appendix 2.1**). Potential emergencies and respective emergency responses include: • Hydrocarbon spill or leak – Hydrocarbon contamination incidents will be dealt with immediately as they arise.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 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 ECoW in conjunction with a preidentified consultant (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. • 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Suitable receptacles for cementitious materials will also be at hand. In the event of a significant contamination or polluting incident the relevant authorities will be informed immediately.		
MM67	Managing & Reporting Environmental Incidents	Chapter 9: Hydrology and Hydrogeology	9.5.2.18	Environmental incidents including accidental spillages on soils (e.g. fuel), breeches of licence limits if applicable (discharge of trade effluent), and significant environmental incidents 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.		
MM68	Construction Phase Mitigation	Chapter 10: Air and Climate	10.2.8.1	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 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• 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. • 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. The concrete wash water will be disposed of at a licensed facility as outlined in the Construction Environment Management Plan (CEMP) – **Management Plan 5 Waste Management Plan (Appendix 2.1**) • 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				toolbox talks. • Stockpiling of materials will be carried out in such a way as to minimise their exposure to wind. Stockpiles will be covered with geotextiles layering and damping down will be carried out when weather conditions require it. • Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable. • An independent, qualified Geotechnical Engineer will be contracted for the detailed design stage of the 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.		
MM69	Construction Noise Mitigation	Chapter 11: Noise	11.6.1	General guidance for controlling construction noise through the use of good practice given in BS 5228 will be followed. Construction of the Development shall be limited to working times given and any controls incorporated in any planning permission.		
MM70	Forestry	Chapter 13: Material Assets and Other Issues	13.5.3	The construction works will be planned and managed by a Construction and Environmental Management Plan (CEMP) (**Appendix 2.1**). This provides details on day to day works and methodologies. As part of these works, the public and other stakeholders will be provided with updates on construction activities which will affect access to surrounding lands. This will be communicated to members of the public through a community liaison officer employed for the duration of the construction period.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM71	Telecommunications	Chapter 13: Material Assets and Other Issues	13.6.4	All electrical elements of the Development are designed to ensure compliance with electro-magnetic fields (EMF) standards for human safety. Compliance with the EMC Directive 2014/30/EU will mean that the electromagnetic emissions from devices used will not cause interference to other equipment.		
MM72	Electricity Networks	Chapter 13: Material Assets and Other Issues	13.7.4	Mitigation by design and avoidance will minimise impacts on existing electricity networks. • Prior to construction confirmatory drawings for all existing services will be sought from 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. • 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.		
MM73	Air Navigation	Chapter 13: Material Assets and Other Issues	13.8.5	The Developer is committed to undertaking a IFP assessment subject to the grant of planning permission by the relevant authority.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Although no significant impacts are predicted, it is standard policy of the IAA Safety Regulation Division to request an Obstruction Survey for wind farms. This Survey is designed to collate data on the height, latitude, longitude, elevation and dimensions of any structures or feature that the IAA deems necessary. An Obstruction Survey will be undertaken at the pre-construction phase in agreement with the IAA. An aeronautical lighting scheme for the Development will be agreed with the Irish Aviation Authority (IAA) prior to turbine erection. The IAA will be notified of intention to commence crane operations with at least 30 days prior notification of their erection.		
MM74	Quarries	Chapter 13: Material Assets and Other Issues	13.9.4	Existing tracks have been used where possible and the layout was designed to minimise the length of new track required in order to reduce the requirement for such stone material.		
MM75	Waste	Chapter 13: Material Assets and Other Issues	13.10.7	***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 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 Eireann rain forecast maps), and do not proceed during any yellow (or worse) rainfall warning issued by Met Eireann. This also will avoid such conditions while concrete is curing, in so far as practical. Ground crew will have a spill kit readily available, and any spillages or deposits will be cleaned/removed as soon as possible and disposed of appropriately. Pouring of concrete into standing water within excavations will be avoided. Excavations will be prepared before pouring of		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 5969-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. 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 All 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 of the following: • A leak-proof test certificate • A copy of the IBC approval certificate • 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 will be 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Refuelling During construction/decommissioning, where possible all refuelling on site will be within the temporary compound within the re-fuelling area (see Drawing No. 5969-PL-803). Only essential refuelling (e.g., cranes) will be carried out, outside of this area, but not within 50m 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. ***Packaging*** In accordance with the waste hierarchy, packaging will be returned to the originator ahead of re-use or recycling. Where this is not possible, waste will be separated as appropriate and safely stored on site appropriately in anticipation of recycling. ***Metals*** Waste metals from concrete reinforcing 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.		
Operational Phase						
MM76	Human Health and Safety Operation	Chapter 4: Population and Human Health	4.5.7.2	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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				Equipment within high voltage substations presents a potential hazard to health and safety. The proposed 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 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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		
MM77	Shadow Flicker Mitigation Measures and Residual Effects	Chapter 4: Population and Human Health	4.9.1.6	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 • The turbine will automatically shut down safely during periods when shadow flicker exceeds the thresholds as set out in the WEDG (2006); and will restart when the potential for shadow flicker ceases at the affected properties.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				It is intended that the measures outlined above, subject to safe shut down time of approximately 60 seconds, will ensure the WEDG (2006) shadow flicker thresholds are not exceeded at any of the properties within the study area, this will be the case regardless of which turbine is selected within the turbine range. The control system can be adjusted to automatically shut-down the turbine when the control systems detects the sunlight is strong enough to cast a shadow thereby complying with the 2019 Draft WEDG if/when they come into effect.		
MM78	Protection of Bats-Mitigation by Reduction	Chapter 5: Terrestrial Ecology		Cut-in Speeds/Curtailment: Cut-in speeds should be increased during the bat activity season (April-October) or where temperatures are optimal for bat activity to 5.5 m/s from 30 minutes prior to sunset and to 30 minutes after sunrise at turbines where surveillance shows high bat activity levels for High and Medium-Risk species and/or if bat carcasses are recorded. Cut-in speeds restrictions will be operated according to specific weather conditions: • When the air temperature is greater than 7°C (as bat activity does not usually occur below this temperature). • Generally, bat activity peaks at low wind speeds (<5.5m/s). As such, it has been shown that curtailing the operations of wind turbines at low wind speeds can reduce bat mortality dramatically, particularly during late summer and the early autumn months. Due to the considerable unnecessary down time resulting from the proposed "blanket curtailment" (above) and the advances in smart curtailment a focused curtailment regime is further proposed from the year two of operation.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				This will focus on times and dates, corresponding with periods when the highest level of bat activity occurs within the Site. This includes the use of the SCADA (Supervisory Control and Data Acquisitions) operating system (or equivalent) to only pause/feather the blades below a specified wind speed and above a specified temperature within specified time periods. Post-constructions surveys will be undertaken for the first three years of operation to confirm if blanket curtailment restrictions can be amended in line with post-construction activity levels. The post construction surveys will be used to update the current curtailment regime (blanket curtailment) designed around the values for the key weather parameters and other factors that are known to influence collision risk. This will include all of the following: • Wind speed in m/s (measured at nacelle height) • Time after sunset • Month of the year • Temperature (ºC) • Precipitation (mm/hr)		
MM79	Offsetting-Restoration of Important Habitats	Chapter 5-Terrestrial Ecology	5.5.6	Restoration of habitats will require ongoing positive management input as well as monitoring of success and necessary remedial measures. This is set out in the Habitat Management Plan in **Appendix 5.4.**		
MM80	Protection of Watercourses	Chapter 6: Aquatic Ecology	6.1.2.1	The following measures are required in order to ensure the ongoing protection of watercourses: • Re-seeding / re-vegetation of all areas of bare ground or the placement of Geo-jute (or similar) matting will take place as practically possible at the start of the operational phase to		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				prevent run-off. • Silt traps erected during the construction phase within roadside and artificial drainage will be replaced with stone check dams for the lifetime of the project. These stone check dams will only be placed within artificial drainage systems such as roadside drains and not natural streams or ditches. • 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. • The operational phase compound / office must house all chemicals within a secure bunded COSSH (Control of Substances Hazardous to Health) store for the operational phase of the project.		
MM81	Hydraulic Loading During the Operational Phase	Chapter 6: Aquatic Ecology	6.1.2.2	Mitigation measures to facilitate a reduction in surface water runoff are limited to ensuring that pre-existing and newly established drainage infrastructure is sufficiently maintained for the discharge rates associated with all areas of the Site. Once identified, any and all blockages which may adversely impact upon the drainage regime at the Site will be immediately removed during the operational phase of the proposed Development. No other additional impacts are anticipated during the operational phase of the Development.		
MM82	Mitigation by Reduction	Chapter 7: Ornithology	7.6.2.2	In order to reduce the potential for casualties at turbines, proactive measures will be taken to discourage birds from hunting in the area surrounding the four turbine locations. This will involve eliminating any high sward or rank vegetation from around the relevant turbine(s) to make it less suitable for		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				supporting prey items such as small mammals (mice, shrews, voles) and birds (meadow pipit, skylark etc). Vegetation clearing can be achieved by mowing and/or strimming. With mitigation in place, the risk of collision risk to Kestrel as a result of the project will be further reduced, in keeping with the very low level of significance posed to this species.		
MM83	Change to Hydrological Regime	Chapter 8: Soils and Geology	8.6.3.1	Consideration should be given to the engineered design of roadside drains, the hardstanding areas and improved access roads to take the capacity of additional surface run-off arising from the proposed development. The design must prevent both ***(a) hydraulic loading*** of the existing surface water network and ***(b) provide sufficient attenuation of suspended solids*** prior to outfall to the natural drainage network to maintain the existing environments baseline chemistry. Surface water flows in all existing waterways and drainage should not be impeded in any way by the proposed development. Access tracks that intercept existing waterways should have suitably designed culverts installed to maintain baseline flows, large enough to accommodate peak flow of a one in 100-year return period.		
MM84	Water Quality	Chapter 8: Soils and Geology	8.6.3.2	The following measures are recommended to mitigate pollution to surface waters and groundwaters during the lifetime of the project. A regular programme of environmental site maintenance for the drainage network and drainage culverts to ensure their performance to standards at the site. Some changes in the drainage network may be required as a result of unanticipated changes in the hydrological regime at the site during the operation phase of the project.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				If fuelling has occurred on site, the fuel tanks and oil interceptor used at the fuel transfer area should be removed by a suitably qualified contractor. An audit of ground and water conditions immediately under and around the transfer area is recommended to investigate whether any leakage has occurred to the hydrological system and whether some clean-up measures are required. Aside from the use of lubricant oils at the substation (low volume), fuels should not be stored on site for the operation phase of the project. The substation compound is likely to require substation transformer cooling oil or gas. This should be stored in containers within a safe part of the substation compound, minimising accidental leakage and / or fire hazards. Consideration should also be given to a "bunded" area for the oil. Similarly, any other potentially harmful substances used to service the substation should be stored in an environmentally safe manner to mitigate impact to the soils and water.		
MM85	Increase in Hydraulic Loading Proposed Mitigation Measures	Chapter 9: Hydrology and Hydrogeology	9.5.3.1	The principles of the mitigation measures described under **Section 9.5.1** (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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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. 0.4m^2. Presume 100m length of collector drain; up to 40m^3 capacity per 100m, by 50% allowing for gradient equates to 20m^3. 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. The actual attenuation capacity of the drainage network and treatment trains will be calculated during the detailed design phase of the development **(Appendix 9.5 – Tile 7).** • 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.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				The Development will lead to an increase in impermeable surface area through the construction of hardstand areas within the Site. This in turn will lead to an increase in hydraulic loading by surface water runoff. Preliminary water balance calculations indicate that the worst-case net increase in surface water runoff volumes will be approximately 13990m3/hour or 0.102 l/sec (or 0.26%) relative to the area of the Site, therefore this is considered an imperceptible, or not significant impact. The potential combined attenuation capacity of the proposed drainage infrastructure, checked dams, stilling ponds, etc. (**Management Plan 1, Appendix 2.1** Appendix 2.1) has been designed to attenuate net increase in water runoff during extreme storm events i.e., 1 in 100-year storm event plus a 20% allowance for global warming, as set out in **Appendix 9.1 – Letter Flood Risk Assessment.**		
MM86	Waste	Chapter 13: Material Assets and Other Issues	13.10.7	***Staff Facilities*** Provision for separation of waste streams will be provided so that e.g., paper, and cardboard waste and bottles may be recycled. ***Sewage*** It is proposed to install a rainwater harvesting system as the source of water for toilet facilities for the operational phase. Wastewater from the staff welfare facilities in the control building will be collected in a sealed storage tank, fitted with a high-level alarm. This is a device installed in a fuel storage tank that is capable of sounding an alarm, during a filling operation, when the liquid level nears the top of the tank.		
MM87	Mitigation Measures	Chapter 14: Cultural Heritage	14.5.7	The following mitigation measures will be implemented during the construction phase: • All ground disturbance associated with the construction of		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				the proposed development will be monitored by a suitably qualified archaeologist working under licence as issued by the minister (DCHG) under section 26 of the National Monuments Acts (1994-2014). • In the event of archaeological features, finds and/or deposits been encountered during the monitoring, all relevant authorities should be notified immediately. Preservation in-situ or preservation by record (excavation) may be required.		
Decommissioning Phase						
MM88	Land Use	Chapter 4: Population and Human Health	4.5.5	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 decommissioning 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 decommissioning period.		
MM89	Human Health and Safety	Chapter 4: Population and Human Health	4.5.7	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 will be followed. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. 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		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				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 construction site during decommissioning 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 decommissioning stage. This measure aims to avoid potential injury to members of the public as a result of decommissioning activities. 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. Public consultation will be conducted along the grid cable route to inform local residents ahead of decommissioning works. 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 the decommissioning of the proposed project is expected to be not significant and temporary to short-term.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
MM90	Decommissioning Phase	Chapter 8: Soils and Geology	8.6.4	No new mitigation is anticipated during the decommissioning phase. However, prior to initiating the decommissioning phase a review will be undertaken of the relevant legislation and guidance in force at that time to determine if additional mitigation is required. Limited temporary decrease in water quality on a local level is likely to arise from the release of suspended solids and sediments during the excavation and construction process, particularly following rainfall events after a sustained dry period. This local deterioration in water quality will subsequently be reduced naturally by dilution and by managed mitigation prior to exiting from the site boundary to main catchments.		
MM91	Decommissioning of Infrastructure Phase/s	Chapter 9: Hydrology and Hydrogeology	9.5.4.1	As discussed in **Section 9.4.6**, no new significant effect on the surface water and groundwater receiving environment are anticipated during the Decommissioning phase of the project. The Decommissioning phase of the project will result in the removal of Site infrastructure such as wind turbine blades, towers, transformers, etc. The excavation of topsoil and subsoils is expected during the Decommissioning phase, but, however, to a far less extent when compared to that of the construction phase. For instance, it is proposed the turbine foundations will remain in situ and upon turbine dismantling and redressed with topsoil and revegetated with sods. Similarly, the movement of plant, vehicles and equipment is expected to be required during the Decommissioning phase, but to a far less extend than during the construction phase. As a result, there remains a risk of elevated suspended solids being discharged in surface water run-off to the downstream receiving environmental during the Decommissioning phase. Additionally, the potential risk remains for spills of fuels hazardous chemicals which is a common risk to		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				all developments. The mitigation measures outlined in this chapter will be implemented during the Decommissioning phase, as well as those outlined in the Decommissioning Plan, to reduce the potential for such effects. In regard to cable ducting, for the Grid Connection route, cable joint bays will be left in-situ and cabling on site will be removed from the cable bays. The ground above original pulling pits/joint bays will be excavated to access the cable ducts using a mechanical excavator and will be fully re-instated once the cables are removed. Excavated material will be temporarily stored adjacent to the site of excavation at a height of less than 1m and outside of any surface water buffer zone, and will be removed from the site appropriately for reuse elsewhere on site, reused on another site or disposed of as a waste (through appropriate classification and assessment).		
MM92	Reinstatement of Redundant Access Track and Hardstand Areas	Chapter 9: Hydrology and Hydrogeology	9.5.4.2	In order to reduce the potential impact of excavating and removing the entirety of the crane hardstand areas, it is proposed that the majority of the stone structure of the individual crane hardstands will be left in place, with topsoil spread on top of the hardstand to form a vegetated surface layer. The top layer of the crane hardstand areas will have the rock/stone dug out and be left to revegetate naturally. Any reinstatement of topsoil and the restoration of vegetation will be kept consistent and compatible with surrounding vegetation, and shall be agreed with the Environmental Engineer in advance of commencement. Reinstatement of redundant site access tracks and Turbine Hardstand areas during the Decommissioning phase has the potential to result in soil creep, associated erosion and potential entrainment of elevated suspended solids in surface water run-off. This in turn has the potential to impact on the receiving surface water environment.		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				• A site specific Decommissioning Plan has been developed prior to the commencement of any Decommissioning activities (**Management Plan 6, Appendix 2.1**). • Mitigation measures described in this chapter to reduce the potential for run-off of elevated suspended solids will be implemented. • It is recommended that silt/sediment fences should be implemented along the perimeter of all access tracks and hardstand areas prior to decommissioning works and for the during the reinstatement works. • Additional precautions such as the implementation of check dams, secured straw bales, sandbags, or settlement ponds should be implemented at areas where surface water runoff is likely to be intercepted by both natural and artificial drainage features. • The mitigation measures for the preparation of the hardstand area surfaces prior to material being deposited discussed in **Chapter 8: Soils and Geology** will be implemented. • It is recommended that monitoring and maintenance of the reinstated areas should be conducted regularly following the initial stages of establishment to ensure that the potential for excessive surface water runoff eroding deposited material along preferential pathways is minimised. The Site Access Roads and associated drainage systems will serve ongoing forestry and agriculture activity in the area. All other hard surfaced areas will be allowed to revegetate naturally. Based on the experience of the project team monitoring operational wind farm sites throughout the country, the approach of allowing these areas to revegetate naturally has proven to be		

Ref. No.	Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
				very successful.		
MM93	Construction Noise Mitigation	Chapter 11: Noise	11.6.1	Decommissioning of the Development shall be limited to working times given and any controls incorporated in any planning permission. Any legislation, guidance or best practice relevant at the time of decommissioning will be complied with.		

Table 17.1b: Monitoring Schedule

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Pre-Construction Phase						
MX1	Monitoring	Chapter 5: Terrestrial Ecology Appendix 2.1 CEMP	Pre-construction confirmatory surveys required in advance of the construction phase will include as a minimum: • Otter surveys along the Owengar River. Surveys to be completed will pay particular attention to identifying the presence/absence of otter holts/couches within 150m of the proposed wind farm infrastructure. In the event that otter holts or couches identified within 150m of the proposed development the status of the breeding/resting place will be confirmed. Where the holt/couch is identified as a breeding site, then, in the absence of a derogation licence, no works will be permitted to proceed within a 150m radius of the breeding place, whilst it is still actively used as a breeding site. In the event that a non-breeding active holt or couch is identified within 50m of the proposed development, then, in the absence of a derogation licence, no works will be permitted to proceed within a 50m radius of the non-breeding but active holt or couch. • Non-native invasive plant species surveys: An up-to-date confirmatory non-native invasive plant species survey of the Site and adjacent areas will be completed during the growing season immediately prior to the commencement of construction works. • Confirmatory surveys for the presence of plant species of conservation interest. These surveys shall be completed during the growing season immediately prior to the commencement of the construction phase. The surveys shall be completed to identify the presence of any new stands of rare or threatened species. In the event that new stands of these species are identified as occurring within			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			the footprint of the proposed wind farm, stands of these plants will be required to be translocated to a suitable receptor area either within the proposed development site or an alternative suitable location. Such translocations will only be permitted to proceed upon receipt of a derogation licence. • The ECoW will ensure that best practice construction methods and mitigation measures detailed in this EIAR and accompanying planning documentation including the CEMP and NIS are implemented in full. • The ECoW will be responsible for ensuring that the construction phase contractor is aware of key biodiversity receptors. The ECoW will inspect the construction works throughout the construction phase and will pay particular attention to the implementation of all biodiversity related mitigation measures. • The ECoW will provide monitoring inspection reports during the construction phase and will also provide a close-out report following the completion of the contract construction works. • Where necessary the ECoW will liaise with relevant authorities such as Leitrim County Council, the IFI and the NPWS with respect to construction phase activities that relate to biodiversity. • As part of the ECoW terms of appointment, the ECoW will be vested with the authority to stop works where activities have been identified on site that are not in accordance with the mitigation measures outlined in this EIAR, the NIS and/or the CEMP prepared for the planning application for the proposed development.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Construction Phase						
MX2	Water Quality Monitoring	Chapter 6: Aquatic Ecology Appendix 2.1 CEMP	The following water quality monitoring will be implemented to mitigate against potential impacts on the surface water receiving environment: • A programme of water quality monitoring outlining the selected parameters and monitoring frequency will be agreed with Inland Fisheries Ireland and Leitrim County Council prior to the commencement of construction. • In order to assist in the detection of any deviations from the baseline hydrochemistry conditions at the Site, regular periodic monitoring of the Site's surface waters will be carried out prior to and during construction. • It is proposed that a programme of operational phase water quality monitoring is also implemented at a monitoring frequency agreed with Leitrim County Council in order to aid the detection of any potential operational phase impacts on surface water quality. • As a minimum requirement, field measured parameters such as pH, conductivity, total dissolved solids (TDS), temperature, dissolved oxygen (DO) and turbidity will be included in the water quality monitoring programme. The results will be compared to the applicable EQS to determine if adverse impacts on water quality are occurring. • Water quality will be monitored for trace metal concentrations prior to, during and after the construction phase. • Water quality monitoring locations will include both upstream and downstream points relative to the works locations. The locations of the water quality monitoring points will be flexible and will be moved as the			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			construction phase progresses so that monitoring points remain representative of the most likely construction impact receptor points. • The watercourses within and adjacent to the proposed spoil storage area will be included within the water quality monitoring programme. • The downstream monitoring locations will be positioned as close as possible downstream of the works location, and another positioned further downstream. This approach will allow for an assessment of the dilution of potential contaminations (if present) as the distance from the point of diffuse source location increases. • Watercourses which do not have year-round flows such as artificial drains, ditches or ephemeral streams will be avoided as water quality monitoring locations. • During the construction phase, daily visual inspections of excavations, dewatering procedure, settlement ponds, silt traps, buffered outfalls and drainage channels etc. will be carried out by a suitably qualified person. Any excess build-up of sediment at settlement ponds, drains or at any other drainage features that may decrease the effectiveness of the drainage feature will be promptly removed. • During the construction phase of the Development, all development areas will be monitored on a daily basis for evidence of groundwater seepage, water ponding and wetting of previously dry spots. • Following the completion of the construction phase, inspection of silt traps, buffered outfalls and drainage channels will be periodically inspected during maintenance visits to the Site when the operational phase water quality			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			monitoring will also be carried out. • The proposed watercourse crossings discussed will be monitored daily during construction and during each Site visit during the operational phase. The watercourse crossings will be monitored in terms of their impacts (if any) on the receiving watercourses and in terms of their structural integrity to identify any signs of erosion or potential for sediment release. • It is proposed that a handheld turbidity meter is available at the Site to accurately measure the quality of water discharging from the Site. The meter will be maintained and calibrated frequently. • A detailed inspection and monitoring regime to be agreed with Inland Fisheries Ireland and Leitrim County Council will be included in the CEMP. • Any discharges of sediment treated water will meet the requirements of the Surface Water Regulations 2009, as amended.			
MX3	Monitoring – Wind Farm Site	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	To ensure effective implementation of mitigation measures, environmental auditing, and monitoring of environmental obligations of the Developer, an Environmental Clerk of Works (EnvCoW) 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 Environmental Clerk of Works (EnvCoW) 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 Environmental Clerk of Works			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			(EnvCoW) will have the authority to temporarily stop works in a particular area of the site to ensure corrective measures are implemented and adverse environmental effects are minimised if not avoided. The following wind farm Site monitoring recommendations will be undertaken by the EnvCoW assigned by the Developer to mitigate against potential effects on the surface water and groundwater receiving environment: • 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 Environmental Clerk of Works (EnvCoW) 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 effects: • 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			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			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 (**Figure 9.6**) (locations close to active working zones). Monitoring of same during times when excavations are being dewatered (likely high in solids) will be done in real time. In this regard, physiochemical properties will be monitored in real time by means of alarmed telemetry e.g., telemetric monitoring at baseline sampling locations and alarm thresholds established in line with water quality reference concentrations/limits which will be set using relevant instruments for example, Surface Water Quality Regulations, <25mg/l Total Suspended Solids (TSS). • Continuous Monitoring will be carried out as part of Active Management of construction water management and treatment **(Appendix 2.1 CEMP** and the **SWMP**). 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			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			telemetry during the construction phase. Triggering of the threshold at these locations will trigger emergency response and escalation of measures including immediate full site inspection to ascertain to the potential unknown source (bearing in mind that the quality of managed runoff at the site will be known by means of live telemetry and handheld meters). Continuous monitoring at Baseline SW Monitoring Locations will continue into the operational phase until stable conditions are observed e.g., stable conditions in line with baseline conditions for 6 months. • 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			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			the construction phase. • A programme of water quality monitoring outlining the selected parameters and monitoring frequency should be agreed with Inland Fisheries Ireland and Leitrim County Council prior to the commencement of construction. During the construction phase of the project, the Development areas and adjacent receiving drainage systems will be monitored daily for evidence of erosion and other adverse effects to natural drainage channels and existing degraded areas whereby soils/subsoils 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, the watercourse crossing within the Site 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 will be specified in the CEMP (**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			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			locations will be monitored on a continuous basis during the construction phase of the Development. Monitoring will continue into the operational phase until such time that the Site and water quality have stabilised (stable conditions in line with baseline conditions for e.g. 8 consecutive quarterly monitoring events). This monitoring will be carried out at the downstream surface water baseline sampling locations (**Figure 9.6a**) • 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 maintained and calibrated frequently (per the particular unit's calibration requirements / user manual), and will also be used to check and calibrate remote sensors if they are employed. Quality thresholds have been established for the purposes of escalating water quality issues as they arise. • 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.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• As part of the CEMP, 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. • All details in relation to monitoring will be included in the Surface Water Management Plan (SWMP) (**Management Plan 3, Appendix 2.1**).			
MX4	Routine Surface Water Monitoring	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	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). Sample locations, monitoring frequency and precise hydrochemistry parameters will be agreed in writing with Leitrim County Council, prior to commencement of construction, and following consultation with Inland Fisheries Ireland **(Water Quality Management Plan 3).**			
MX5	Continuous Monitoring of Active Construction Water Management and	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	As a minimum, the monitoring programme will include: • At least one baseline monitoring visit. • Daily visual observation in areas of high construction activity or during high rainfall periods to identify any evidence of siltation, oil or silt. Visual inspections will include details of the colour of the water at the time of			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
	Discharge		inspection. • Weekly visual inspections and monthly field hydrochemistry monitoring. • One round of post construction monitoring, to be agreed with Leitrim County Council. Post construction will be defined as when the reinstatement phase is completed. • Monthly analysis of water parameters will be carried out. Construction-stage analytical determinants (including limits of detection and frequency of analysis) will be specified and agreed with the Local Authority and third parties for each sample location. The agreed suite of grab sample determinants will include the following: **Parameters for hydrochemistry analysis** • pH • Temperature • Total Suspended Solids (TSS) • Dissolved Organic Carbon (DOC) • Conductivity • Dissolved Oxygen (DO) • Total Oxidized Nitrogen (TON) • Ammoniacal Nitrogen • Ammonia • Potassium			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			• Phosphate • Biological Oxygen Demand (BOD) • Chemical Oxygen Demand (COD) • Total Petroleum Hydrocarbons (TPH)* In line with monitoring objectives in relation to surface water quality, parameter value thresholds or limits when exceeded, the 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.			
MX6	Active Monitoring on Site	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	Handheld meters (Turbidity / Total Suspended Solids (TSS)) will used by the EnvCoW / 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.			

* Only during construction phase

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Handheld probes will be checked and calibrated regularly.			
MX7	Monitoring Under Licence	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	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.			
MX8	Tailoring of Monitoring Requirements	Chapter 9: Hydrology and Hydrogeology Appendix 2.1 CEMP	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 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 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			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			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 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).			
Operational Phase						
MX9	Monitoring	Chapter 7: Ornithology Appendix 2.1	A detailed breeding bird monitoring will be implemented at least 12 months prior to the start of construction works. The monitoring plan would detail survey methods, and the reporting mechanism, for each focal species. The surveys would be			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
		CEMP	completed by suitably experienced ornithologists. The surveys will commence (as a minimum) in the breeding season prior to works commencing and for at least the first fifteen years of wind farm operation (i.e., annually for the first three years, then fifth, seventh, tenth and fifteen years). At which point the need for further monitoring would be reviewed. The surveys would include the flight survey area which comprises the four proposed turbines and a 500m surrounding buffer area. The monitoring will comprise: Vantage point surveys as per SNH (2017) from the two vantage points used for the baseline surveys. Breeding bird survey following methods used in the baseline survey to be repeated yearly between early April to early July during each operation phase monitoring year. Collision fatality searches which will involve the search of a standard polygon area around each of the 4 no. turbines. At the start of each survey, data recorded will include meteorological and ground cover information. The locations of any carcasses found will be recorded by GPS and will be photographed in-situ. The state of each carcass will be recorded on a corpse record card, using the following categories (after Johnson 2003): • 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			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			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, 7, 10, 15 of the operational wind farm.			
MX10	Monitoring	Chapter 8: Soils and Geology Appendix 2.1 CEMP	In order to ensure there are no impacts on soils and geology during the operational phase a schedule of regular maintenance is proposed, as follows: • Regular inspections and maintenance of surface water drainage to ensure correct functioning and to prevent build-up of blockages • Regular inspection and maintenance of bunded storage of chemicals and fuels to prevent escape of contaminants and allow early indications of any potential defects in storage facilities • Regular inspection and maintenance of roads, footpaths and parking areas to monitor settlement and investigation further where recorded. • Regular monitoring of adjacent watercourses for contamination and comparison to baseline readings.			