

18.

SCHEDULE OF MITIGATION AND MONITORING PROPOSALS

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

All mitigation which will be implemented during the various phases of the Proposed Development are presented in Table 18-1 below. The mitigation measures have been grouped together according to their EIAR Chapter and Proposed Development phase and are presented under the following headings:

- Pre-Commencement Phase
- Construction Phase
- Operational Phase
- Decommissioning Phase

The mitigation proposals in the below format provides an easy to audit list that can be reviewed and reported on during each phase of the Proposed Development. The proposal for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as Appendix 4-3 of this EIAR. The tabular format in which the below information is presented, can be further expanded upon during each Proposed Development phase 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 Proposed Development are outlined in Table 18-2. All monitoring measures were set out in the relevant chapters of this EIAR. The monitoring proposals are presented in terms of the monitoring requirement, frequency of monitoring and the mechanism for reporting results where applicable. By presenting the monitoring proposals in the below format, it is intended to provide a monitoring schedule that can be reviewed and tracked during all phases of the Proposed Development to ensure all the required monitoring is completed as required.

It is intended that the CEMP will be updated where required prior to the commencement of construction to include all mitigations and monitoring measures, planning 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 prior to the commencement of development.

18.1

EIAR Mitigation Measures

Table 18-1 Schedule of Mitigation

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
EIAR Chapter 4 – Description of the Proposed Project					
Pre-Construction Phase					
MM1	Environmental Management	EIAR Chapter 4	<p>All proposed activities on the site of the Proposed Development will be provided for in an environmental management plan. A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development and is included in Appendix 4-3 of this EIAR.</p> <p>The CEMP sets out the key environmental considerations to be managed by the contractor during construction of the Proposed Development. The CEMP includes details of drainage, spoil management and waste management, and outlines clearly the mitigation measures and monitoring proposals that are required to be adhered to in order to comply with the environmental commitments outlined in the EIAR. In the event planning permission is granted for all elements of the Proposed Development, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for approval.</p>		
MM2	Environmental Management	CEMP Section 4	<p>➤ The main contractor will be required to engage a qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of Environmental Clerk of Works (ECoW) to oversee the construction works and audit the implementation of the CEMP. The ECoW will report to the Project Developer and Project Contractor but will liaise closely with the Construction Manager in relation to the Project Contractor’s day-to-day implementation of the CEMP onsite.</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The Environmental Clerk of Works (ECoW) will be nominated by the project developer to oversee the Project Contractor’s effective implementation of the Proposed Projects environmental requirements and obligations, as captured in the CEMP and provide on-site advice on the mitigation measures necessary as necessary to ensure the project proceeds as intended. ➤ The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, Developer’s Project Manager, and any Authorities or other Agencies, will be agreed by all parties prior to commencement of construction, and may be further adjusted as required during the course of the Proposed Development. 		
MM3	Surface Water Quality	CEMP Section 4	<ul style="list-style-type: none"> ➤ Visual inspection and laboratory analysis results of water quality monitoring shall assist in determining requirements for any necessary improvements in drainage controls and pollution prevention measures implemented on site. ➤ Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standards (EQSs) and sampling will be undertaken at designated locations as outlined in Figure 9-9 of the EIAR. ➤ Baseline sampling will be completed on at least two occasions, and these should ideally coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell. 		
MM4	Concrete Deliveries	EIAR Chapter 4 CEMP Section 3	<ul style="list-style-type: none"> ➤ The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures. ➤ Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible pre-cast elements for culverts and concrete works will be used; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM5	Site Drainage Plan	EIAR Chapter 4, 9 CEMP Section 3	<p>The key principles of drainage design that will be implemented and adhered to as part of the Proposed Development are as follows:</p> <ul style="list-style-type: none"> ➤ Keep ‘clean water clean’ by intercepting it where possible, upgradient of works areas and minimise works in or around artificial drainage features and divert it around the excavation areas, reinstatement areas, construction areas and temporary storage areas. Another method for drainage control involves collecting any drainage waters from works areas within the site that might carry silt or sediment, and nutrients, to route them towards new proposed silt traps and settlement ponds prior to controlled diffuse release into the drainage network. ➤ No alteration of natural watercourses or to existing drainage channels on site ➤ Maintain the existing hydrology of the Site. ➤ Blocking of existing manmade drainage as appropriate. ➤ Where possible, drainage controls will be installed during seasonally dry ground conditions. ➤ Daily inspection and recording of surface water management system by on-site Environmental Clerk of Works and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the Site. ➤ Use of siltbuster or equivalent system if required. ➤ However, prior to commencement of works in sub-catchments across the site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis prior to the commencement of construction works across the site, as works in all areas will not commence simultaneously. 		
MM6	Waste Management	EIAR Chapter 4	<ul style="list-style-type: none"> ➤ Prior to the commencement of the development a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 3	implementation of the objectives of the Waste Management Plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to.		
MM7	Preparative Site Drainage Management	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ Interceptor drains will be installed in advance of any main construction works commencing. The material excavated to make the drain will be completed on the downslope edge of the drain to form a diversion dike. However, prior to commencement of works in sub-catchments across the site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis prior to the commencement of construction works across the site, as works in all areas will not commence simultaneously. ➤ Drainage associated with pollution control measures will be implemented onsite before the main construction works commence. Where possible, drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off. ➤ No routes of any natural drainage features will be altered as part of the Proposed Development and turbine locations and associated new roadways were originally selected to avoid natural watercourses, and existing roads are to be used wherever possible. ➤ Buffer zones of 50m around rivers and streams, respectively, have been used to inform the layout of the Proposed Development. ➤ Double silt fences will be used in areas where a 50m setback from existing watercourses cannot be achieved 		
MM8	Earthworks	CEMP Section 3	<ul style="list-style-type: none"> ➤ Drainage associated with pollution control measures will be implemented onsite before the main construction works commence. Where possible, drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM9	Traffic Management	EIAR Chapter 4, 15	<p>In the event planning permission is granted for the Proposed Development, the final Traffic Management Plan will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned. The plan will include:</p> <ul style="list-style-type: none"> ➤ A delivery schedule. ➤ Details of works or any other minor alteration identified. ➤ A dry run of the route using vehicles with similar dimensions. 		
MM10	Spoil Management	EIAR Chapter 4 CEMP Section 3	<ul style="list-style-type: none"> ➤ The proposed placement of peat and spoil and excavation method, as per the Peat & Spoil Management Plan in Appendix 4-2 of the EIAR, includes procedures that are to be included in the construction to minimise any adverse impact on peat stability. 		
Construction Phase					
MM11	Refuelling	EIAR Chapter 4, 8, 9 CEMP Section 3	<ul style="list-style-type: none"> ➤ Wherever possible, vehicles will be refuelled off-site. However, for construction machinery that will be based on-site continuously, a limited amount of fuel will have to be stored on site. ➤ The construction compounds will consist of a bunded refuelling and containment area for the storage of lubricants, oils and site generators, etc, and full retention oil interceptor, waste organic storage area, welfare facilities including temporary site offices, staff facilities and car parking areas for staff and visitors. ➤ On-site refuelling of machinery will be carried out at dedicated refuelling locations using a mobile double skinned fuel bowser. The fuel bowser, a double-axle custom-built refuelling trailer will be re-filled off site and will be towed around the site by a 4x4 jeep to where machinery is located. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use. ➤ Only designated trained and competent operatives will be authorised to refuel plant on site. ➤ Mobile measures such as drip trays, spill kits and fuel absorbent mats will be used during all refuelling operations. 		
MM12	Concrete Deliveries and Management	ElAR Chapter 4 CEMP Section 3	<ul style="list-style-type: none"> ➤ Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in concrete delivery trucks. The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. ➤ When concrete is delivered to site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the site. ➤ Concrete trucks will be washed out fully at the batching plant, where facilities are already in place. ➤ The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a Siltbuster-type concrete wash unit or equivalent. ➤ The residual liquids and solids can be disposed of off-site at an appropriate waste facility. ➤ Where temporary lined impermeable containment areas are used, such containment areas are typically built using straw bales and lined with an impermeable membrane. ➤ Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout. <ul style="list-style-type: none"> ➤ Site roads will be constructed to a high standard to allow transport of the turbine components around the site, and hence, concrete delivery trucks will be able to access all areas where the concrete will be needed. No concrete will be transported around the site in open trailers or dumpers so as to avoid spillage while in transport. All concrete used in the construction of turbine bases will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete locally to the location where it is needed.</p> <ul style="list-style-type: none"> ➤ The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, confirming routes, prohibiting on-site washout and discussing emergency procedures. ➤ Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the site. ➤ Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast. ➤ Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete. ➤ Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets. ➤ Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain. ➤ Disposing of any potential, small surplus of concrete after completion of a pour in suitable locations away from any watercourse or sensitive habitats. 		
MM13	Road Cleanliness	EIAR Chapter 4 CEMP Section 3	<ul style="list-style-type: none"> ➤ A wheelwash facility will be provided for the site. ➤ The site roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt. ➤ A road sweeper will be available if any section of the public roads requires cleaning due to construction traffic associated with the Proposed Development. 		
MM14	Watercourse Buffers & Water discharge	EIAR Chapter 4, 9	<ul style="list-style-type: none"> ➤ Two distinct methods will be employed to manage drainage water within the Proposed Development site. The first method involves 'keeping clean water clean' by avoiding disturbance to existing drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations, 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 3	reinstatement areas, construction areas and temporary storage areas. The second method involves collecting any drainage waters from works areas within the site that might carry silt or sediment, and nutrients, to route them towards new proposed silt traps and settlement ponds (or stilling ponds) prior to controlled diffuse release into the existing drainage network. This allows for attenuation and settlement prior to s diffuse release.		
MM15	Wastewater Management	EIAR Chapter 4 CEMP Section 2	The construction compounds will consist of a bunded refuelling and containment area for the storage of lubricants, oils and site generators, etc, and full retention oil interceptor, waste organic storage area, welfare facilities including temporary site offices, staff facilities and car parking areas for staff and visitors. Temporary port-a-loo toilets and toilets located within a staff portacabin will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered offsite by a permitted waste collector to wastewater treatment plant. There will also be a water supply onsite for hygiene purposes, by way of a temporary storage tank.		
MM16	Drainage Measure Management	EIAR Chapter 4 CEMP Section 3	<ul style="list-style-type: none"> ➤ Vegetation filters will carry outflow from the level spreaders as overland sheet flow, removing any suspended solids and discharging to the groundwater system by diffuse infiltration. ➤ Drains will be excavated, and stilling ponds constructed to eliminate any suspended solids within surface water running off the site. ➤ Regular inspections of all existing and installed drainage measures should be undertaken by the Project Contractor, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water within the system. ➤ The contractor will devise a system of recording the findings of these inspections. ➤ Any excess build-up of silt levels at check dams, the settlement ponds, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ For this reason, the drainage measures installed on-site should be inspected at least weekly by the contractor and maintained as required during the construction phase of the Proposed Project to ensure good performance. ➤ The ECoW will monitor the effectiveness of the on-site drainage during changing weather, ground or drainage conditions encountered on site, through their regular visual inspections of on-site watercourses and water monitoring programme. Where it appears that additional drainage measures will be required to ensure the drainage system remains effective, the ECoW will notify the contractor, the developer and project design team including the Project Hydrologist. 		
MM17	Interceptor Drains	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ The interceptor drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area. ➤ Interceptor drains will be predominantly installed horizontally across slopes to run in parallel with the natural contour line of the slope. Intercepted water will travel along the interceptor drains, pass through piped drains, and onto areas downgradient of works areas where the drain will terminate at a level spreader. Across the entire length of the interceptor drains, the design elevation of the water surface along the route of the drains will not be lower than the design elevation of the water surface in the outlet at the level spreader. 		
MM18	Collector/swales Drains	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ New collector drains and sediment traps will be installed during ground preparation to intercept water upgradient of felling areas and divert it away. Collector drains will be excavated at an acute angle to the contour (0.3%-3% gradient), to minimise flow velocities. ➤ Drainage swales will remain in place to collect runoff from roads and hardstanding areas of the Proposed Development during the operational phase. ➤ Drainage swales will be installed downgradient of any works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and picked up silt and 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>sediment. Swales will intercept the potentially silt-laden water from the excavations and construction areas of the site and prevent it reaching natural watercourses.</p> <ul style="list-style-type: none"> ➤ Drainage swales will be installed in advance of any main construction works commencing. The material excavated to make the swale will be compacted on the downslope edge of the drain to form a diversion dike. 		
MM19	Check Dams	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. ➤ Regular maintenance of dams, to ensure they continue to function effectively, and the Project Contractor is entirely responsible for this maintenance. ➤ Existing artificial drains in the vicinity of existing site roads will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. 		
MM20	Level Spreader	EIAR Chapter 4	<ul style="list-style-type: none"> ➤ A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain, into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations where they will not contribute further to water ingress to construction areas of the Proposed Development site. ➤ The water carried in interceptor drains will not have come in contact with works areas, and therefore should be free of silt and sediment. The level spreaders will distribute clean drainage water onto vegetated areas where the water will not be reconcentrated into a flow channel immediately below the point of discharge. The discharge point will be on level or only very gently sloping ground rather than on a steep slope so as to prevent erosion. ➤ The slope in the channel leading into the spreader will be less than or equal to 1%. The slope downgradient of the spreader onto which the water will dissipate will have a grade of less than 6%. The availability of slopes with a grade of 6% or less will determine the locations of level spreaders. If a slope grade of less than 6% is not available in the immediate area downgradient of a works area at the end of a diversion drain, a piped 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>slope drain (see Section 4.6.5.5 below) will be used to transfer the water to a suitable location.</p> <ul style="list-style-type: none"> ➤ The spreader lip over which the water will spill will be made of a concrete kerb, wooden board, pipe, or other similar piece of material that can create a level edge similar in effect to a weir. The spreader will be level across the top and bottom to prevent channelised flow leaving the spreader or ponding occurring behind the spreader. The top of the spreader lip will be 150mm above the ground behind it. The length of the spreader will be a minimum of four metres and a maximum length of 25 metres, with the actual length of each spreader to be determined by the size of the contributing catchment, slope and ground conditions. ➤ Clean four-inch stone can be placed on the outside of the spreader lip and pressed into the ground mechanically to further dissipate the flow leaving the level spreader over a larger area 		
MM21	Culverts	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse. ➤ All roads and culverts will be inspected by the ECoW and contractor prior to any machinery being brought on site to commence the felling operation. ➤ Checking and maintenance of roads and culverts will be on-going through any felling operation. ➤ Some culverts may be installed to manage drainage waters from works areas of the Proposed Development, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. ➤ In all cases, culverts will be oversized to allow mammals to pass through the culvert. ➤ Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM22	Piped Slope Drains	EIAR Chapter 4	<ul style="list-style-type: none"> ➤ Piped slope drains will be used to convey surface runoff from diversion drains safely down slopes to flat areas without causing erosion. Once the runoff reaches the flat areas it will be reconverted to diffuse sheet flow. Level spreaders will only be established on slopes of less than 6% in grade. Piped slope drains will be used to transfer water away from areas where slopes are too steep to use level spreaders ➤ The piped slope drains will be semi-rigid corrugated pipes with a stabilised entrance and a rock apron at the outlet to trap sediment and dissipate the energy of the water. The base of drains leading into the top of the piped slope drain will be compacted and concavely formed to channel the water into the corrugated pipe. The entrance at the top of the pipe will be stabilised with sandbags if necessary. The pipe will be anchored in place by staking at approximately 3-4 metre intervals or by weighing down with compacted soil. The bottom of the pipe will be placed on a slope with a grade of less than 1% for a length of 1.5 metres, before outflowing onto a rock apron. ➤ The rock apron at the outlet will consist of 6-inch stone to a depth equal to the diameter of the pipe, a length six times the diameter of the pipe. The width of the rock apron will be three times the diameter of the pipe where the pipe opens onto the apron and will fan out to six times the diameter of the pipe over its length ➤ Piped slope drains will only remain in place for the duration of the construction phase of the Proposed Development. On completion of the works, the pipes and rock aprons will be removed, and all channels backfilled with the material that was originally excavated from them. ➤ Piped slope drains will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and blockages. Stake anchors or fill over the pipe will be checked for settlement, cracking and stability. Any seepage holes where pipe emerges from drain at the top of the pipe will be repaired promptly 		
MM23	Vegetation Filters	EIAR Chapter 4	<ul style="list-style-type: none"> ➤ Vegetation filters are the existing vegetated areas of land that will be used to accept surface water runoff from upgradient areas. The selection of suitable areas to use as vegetation 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>filters will be determined by the size of the contributing catchment, slope and ground conditions.</p> <ul style="list-style-type: none"> ➤ Vegetation filters will carry outflow from the level spreaders as overland sheet flow, removing any suspended solids and discharging to the groundwater system by diffuse infiltration. ➤ Vegetation filters will not be used in isolation for waters that are likely to have higher silt loadings. In such cases, silt-bearing water will already have passed through stilling ponds prior to diffuse discharge to the vegetation filters via a level spreader 		
MM24	Stilling Ponds	EIAR Chapter 4	<ul style="list-style-type: none"> ➤ Stilling or settlement ponds will be used to attenuate runoff from works areas of the site of the Proposed Development during the construction phase and will remain in place to handle runoff from roads and hardstanding areas of the Proposed Development during the operational phase. The purpose of the stilling ponds is to intercept runoff potentially laden with sediment and to reduce the amount of sediment leaving the disturbed area by reducing runoff velocity. Reducing runoff velocity will allow larger particles to settle out in the stilling ponds, before the run-off water is redistributed as diffuse sheet flow in filter strips downgradient of any works areas ➤ Stilling ponds will be excavated/constructed to the appropriate size at each required location as shown on the drainage design drawings included in Appendix 4-4 of this document. The points at which water enters and exits the stilling ponds will be stabilised with rock aprons, which will trap sediment, dissipate the energy of the water flowing through the stilling pond system, and prevent erosion. The stilling ponds will reduce the velocity of flows in order to allow settlement of silt to occur. Water will flow out of the stilling pond through a stone dam, partially wrapped in geo-textile membrane, which will control flow velocities and trap any sediment that has not settled out ➤ Water will flow by gravity through the stilling pond system. The stilling ponds have been sized according to the size of the area they will be receiving water from and are large enough to accommodate a 10-year return rainfall event. The settlement ponds are designed for 11hr and 24hr retention times used to settle out medium silt (0.006mm) and 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>fine silt (0.004mm) respectively (EPA, 2006)¹. The stilling ponds will be dimensioned so that the length to width ratio will be greater than 2:1, where the length is the distance between the inlet and the outlet. Where ground conditions allow, stilling ponds will be constructed in a wedge shape, with the inlet located at the narrow end of the wedge. Each stilling pond will be a minimum of 1-1.5 metres in depth. Deeper ponds will be used to minimise the excavation area needed for the required volume</p> <ul style="list-style-type: none"> ➤ The embankment that forms the sloped sides of the stilling ponds will be stabilised with vegetated turves, which will have been removed during the excavation of the stilling ponds area ➤ Stilling ponds will be located towards the end of swales, close to where the water will be reconverted to diffuse sheet flow. Upon exiting the stilling pond system, water will be immediately reconverted to diffuse flow via a fan-shaped rock apron if there is adequate space and ground conditions allow. Otherwise, a swale will be used to carry water exiting the stilling pond system to a level spreader to reconvert the flow to diffuse sheet flow. ➤ A water level indicator such as a staff gauge will be installed in each stilling pond with marks to identify when sediment is at 10% of the stilling pond capacity. Sediment will be cleaned out of the still pond when it exceeds 10% of pond capacity. Stilling ponds will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows 		
MM25	Silt Bags	<p>ELAR Chapter 4</p> <p>CEMP Section 3</p>	<ul style="list-style-type: none"> ➤ The silt bag will allow the water to flow through the geotextile fabric and will trap any of the finer silt and sediment remaining in the water after it has gone through the previous drainage measures. ➤ The dewatering silt bag that will be used will be approximately 3 metres in width by 4.5 metres in length and will be capable of trapping approximately four tonnes of silt. 		

¹ Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006)

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM26	Siltbuster	EIAR Chapter 4	<ul style="list-style-type: none"> ➤ The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a Siltbuster-type concrete wash unit. ➤ The residual liquids and solids can be disposed of off-site at an appropriate waste facility. 		
MM27	Silt Fences	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the 50-metre buffer zone of a natural watercourse, which is inevitable where existing roads in proximity to watercourses are to be upgraded as part of the Proposed Development. Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading. The silt fence designs follow the technical guidance document 'Control of Water Pollution from Linear Construction Projects' published by CIRIA (Ciria, No. C648, 1996). Up to three silt fences may be deployed in series. ➤ On steeper slopes, silt fences, will be installed temporarily downgradient of the cable trench works area, or on the downhill slope below where excavated material is being temporarily stored to control run-off. ➤ Silt fences will require regular maintenance to ensure they continue to function effectively, and the Project Contractor is entirely responsible for this maintenance. 		
MM28	Hydrocarbon Interceptor	CEMP Section 3 EIAR Chapter 4	<ul style="list-style-type: none"> ➤ A hydrocarbon interceptor is a trap used to filter out hydrocarbons from surface water runoff. A suitably sized hydrocarbon interceptor will be installed wherever it is intended to store hydrocarbons and oils (i.e. construction compounds and substation compound) or where it is proposed to park vehicles during the construction and operational phases of the Proposed Development (i.e. construction compounds, substation compound and visitor car park). 		
MM29	Water Discharges	EIAR Chapter 4	<ul style="list-style-type: none"> ➤ There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		CEMP Section 3	appropriate distance from natural watercourse and lakes. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Development and are indicated on the drainage design drawings.		
MM30	Excavations	EIAR Chapter 4 CEMP	<ul style="list-style-type: none"> ➤ No excavations (e.g. drainage, peat cuttings) will be carried out within 5m distance of a completed floated access road edge, or at a distance determined following a site inspection. The presence of excavations can destabilise the road. Temporary excavations, where required, should be excavated in short lengths and backfilled as soon as practicable. ➤ Large excavations and movements of peat/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. <ul style="list-style-type: none"> ➤ Undercutting of slopes and unsupported excavations will be prevented. ➤ All necessary health and safety signage will be erected to warn of deep excavations etc. Access to and from excavated bases will be formed by excavating a pedestrian walkway to 1:12 grade. ➤ Tracked excavators will carry out excavation for roads with appropriate equipment attached. The excavations shall follow a logical route working away from the borrow pit location. Excavated material will be transported back to the borrow pit in haul trucks. A two to three-metre-wide working area will be required around each hardstanding area, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur. ➤ Soil excavation shall be observed by a qualified archaeologist in accordance with a scheme of archaeological monitoring to identify any significant remains as they come to light; 		
MM31	Spoil Management	EIAR Chapter 4	<ul style="list-style-type: none"> ➤ No excavated material will be removed from site with excavated spoil being transported and stored in the identified spoil management areas within the Wind Farm Site. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		Appendix 4-2 CEMP	<ul style="list-style-type: none"> ➤ It is proposed that any excess peat and spoil generated through construction activities, not used to reinstate the borrow pit will be used for landscaping, or be placed around selected turbines bases and hardstands. The areas around 11 no. turbine bases and hardstands have been assessed as suitable locations for peat and spoil placement due to suitable ground conditions including peat depths and slope angles. ➤ The rock buttresses will be constructed in stages to allow infilling of peat and spoil within cells. The buttress will be constructed of selected rock fill and placed and compacted in suitable layers to form a buttress of sufficient stability to retain the placed peat and spoil. ➤ The rock buttresses will be wide enough (up to 4m) to allow construction traffic access for tipping and grading during the placement of the excavated peat and spoil. The permanent side slopes of the rock buttress will be constructed at 40 to 60 degrees. ➤ Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/rock buttress, allowing the borrow pit to be developed and infilled in cells. The contractor excavating the rock will be required to develop the borrow pits in a way which will allow the excavated peat and spoil to be reinstated safely. ➤ A layer of geotextile will be placed on the inside face of the perimeter berm to act as a separator layer between the berm and the placed peat/spoil, to prevent the placed peat/spoil infilling any voids on the inside face of the berm, maintaining the permeability of the berm. ➤ The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required. ➤ The surface of the placed peat and spoil will be shaped following backfill using excavators to allow efficient run-off of surface water from the placed arisings towards the perimeter of the borrow pit. ➤ A layer of geogrid to strengthen the surface of the placed peat and spoil within the borrow pits will be required. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the peat and spoil within the borrow pits. ➤ Spoil materials will be side-cast along the access road section to embed the access roads into the surrounding environment where slope and ground conditions allow, limiting their ecological and environmental impact. 		
Operational Phase					
MM32	Drainage Maintenance	EIAR Chapter 4 CEMP Section 3	<ul style="list-style-type: none"> ➤ Some interceptor drains will be left in place, upgradient of the proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader. ➤ Swales/road side drains will remain in place to intercept and collect runoff from access roads and hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to stilling ponds for sediment settling; ➤ Check dams will be put in place at regular intervals along interceptor drains and swales/roadside drains in order to reduce flow velocities and therefore minimise erosion within the system during storm rainfall events; and, ➤ Stilling ponds/settlement ponds, emplaced downstream of swales and roadside drains, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses. The stilling ponds will be sized according to the size of the area they will be receiving water from, but will be sufficiently large to accommodate peak flows storm events. Inspection and maintenance of all settlement ponds, along with the entire drainage network, will be ongoing through the construction period. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM33	Collector/Swale Drains	EIAR Chapter 4 CEMP Section 3	<ul style="list-style-type: none"> Drainage swales (or collector drains) are shallow drains that will be used to intercept and collect run-off from construction areas of the site during the construction phase. Drainage swales will remain in place to collect runoff from roads and hardstanding areas of the Proposed Development during the operational phase. 		
Decommissioning Phase					
MM34	Decommissioning	EIAR Chapter 4	<ul style="list-style-type: none"> Prior to the end of the operational period the Decommissioning Plan (Appendix 4-5 of the EIAR) will be updated in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time. 		
MM35	Decommissioning	EIAR Chapter 4	<ul style="list-style-type: none"> Upon decommissioning of the Proposed Development, the wind turbines would be disassembled in reverse order to how they were erected. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in significant environment nuisances such as noise, dust and/or vibration. Site roadways will be left in situ, for future forestry operations and for local landowners to access their lands. Underground cables will be removed and the ducting left in place. 		
MM36	Decommissioning	EIAR Chapter 4 CEMP	<ul style="list-style-type: none"> The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential effects. 		
Chapter 5: Population and Human Health					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM37	Human Health	EIAR Chapter 5	Prior to the commencement of any works, the occupants of dwellings in the vicinity of the proposed works area will be contacted and the scheduling of the works will be made known. Local access to properties will also be maintained throughout any construction works.		
Construction Phase					
MM38	Land Use Patterns	EIAR Chapter 5	The existing land-use of wind energy, small-scale agriculture and farming practices will continue on the site in conjunction with the Proposed Development. The Proposed Development will have no effect on existing land-uses as it has been operating as a wind energy development since 2007 and has been co-existing with the other land uses. The section of the old N22 that is being assessed as part of the turbine delivery route will not change its land use, as it was previously in use as a National Primary Route, with minimal works being needed (temporary berm, fence and gate removal) needed to restore it to an area fit to accommodate the transfer of the turbine components from the SuperWing Carrier to the blade adapter trailer.		
MM39	Residential Amenity	EIAR Chapter 5, 10, 12, 15	<ul style="list-style-type: none"> ➤ All mitigation as outlined and in the corresponding chapters: Chapter 10 Air Quality, Chapter 12 Noise and Vibration, and Chapter 15 Material Assets will be implemented in order to reduce insofar as possible, impacts on residential amenity at properties located in the vicinity of Proposed Developments construction works. 		
MM40	Human Health	EIAR Chapter 5	<p>The Proposed Development will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including:</p> <ul style="list-style-type: none"> ➤ Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); ➤ Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), as amended; ➤ Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. 291 of 2013), as amended; and 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). ➤ During construction of the Proposed Development, all staff will be made aware of and adhere to the Health & Safety Authority’s ‘Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006’. This will encompass the use of all necessary Personal Protective Equipment, Risk Assessment and Method Statements and adherence to the site Health and Safety Plan. ➤ Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate health and safety signage will also be erected on this fencing and at locations around the site. ➤ The existing on site Coomagearlahy 110kV substation is currently a live node on the national electricity grid, and is connected to Clonkeen 110kV substation, approximately 6.07km to the north via an overhead electrical cable. It is intended that this cable will remain in place and no alterations will be made to it. Health and safety guidelines for working within and around electrical substations and underground cables will be adhered to on site. 		
MM41	Human Health	EIAR Chapter 5, 10	<ul style="list-style-type: none"> ➤ Proposed Development construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager produce and follow a site inspection and machinery checklist which will be followed and updated if/when required. ➤ All plant and materials vehicles shall be stored in dedicated areas (on-site). Machinery will be switched off when not in use. ➤ Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. Please see Chapter 15 Material Assets for details. ➤ All plant and materials vehicles shall be stored in dedicated areas (on-site). 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. ➤ The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the site. Therefore, all wastes streams generated onsite will be deposited into a single waste skip which will be covered. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF will be local to the site to reduce the emissions associated with vehicle movements. There are several licenced waste treatment facilities located outside of Killarney and Kenmare, approximately 14.2km northwest and 16km southwest respectively of the site. ➤ Aggregate materials for the construction of the Proposed Development infrastructure will be predominantly sourced onsite. ➤ Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff. ➤ All plant and materials vehicles shall be stored in dedicated areas within the site. ➤ Turbines and construction vehicles will be transported to the site on specified haul routes only. ➤ The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary. ➤ The roads adjacent to the site entrances will be checked weekly or damage/potholes and repaired as necessary. ➤ The transport of construction materials around the site from the nearby quarry facilities will be covered by tarpaulin where necessary. ➤ Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the volume of emissions associated with vehicle movements.</p> <ul style="list-style-type: none"> ➤ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-3). <p>The Proposed Development will be constructed in accordance with all relevant Health and Safety Legislation, including:</p> <ul style="list-style-type: none"> ➤ Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); ➤ Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), as amended; ➤ Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. 291 of 2013), as amended; and ➤ Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). 		
MM42	Human Health	Chapter 4, 5, 9	<ul style="list-style-type: none"> ➤ A bespoke drainage design which includes but is not limited to interceptor drains, check dams, swales and ponds will be implemented on the Site. ➤ Chapter 9 of the EIAR details all best practice and mitigation measures to minimise the potential for entrainment of suspended sediment or potential hydrocarbon leak 		
MM43	Human Health	Chapter 5, 12	<p>Good site practices will be implemented to minimise the likely effects. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will be employed onsite:</p> <ul style="list-style-type: none"> ➤ No plant used on site will be permitted to cause an on-going public nuisance due to noise. ➤ The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract. ➤ Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. ➤ Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use. ➤ Any plant, such as generators or pumps, which is required to operate outside of general construction hours will be surrounded by an acoustic enclosure or portable screen. ➤ During the course of the construction programme, supervision of the works will include ensuring compliance with the limits detailed in Chapter 11 using methods outlined in British Standard BS 5228-1:2014+A1:2019 Code of practice for noise and vibration control on construction and open sites – Noise. ➤ The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 7:00hrs and 19:00hrs Monday to Saturday. However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e. concrete pours, large turbine component delivery, rotor/blade lifting) it could occasionally be necessary to work out of these hours. <p>Rock Breaking Noise Emission Measures:</p> <ul style="list-style-type: none"> ➤ Fit suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency. ➤ Ensure all leaks in air lines are sealed. ➤ Use a dampened bit to eliminate ringing. ➤ Erect acoustic screen between compressor or generator and noise sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation. 		
MM44	Human Health	EIAR Chapter 5, 15	<ul style="list-style-type: none"> ➤ A complete Traffic and Transport Assessment (TTA) of the Proposed Project has been carried out by Alan Lipscombe Traffic and Transport Consultants. The full results of the TTA are presented in Section 15.1 of Chapter 15: Material Assets. ➤ Traffic management measures have been presented in this chapter which, if implemented, will minimise any potential effect on the local population during the construction phase of the Proposed Project due to traffic. ➤ Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be made known. Local access to properties will also be maintained throughout any construction works. 		
Operational Phase					
MM45	Human Health	EIAR Chapter 5	<ul style="list-style-type: none"> ➤ There are no turbines proposed in excess of 800m (4 x tip height) of any sensitive receptors. ➤ All mitigation as outlined under noise and vibration, dust, traffic, visual amenity and shadow flicker in this EIAR will be implemented in order to reduce insofar as possible effects on residential amenity at properties located in the vicinity of the Proposed Development. 		
MM46	Human Health	EIAR Chapter 5	<p>The Proposed Development will operate in accordance with all relevant Health and Safety Legislation, including:</p> <ul style="list-style-type: none"> ➤ Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); ➤ Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), as amended; ➤ Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. 291 of 2013), as amended; and 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). 		
MM47	Human Health	EIAR Chapter 5	<ul style="list-style-type: none"> ➤ It is Ørsted company policy that any person entering or leaving the site must first ring the NaturalPower phonenumber to log their presence on the site. All persons who intend to enter the site must also carry out a site induction and be the holder of a valid SafePass card. ➤ Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. ➤ Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed or are becoming hidden by vegetation or foliage, with prompt action taken as necessary. ➤ Signs will also be erected at suitable locations across the site as required for the ease and safety of operation of the Proposed Development. These signs include: <ul style="list-style-type: none"> ○ Buried cable route markers at 50m (maximum) intervals and change of cable route direction; ○ Directions to relevant turbines at junctions; ○ “No access to Unauthorised Personnel” at appropriate locations; ○ Speed limits signs at site entrance and junctions; ○ “Warning these Premises are alarmed” at appropriate locations; ○ “Danger HV” at appropriate locations; ○ “Warning – Keep clear of structures during electrical storms, high winds or ice conditions” at site entrance; ○ “No unauthorised vehicles beyond this point” at specific site entrances; and ○ Other operational signage required as per site-specific hazards. ➤ During the operation of the Proposed Development regular maintenance of the turbines will be carried out by the turbine manufacturer or appointed service company. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM48	Human Health	EIAR Chapter 5	<ul style="list-style-type: none"> ➤ An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the site, providing access for emergency services at all times. ➤ The components of a wind turbine are designed to last up to 35 years and are equipped with a number of safety devices to ensure safe operation during their lifetime. During the operation of the Proposed Development regular maintenance of the turbines will be carried out by the turbine manufacturer or appointed service company. A project or task specific Health and Safety Plan will be developed for these works in accordance with the site's health and safety requirements. 		
MM49	Human Health	EIAR Chapter 5, 9	<ul style="list-style-type: none"> ➤ The mitigation measures detailed in Chapter 9 Hydrology and Hydrogeology for felling, sediment control, hydrocarbons and control of cement-based products will ensure all surface water runoff and contaminated groundwater will be captured and treated prior to discharge/release. Please see Chapter 9 for details. 		
MM50	Shadow Flicker	EIAR Chapter 5	<ul style="list-style-type: none"> ➤ Assuming worst-case conditions, a total of 2 no properties may experience daily and/or annual shadow flicker occurrences and would therefore require mitigation to reduce this to less than 30 minutes per day, or less than 30 hours per year, as per the 2006 Wind Energy Guidelines (DoEHLG). However, both of these properties are participating landowners and therefore no mitigation is proposed. 		
Decommissioning Phase					
MM51	Human Health	EIAR Chapter 5	<ul style="list-style-type: none"> ➤ Any effect and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent, and the mitigation measures outlined above will be implemented during the decommissioning phase also. A Decommissioning Plan will be agreed with the local authorities three months prior to decommissioning the Proposed Development. The principles that will inform the 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			final decommissioning plan are contained in the Construction and Environmental Management Plan (CEMP) in Appendix 4-9.		
EIAR Chapter 6 Terrestrial Biodiversity					
Pre-construction					
MM52	Invasive Species Management	EIAR Chapter 6 CEMP Section 3	<ul style="list-style-type: none"> ➤ High impact invasive plant species Japanese Knotweed and Rhododendron have been recorded off-site in the wider local area. Both species represent a risk that machinery associated with tree felling and construction could act as a vector for introducing or dispersing non-native invasive species within the Proposed Development working areas (including intersecting watercourses) and to adjacent lands/ watercourses. ➤ Therefore, a baseline invasive species survey will be carried out at the site to identify the presence and location of any invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) by a suitably qualified ecologist. If the presence of such species is found at or adjacent to the site, particularly in areas where its excavation may be required, an invasive species management plan will be prepared for the site to prevent the introduction or spread of any invasive species within the footprint of the works. 		
MM53	Fauna	EIAR Chapter 6	<ul style="list-style-type: none"> ➤ A pre-construction mammal survey (including checks for non-volant mammals and passive/active bat surveys) will be carried out immediately before the commencement of vegetation clearance to ensure that there is no evidence of resting/breeding sites of protected mammal species in or directly adjacent to the works footprint. There are no known mammal resting/roosting or breeding sites which will be directly impacted by the Proposed Development. In the event that resting places of any protected mammal species are present the ECoW (or nominated specialist) will advise on the appropriate course of action. The ecologist will have ‘Stop Work’ authority and works will only proceed in the vicinity of the identified constraint in accordance with the advice of the ecologist and the relevant environmental legislation. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM54	Bats	EIAR Chapter 6	<ul style="list-style-type: none"> ➤ A core search radius of c. 50m radius from the turbine was decided upon following a review of the literature in chapter 6 for bat fatality monitoring. ➤ Felling is also carried out to reduce the likelihood of occurrence of bats in the immediate proximity of operational turbines. 		
MM55	Habitats	EIAR Chapter 6	<ul style="list-style-type: none"> ➤ From the outset an iterative process of constraints led design was employed for the Proposed Development whereby independent ecological expertise was utilised at an early design stage in identifying the constraints and designing the site layout to take account of these constraints. The siting of the turbines and associated infrastructure was informed by the environmental constraints. ➤ Bird Vantage Point surveys will be commenced ahead of the construction phase and continue throughout the construction phase. ➤ Mammals associated with aquatic habitats (e.g. Otter) in the wider area could potentially be subject to indirect negative impact through activities associated with the project, such as siltation, run-off and fuel spills. The design of the project (e.g. setback buffers from watercourses) has through iterative design minimised the risks of significant downstream effects on the local environment. Environmental controls and measures which minimise the occurrence of such impacts downstream of the site are outlined in Chapter 7, Aquatic Ecology. 		
MM56	Aquatic Ecology	EIAR Chapter 6, 7	<ul style="list-style-type: none"> ➤ Mammals associated with aquatic habitats (e.g. Otter) in the wider area could potentially be subject to indirect negative impact through activities associated with the project, such as siltation, run-off and fuel spills. The design of the project (e.g. setback buffers from watercourses) has through iterative design minimised the risks of significant downstream effects on the local environment. Environmental controls and measures which minimise the occurrence of such impacts downstream of the site are outlined in Chapter 7, Aquatic Ecology. 		
Construction Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM57	Designated Sites	EIAR Chapter 6	<ul style="list-style-type: none"> ➤ A suitably qualified ECoW will be appointed and will ensure the implementation and delivery of the mitigation strategy. ➤ A pre-construction survey will be carried out to confirm the presence/absence of Third Schedule Invasive plant species in or directly adjacent to the works footprint. In the event that any Third Schedule Invasive species are recorded in this area an Invasive Species Management Plan will be prepared by a suitably qualified ecologist. A suitably qualified specialist will be appointed if necessary to deliver any recommended control or eradication plans. The plan, if required, will be integrated into the contractor's CEMP. ➤ Due to the unavoidable disturbance to Kerry Slug habitat, a derogation license will be sought from the NPWS prior to the commencement of construction. Works will be carried out in compliance with any conditions set by such the license. To minimise effects on Kerry Slug areas of suitable habitat that occur outside of the footprint of the Proposed Development shall be avoided during the course of construction thereby minimising the loss and disturbance of Kerry Slug habitat. Immediately prior to undertaking works in areas of suitable habitat, the ECoW, or nominated specialist, will check for the presence of Kerry Slug. The preferred method shall be hand-searching. Should slugs be discovered then they will be transferred to suitable habitat identified outside of the works footprint. Throughout construction, monitoring of suitable habitat within works areas will continue using a combination of metric traps and regular hand-searching. Hand-searching will be undertaken during periods of wet weather when slugs are most active and feeding on the surface and therefore at greater risk of impacts e.g. from site traffic. ➤ Bird Vantage Point surveys will be commenced ahead of the construction phase and continue throughout the construction phase. No clearance of vegetation will be carried out in the bird breeding season (March to August inclusive). In the unlikely event that any nesting/roosting Hen Harrier are recorded within, or in the immediate vicinity of the works footprint works will only proceed in this area on the advice of the ECoW and in consultation with NPWS. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ A passive bat monitoring programme will be carried out at the site throughout the construction phase. Artificial lighting will be minimised throughout in order to minimise disruption of foraging and commuting routes for bats. 		
MM58	Habitats and Botanical Species	EIAR Chapter 6	<ul style="list-style-type: none"> ➤ No removal/clearance of habitats or movement of construction machinery will occur outside of the development works area/footprint during the construction phase, where the works area/footprint will be clearly marked for associated site staff. ➤ The construction of the Proposed Development will be implemented in accordance with the CEMP for the Proposed Development to ensure environmental protection of the site in accordance with best practice controls (e.g. CIRIA 2015; see Appendix 4.3). This will be effective in addressing potential indirect impacts on habitats and species such as those associated with dust emissions. All of the mitigation to protect water quality as outlined in Chapter 7, 9 and in the CEMP (Appendix 4.3) will be fully implemented. ➤ Prior to the development works, a survey by an appropriately experienced ecologist will be carried out to confirm the presence/absence and extent of Third Schedule Invasive plant species within or directly adjacent to the proposed works footprint. In the event that any Third Schedule Invasive species are recorded in this area an Invasive Management Plan will be prepared by a suitably qualified ecologist. A suitably qualified specialist will be appointed if necessary to deliver any recommended control or eradication plans. The plan, if required, will be integrated into the contractor's CEMP. <ul style="list-style-type: none"> ○ The contractor will refer to and implement the following, which provides detailed recommendations for the control of invasive species and noxious weeds: Chapter 7 and Appendix 3 of the TII Publication The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2008). ○ Maintaining site hygiene at all times in an area where invasive non-native species are present is essential to prevent further spread. The following site hygiene measures will be implemented onsite during 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>the construction and/or for maintenance works during the operational stage where applicable:</p> <ul style="list-style-type: none"> • Fence off the infested areas prior to and during construction works where possible in order to avoid spreading seeds or plant fragments around or off the construction site. • Clearly identify and mark out infested areas. Erect signs to inform Contractors of the risk. • Avoid if possible using machinery with tracks in infested areas. • Clearly identify and mark out areas where contaminated soil is to be stockpiled on site and cannot be within 75m of any watercourse or within a flood zone. • If soil/stone is imported to the site for landscaping, infilling or embankments, the contractor will gain documentation from suppliers stating that it is free from invasive species. • Ensure all site users are aware of measures to be taken and alert them to the presence of the Invasive Species Management Plan. • Erection of adequate site hygiene signage in relation to the management of non-native invasive material as appropriate. <p>➤ A peatland restoration plan has been developed and will be applied at a suitable location identified by Dr. John Conaghan, the botanical specialist (Appendix 6-5). The restoration area comprises a mix of open blanket bog areas with forest drains and small areas dominated by low-yielding/stunted conifers. The present ecological value of the plot is relatively low at present due to drainage, however there is good potential to increase the cover of bog vegetation, and especially <i>Sphagnum</i> mosses, by blocking the drains and felling conifers. These works will be carried out in parallel with the construction phase and under the supervision of ECoW (or nominated specialist). The blanket bog rehabilitation</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>plan for the Proposed Development will restore an area of former lowland blanket bog that has been damaged by drainage and afforestation. This will provide mitigation for the loss of blanket bog and heath habitat as a result of wind farm construction. The methodology described in the plan is based on similar bog projects which have been carried out successfully at various Coillte owned properties in Ireland (Coillte 2008, Mackin <i>et al.</i> 2017). The restoration area will be monitored for the lifetime of the wind project in accordance with the plan.</p>		
MM59	Mammals	ELAR Chapter 6	<ul style="list-style-type: none"> ➤ Construction operations will largely take place during the hours of daylight to minimise disturbances to nocturnal mammal species. Night-time lighting will be kept to a minimum. <ul style="list-style-type: none"> ○ All lighting systems will be designed to minimise nuisance through light spillage. Shielded, downward directed lighting will be used wherever possible and all non-essential lighting will be switched off during the hours of darkness. ➤ All edible and putrescible wastes will be stored and disposed of in an appropriate manner. Similarly, all construction materials will be stored and stockpiled according to the CEMP (Appendix 4.3) ➤ Any sightings of mammals on-site will be logged on the wildlife register. This includes any fatalities recorded during construction phase. ➤ Bat activity will be monitored at the site in the year(s) of construction with two active detector night-time surveys between May and October. Passive bat detectors will be deployed at several locations close to the construction footprint for the duration of the construction period to monitor the pattern of bat activity in the area throughout the tree felling and construction period. The locations chosen for the deployment of the passive detector(s) will include a number of locations at or adjacent to turbine locations and a number of other locations remote from turbines. These locations will be used for pre-, during- and post-construction bat activity monitoring. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ A fatality monitoring programme for birds and bats (using dog-based searches) will be implemented during the construction phase when the old turbines are being decommissioned and the new turbines and associated infrastructure installed. Monthly searches of turbine bases (where a turbine is present) and around met masts will be carried out throughout the construction phase with associated searcher efficiency and scavenger removal trials will also be included in the programme. A report will be prepared at the end of the construction phase and circulated for the information of the Planning Authority, Kerry County Council and NPWS. 		
MM60	Avifauna	EIAR Chapter 6	<p>During the construction phase there will be vegetation clearance and disturbance associated with movement of plant, materials and personnel. The mitigation as described below and in the accompanying CEMP (Appendix 4.3) will be implemented in full.</p> <ul style="list-style-type: none"> ➤ An appropriately qualified and experienced Ecological/Environmental Clerk of Works (ECoW) will be appointed to monitor the day-to-day construction activity and implementation of the environmental and ecological mitigation measures. <ul style="list-style-type: none"> ○ A Toolbox Talk will be prepared and incorporated as part of the construction phase site induction. A wildlife register will be maintained by the environmental site staff during the construction phase. Site staff will be encouraged to report any bird sightings of note made during the construction phase and this information will be logged by the environmental site staff. The site manager will continue to maintain a wildlife register throughout the operational phase. ➤ Construction operations will largely take place during the hours of daylight to minimise disturbances to roosting birds or any active crepuscular/nocturnal bird species. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ All lighting systems will be designed to minimise nuisance through light spillage. Shielded, downward directed lighting will be used wherever possible and all non-essential lighting will be switched off during the hours of darkness. ➤ All edible and putrescible wastes will be stored and disposed of in an appropriate manner. Similarly, all construction materials will be stored and stockpiled at prescribed locations and all waste materials will be disposed of to licensed facilities. ➤ Tree-felling and removal of mature vegetation will be undertaken outside of the bird breeding season (March 1st – August 31st). To avoid impacts on nesting birds and potentially small mammals all undisturbed works areas will be first checked by a suitably qualified ecologist to ensure that no protected species are present. ➤ Standard Vantage Point Monitoring in accordance with the Survey Methods for Use in Assessing the Impacts of Onshore Wind farms on Bird Communities (Scottish Natural Heritage, 2018) will be carried out during the construction year by competent experienced ornithologists. The survey shall cover the development footprint and all areas within 500m of the works. ➤ During the construction phase and in advance of the operation phase of the new turbines, a detailed White-tailed Eagle mitigation strategy will be implemented in accordance with that agreed with Kerry County Council as part of the Grousemount Planning Application, for the purpose of minimising the risk to White-tailed Eagles. The requirement to adhere to this strategy to prevent Eagle mortality is also referenced in Chapter 12 of the Kerry County Development Plan 2022 - 2028 (Section 12.5.4.1.4). An outline plan to minimise risk to White-tailed Eagles is presented in Appendix 6-9. A suitably qualified ornithologist will be appointed to develop and oversee the implementation of the plan which will include the following: <ul style="list-style-type: none"> ○ Meet with the key stakeholders including the White-tailed Eagle Reintroduction group, and NPWS. ○ Implement an annual monitoring and reporting approach in accordance with the agreed programme for Grousemount Wind Farm. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ○ Instigate regular checks, to ensure that no carrion is present within the wind farm site that could possibly serve as an attractant for feeding White-tailed Sea Eagles. Because dead sheep are likely to be the main source of carrion, effort will be concentrated during times when such death is most likely, i.e. seasonally and climatically. The final approach will be informed by the experience of the Grousemount strategy. ○ The birds most likely to access the wind farm site are young birds that have dispersed from the release, or nest sites. Funds for 10 GSM/GPS ‘satellite’ tags, including download costs (assuming each tag will last four years), will be transferred to the Reintroduction Programme prior to commencement of the wind farm’s operation in accordance with the agreed approach implemented for Grousemount Wind Farm. Responsibility for the tagging of birds will be handed to the Reintroduction Programme as was the case for Grousemount. <p>➤ A fatality monitoring programme for birds and bats (using dog-based searches) will be implemented during the construction phase when the old turbines are being removed and the new turbines and associated infrastructure installed. Monthly searches of turbine bases (where a turbine is present) and around met masts will be carried out throughout the construction phase with associated searcher efficiency and scavenger removal trials will also be included in the programme. A report will be prepared at the end of the construction phase and circulated for the information of the Planning Authority, Kerry County Council and NPWS.</p>		
MM61	Other Protected Taxa	EIAR Chapter 6, 7, 9	<p>➤ Areas where spoil is to be stored temporarily, or permanently, will be checked in advance for the presence of Frogs (and spawn). If protected species are present, the environmental staff will translocate these, if possible (under licence if applicable). The same measure will be applied for any drains or areas of standing water worked on, or forded by construction</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>machinery. These areas will be checked on an ongoing basis by the ECoW and any areas with breeding frogs, spawn or tadpoles will be mapped and if possible fenced off temporarily to allow Frogs to metamorphose. If such areas cannot be avoided by site traffic the environmental staff will translocate the frogs (adults/young) under licence if applicable.</p> <ul style="list-style-type: none"> ➤ An updated survey for adult Marsh Fritillary, <i>Euphydras aurinia</i>, will be carried out in the year of construction (May/June) ideally before construction commences. Locations with Devil's Bit Scabious within the site and along the turbine delivery and grid access route will be checked in September/October for the presence of larval webs. Marsh Fritillary butterfly is the only Irish insect listed under Annex II of the EU Habitats Directive. In the event that larval webs are recorded within the proposed works area, mitigation measures will follow best practice guidelines as outlined in the 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' (NRA, 2008). This could include (for instance) the implementation and monitoring of exclusion areas. ➤ If other taxa such as other species of Lepidoptera, Common Lizard etc. are recorded within or adjacent to the works footprint, these sightings will be logged on the wildlife register. 		
Operational Phase					
MM62	Designated Sites	ELAR Chapter 6	<ul style="list-style-type: none"> ➤ Bat activity will be monitored at the site for the first three years of operation using passive detector deployment at the same locations used to monitor activity in the construction phase. Annual reports on the occurrence and activity of Lesser Horseshoe Bat and other bats species detected will be prepared and submitted for the information of the Planning Authority, Kerry County Council and NPWS. ➤ As a precautionary mitigation measure, in addition to the creation of buffers between the proposed turbines and surrounding vegetation reduced rotation speed will be implemented when turbines are idling. Automatic 'feathering' of idling blades will be implemented (through SCADA) to reduce rotation speed of blades to below 2 RPM while 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>idling. Feathering blades has been shown to be effective in reducing fatality rates of bats by up to 50% and does not result in a significant loss of energy output (SNH, 2019).</p> <ul style="list-style-type: none"> ➤ Vantage Point surveys (breeding and winter) will be carried out at the operational site in years 1, 2, 3, 5, 10 and 15 in accordance with guidance (e.g. SNH, 2009). Reports will be prepared and submitted for the information of the Planning Authority, Kerry County Council and NPWS. ➤ The fatality monitoring programme for birds and bats (using dog-based searches) instigated in the construction phase will be continued for the first three years of operation. Monthly searches of turbine bases and met mast will be carried out along with associated searcher efficiency and scavenger removal trials. An annual report will be prepared detailing the results of the fatality monitoring and circulated for the information of the Planning Authority, Kerry County Council and NPWS. 		
MM63	Habitats and Botanical Species	Chapter 6 Appendix 6-5	<ul style="list-style-type: none"> ➤ The peatland restoration plan (Appendix 6-5) will be monitored annually in years 1, 2 and 3 and at five-year intervals thereafter for the lifetime of the wind farm. Status reports will be prepared and any recommendations for additional management presented in these reports will be implemented according to the advice of the habitat specialist. The reports will be provided for the information of the Planning Authority, Kerry County Council and NPWS. <ul style="list-style-type: none"> ➤ The restoration plan will also include monitoring of the restored borrow pit and decommissioned turbine bases, hard stands and access tracks. ➤ The presence of any Third Schedule Invasive plant species in the development area will be noted and advice provided on appropriate control/eradication options. 		
MM64	Mammals	EIAR Chapter 6	<ul style="list-style-type: none"> ➤ Bat activity will be monitored at the site for the first three years of operation using passive detector deployment at the same locations used to monitor activity in the construction phase. Annual reports on the occurrence and activity of Lesser Horseshoe Bat and other 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>bats species detected will be prepared and submitted for the information of the Planning Authority, Kerry County Council and NPWS.</p> <ul style="list-style-type: none"> ○ As a precautionary mitigation measure, in addition to the creation of buffers between the proposed turbines and surrounding vegetation reduced rotation speed will be implemented when turbines are idling. Automatic ‘feathering’ of idling blades will be implemented (through SCADA) to reduce rotation speed of blades to below 2 RPM while idling. Feathering blades has been shown to be effective in reducing fatality rates of bats by up to 50% and does not result in a significant loss of energy output (SNH, 2019). <p>➤ The fatality monitoring programme for birds and bats (using dog-based searches) instigated in the construction phase will be continued for the first three years of operation. Monthly searches of turbine bases and met mast will be carried out along with associated searcher efficiency and scavenger removal trials. An annual report will be prepared detailing the results of the fatality monitoring and circulated for the information of the Planning Authority, Kerry County Council and NPWS.</p> <p>➤ All lighting systems at the site, including at the entrance and around the substation will be designed to minimise nuisance through light spillage. Shielded, downward directed lighting will be used wherever possible and all non-essential lighting will be switched off during the hours of darkness.</p> <p>➤ All edible and putrescible wastes will be stored and disposed of in an appropriate manner.</p> <p>➤ Any sightings of mammals on-site will be logged on the wildlife register – these logs will be maintained by the site manager and available for inspection at the site office/substation. Any records of mammal fatalities within the wind farm site and along the access track from Cloonkeen will be logged and photographed.</p>		
MM65	Avifauna	EIAR Chapter 6	<p>➤ Vantage Point surveys (breeding and winter) will be carried out at the operational site in years 1, 2, 3, 5, 10 and 15 in accordance with guidance (e.g. SNH, 2009). Reports will be</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>prepared and submitted for the information of the Planning Authority, Kerry County Council and NPWS.</p> <ul style="list-style-type: none"> ➤ The fatality monitoring programme for birds and bats (using dog-based searches) instigated in the construction phase will be continued for the first three years of operation. Monthly searches of turbine bases and met mast will be carried out along with associated searcher efficiency and scavenger removal trials. An annual report will be prepared detailing the results of the fatality monitoring and circulated for the information of the Planning Authority, Kerry County Council and NPWS. ➤ The White-tailed Eagle mitigation strategy will continue to be implemented as described in Section 6.6.1.4 and Appendix 6-9. A suitably qualified ornithologist will be appointed to oversee the implementation of the plan and prepare annual reports. <ul style="list-style-type: none"> ○ The ‘tags’ will provide accurate data on numerous locations per day, providing rapid detection of any regular use of the wind farm site by White-tailed Eagle(s) and enable the Site Manager to focus visual observational efforts (and to investigate any possible cause of regular use e.g. presence of a carcass) before any activity builds to a level where collision risk becomes unacceptable. The Site Manager will be responsible for managing and implementing a potential turbine shut-down system, which will be informed by the following: <ul style="list-style-type: none"> ○ Any sightings and information from third parties, notably the Reintroduction Programme and information on tagged individuals ○ Based on these information sources, thresholds and a protocol for instigating a shut-down (turbine numbers, locations and stop duration) will be agreed with NPWS and/or the White-tailed Eagle Reintroduction Programme in accordance with the measures agreed at Grousemount Wind Farm prior to the operation of the new turbines. ○ The proposed mitigation strategy measures for White-tailed Eagle will be applied initially for the first five years of operation. A review 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>will be conducted after five years, including consultation with stakeholders, to consider if these, or other additional measures should continue to be applied for the remainder of the lifetime of the wind farm. A review report with recommendations will be prepared by a suitably qualified ornithologist with actionable recommendations fully implemented.</p> <p>➤ The installation of warning lights on turbines can help to increase their visibility, and thereby reduce the risk of bird collision. A number of the turbines will be fitted with aviation warning lights in accordance with the requirements of the Irish Aviation Authority in advance of project construction.</p>		
MM66	Other Protected Taxa	ELAR Chapter 6	<p>➤ A Kerry Slug survey will be carried out in the first year of operation including in areas which have been translocated and a report of the survey results will be prepared for the information of the Planning Authority, Kerry County Council and NPWS.</p> <p>➤ Casual sightings of rare or protected invertebrates, amphibians etc. made in the course of operational phase ecological monitoring will be recorded and if appropriate this information will be submitted to the National Biodiversity Data Centre.</p>		
Decommissioning Phase					
MM67	decommissioning	ELAR Chapter 6 Appendix 4-7	<p>The final decommissioning of the Proposed Development will be carried out according to a decommissioning plan (Appendix 4-7).</p> <p>➤ The potential for impacts during decommissioning are similar in nature, if not in scope, to those assessed for the initial decommissioning and construction phase. All decommissioning works will be governed by the same requirements to control run-off or potential pollution to watercourses as have been implemented during the construction phase.</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The site compound will need to conform to the construction phase mitigation measures including those related to lighting design and proper treatment of edible and putrescible wastes. All plant removed during decommissioning of the site will be re-used at other wind farm sites whenever possible. All remaining materials which cannot be re-used will be recycled. This is likely to include scrap metal, plastic and other waste materials. Any materials which cannot be re-used or recycled will be disposed of by an appropriately licenced contractor in the most environmentally appropriate manner available at the time of the decommissioning by an appropriately licenced contractor. ➤ Following reinstatement, the site will be monitored to determine the progress of revegetation and if necessary to examine the need for supplementary planting with native species. A full site survey by a habitat specialist will be carried out at the end of Year 1 to assess the progression of the restoration and revegetation of the decommissioned areas and to capture photographic evidence of the site vegetation status, drainage management and general site appearance at the end of Year 1. 		
ELAR Chapter 7 Aquatic Ecology					
Pre-Construction Phase					
MM68	Felling		<ul style="list-style-type: none"> ➤ A detailed and comprehensive pre-felling pre-commencement confirmatory audit of the minor drainage channels within the proposed felling areas and their proposed access routes will be jointly undertaken by the forestry harvesting Site Manager and the ECoW. This will identify all 'aquatic zones' and 'relevant watercourses' / drains (as specified in 		

²**Aquatic zone:** Any natural river, stream or lake (but not an artificial drain) illustrated on an Ordnance Survey 6

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			the Felling Standards (DAFM (2019)). Areas of very wet ground (“hotspots”) will also be earmarked as exclusion zones as these could become damaged by machine tracking and/or become preferential surface run-off conduits following the felling. The audit will establish where silt traps and/or flow control measures will be placed to maximise on-site attenuation of sediment.		
MM69	Water Exclusion Zones	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ Before operations commence, a 10 m wide exclusion zone will be identified along the edge of all aquatic zones and hotspots, and this will be marked clearly on a site map. ➤ All operators will be made aware of the exclusion zone and its purpose, through the pre-commencement awareness process and throughout operations. 		
MM70	Silt & Sediment	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ Prior to the commencement of operations, silt traps will be installed within existing forest drains that connect with aquatic zones, either directly or indirect via relevant watercourses. 		
MM71	Earthworks- General Sediment Control Measures	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ A detailed and comprehensive pre-commencement confirmatory audit of the existing road drainage features will be undertaken by the contractor and ECoW to identify areas where existing and additional run-off control features will be installed and/or improved in compliance with the detailed drainage design accompanying this application. This applies to the Proposed Development site and the site access road. There are numerous unmapped, small forestry and existing roadside drains that will require sediment run-off control features during the construction phase and these will all be subject to run-off control features including cut-off drains, check-dams, silt fencing and settlement pond installation. 		
Construction Phase					

inch map.

Relevant watercourse: Any other watercourse that has the potential to act as a pathway for the movement of significant amounts of sediment and/or nutrients from the site to an aquatic zone. Relevant watercourses are existing drains and channels that may contain flowing water during and immediately after rainfall

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM72	Tree Felling	EIAR Chapter 7 Appendix 4-2	<p>Tree felling will be the subject of a Felling Licence from the Forest Service and will be in accordance with the conditions of such a licence. The following Guidelines & Standards apply and will be complied with during felling operations:</p> <ul style="list-style-type: none"> ➤ Forestry & Water Quality Guidelines (DAFM, 2000a) ➤ Forest Harvesting & the Environment Guidelines (DAFM, 2000b) ➤ Standards for Felling and Reafforestation (DAFM, 2019) <p>The appointed qualified and experienced ECoW (see Section 4.1.2 of the CEMP, Appendix 4.2) will ensure all felling related water quality protection guidelines and standards are complied with during the pre-commencement and felling operation phases.</p> <p>The ECoW will carry out daily visual checks of all measures employed to avoid or reduce impact of forestry residues, erosion, including inspections of temporary drainage infrastructure (e.g., drain crossings), silt control measures, extraction routes and log storage areas.</p>		
MM73	Water Exclusion Zones	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ All operators will be made aware of the exclusion zone and its purpose, through the pre-commencement awareness process and throughout operations. ➤ Machine traffic and timber stacking are not permitted within exclusion zones. ➤ Trees within the reach of the harvester arm will be felled by harvester and stacked outside the exclusion zone. ➤ Trees outside machine reach will be felled manually by chainsaw operators. Felled trees will be winched out of the exclusion zone where it is appropriate and safe to do so, or removed by extended harvester arm, for subsequent sending and processing outside the exclusion zone. ➤ In all cases, trees will be felled away from the water feature. ➤ Regarding aquatic zones, watercourse banks must not be disturbed. No branches or debris will be allowed to enter the aquatic zone during operations. Any branches that do fall in will immediately and with care be removed. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The accumulation of brush, logs and debris in on-site drains and any aquatic zones will be prevented. 		
MM74	Silt & Sediment Control	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ Silt traps will be staggered along the length of the drain, and not only at the lower reaches towards its outflow. ➤ Silt trap designs will include log sections laid lengthways into the drain and/or the use of staked geotextile barriers. ➤ Silt fences will be installed where necessary, to block pathways for silt escapement where overland flow is possible. ➤ Once silt traps and silt fences become functional, they will be checked a minimum of twice weekly and maintained / repaired, as necessary, in order to ensure continued effectiveness throughout felling operations. ➤ Drainage channels which by-pass the vegetated buffer zone and provide direct connection between the felling area and the stream need to be intermittently blocked with staked plastic sheet pile to minimise the risk of silt and nutrient run-off into the receiving waters. ➤ Extraction and haul routes must be confined to the driest areas of the site and routed in order to minimise the amount of trafficking around the site. Wherever possible, low load bearing harvesters and forwarding machinery will be used. Thick brash mats will be used and maintained and will be removed once felling is complete. At no time will brash be allowed to accumulate in drains, no matter how small. If brash has to be stockpiled it will be in dry areas as far from drainage as possible. 		
MM75	Temporary Water Crossings	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ Direct crossing over stream beds will not be permitted. ➤ Crossing of on-site forest drains / 'relevant watercourses' and aquatic zones will be avoided. ➤ The crossing of drains during felling and extraction will be minimised, and machine activity will be restricted to brashed extraction racks and haulage routes. ➤ Where a drain crossing is needed, a method will be selected that prevents the breakdown and erosion of drain sides. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ For larger drain crossings, i.e., those with standing water or obvious water flow, a heavy-duty plastic culvert will be deployed lengthways into the channel and covered with brash material. ➤ For smaller drain crossings, i.e., those that have no standing water and are generally dry, log sections will be temporarily laid lengthways into the channel and overlaid with brash. ➤ When installing and removing the temporary crossings, it will be ensured that no additional work is carried out within the aquatic zone, and that the upstream 		
MM76	Earthworks General Sediment Control	ELAR Chapter 7, 9 Appendix 4-2	<ul style="list-style-type: none"> ➤ Overarching water quality protection measures and site-specific drainage design will be adhered to, as detailed in Chapter 9: Water, Section 9.5 and amalgamated into the CEMP. ➤ Tracking or fording across the exclusion zone or watercourse streambeds is prohibited – the existing crossing points on access tracks will be used. ➤ Topsoil stripping in proximity to any watercourses will be undertaken in dry weather conditions and any spoil stockpiles must be located greater than 50m from a watercourse, and/or at least 10m away from a non-flowing drain, surrounded with double lines of geotextile silt fencing to prevent escapement of suspended solids. ➤ Prior to the commencement of operations, silt traps and check-dams will be installed within existing swales / drains that connect with watercourses, either directly or indirectly via other drains. ➤ Silt traps will be staggered along the length of swales / drains, and not only at the lower reaches towards the outflow to watercourses. ➤ Silt fences will be installed where necessary, to intercept pathways for silt runoff where overland flow towards watercourses is possible. ➤ Attenuation / settlement ponds will be installed as specified in the site drainage plan on downslopes of new internal access track constructions in areas where it is difficult to control run-off, i.e., where there is steep topography. ➤ Once check-dams, attenuation / settlement ponds, silt traps and silt fences are installed and works commence, they will be checked a minimum of twice weekly and maintained as necessary, in order to ensure continued effectiveness throughout earthworks and excavation operations. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Crushed rock for track resurfacing should be locally sourced with low limestone content to limit potential for pH changes linked to sediment washout to watercourses and downstream fisheries habitats. ➤ The qualified, experienced Environmental Clerk of Works (ECoW) will be responsible for daily, weekly and monthly checks that ensure all water quality protection measures and guidelines are complied with during the pre-commencement and active earthworks / excavations period of the construction phase. The ECoW will carry out daily visual checks of all measures employed to control, avoid or reduce export of suspended solids and sediment from active earthworks areas. 		
MM77	Earthworks- New and Upgraded Roads	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ Regarding internal access track upgrades, there will be limited, if any “cleaning” of existing vegetation of any existing drains, swales or ponds, as their vegetated state reduces run-off velocity and prevents scour / erosion, contributing to avoidance and reduction of solids export through scour protection, retention and attenuation function. In place where it’s not possible to retain full lengths of existing swale / drain vegetation – then intermittent lengths of existing vegetation will be marked out and retained, supplemented by check dams, until after the bulk of access track upgrade works are complete. Freshly “cleaned” or excavated swales / drains will have intermittent, well-constructed check-dams installed along the length - comprised of gravel mounds and staked geotextile dams. Check-dams will then become permanent features of the swale, helping to manage run-off velocities during the operation phase. 		
MM78	Earthworks- Borrow Pit	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ The relatively low gradient topography and contained nature of the proposed borrow pit location (set into the hillside) means there is good opportunity to implement silt and sediment controls on hydrological pathways that will avoid and minimise potential for excessive suspended solids loads to reach the Thureehouma stream in the first place. The approach to dirty water management at the borrow pit will be to maintain a “containment area”, e.g., through use of silt fencing and/or bunds that prevent run-off along preferential flow paths. A series of gravel and/or staked geotextile check dams will be installed along the main preferential flow path exiting the borrow pit area. Temporary 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			attenuation/settlement ponds will be installed downslope from the borrow pit on surface water run-off flow paths.		
MM79	Earthworks- Cable Trenching	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ All trenching works will be undertaken using a cut and fill procedure to ensure that only short sections of the trench (≤50m) are open at any time. The trench construction reaches will be limited to lengths that can be trenched, ducted and back-filled within the same work day. ➤ There will be no discharge of silt contaminated pump-out water directly to on-site drains or watercourses. Any silt contaminated water which gathers in an excavated trench will be collected and treated appropriately using Best Practice methods (e.g., silt bags, settlement systems) before being discharged. Treated water will be discharged across vegetated land to drain slowly into any nearby drain or watercourse. ➤ Any freshly excavated spoil will be retained in an area over 10m away from any drain or watercourse until such time as the trench is refilled. The spoil heap will be located on either a well vegetated area surrounded by silt fencing or with the use of containment measures (geotextile mat or bag) and covered to reduce potential for sediment wash out. A ready supply of these materials will be onsite to deal with such eventualities. Spoil heaps are unlikely to accumulate because trenches will be immediately back filled following ducting installation. ➤ At the watercourse crossings, a method of water management such as dam and pump over will be used to create a short, dry working area for cable-trenching. There is no fisheries significance at these upper headwater locations and hence no requirement for fish removal. Stony stream bed substrates will be removed and stockpiled immediately nearby, and these will be reused for reinstatement of streambed and banks to pre-existing condition once the trench is backfilled. Any additional stony streambed reinstatement material will be of a locally sourced type (e.g., from the borrow pit). 		
MM80	Watercourse Crossings	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ Overarching water quality protection measures and site-specific drainage design will be adhered to. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Sediment Control		<ul style="list-style-type: none"> ➤ All general sediment control measures will be adhered to, as well as specific measures set out below. Measures relating to Culvert Upgrades - Instream Works: ➤ Instream works may only occur during the period July to September (of any year). ➤ Culverts will be subject to Section 50 consent (Arterial Drainage Act 10945), being no less than 900mm in diameter, allowing for a minimum 300mm embed below existing bed level and meeting hydraulic design standards, i.e., capable of passing a fluvial flood flow with a 1% annual exceedance probability (AEP) or 1 in 100 year flow without significantly changing the hydraulic characteristics of the watercourse. ➤ Culvert upgrades will utilise pre-cast concrete components to eliminate risk of wet cement wash-out. ➤ Although there is no fisheries significance in the upper Roughy or Flesk tributaries, IFI must be provided with details of the construction methodology (following planning permission) for the 1no. culvert installation in the Lettercannon headwater and the culvert extension at the Flesk tributary (Site F4). Following agreement of the construction method, IFI must also be notified prior to instream works commencing. ➤ A method of water management such as dam and pump over will be used to create a dry working area for instream culvert installation or upgrade work. ➤ Pumps will remain on-hand to remove ingress water through dams and from groundwater sources. Pump-out water will be extracted from a sunken, gravelled sump area within the 'dry' work area and discharged over 20m away from the stream onto an area of low gradient, rough vegetation surrounded with a double line of silt fencing. ➤ There is no fisheries significance at the upper headwater culvert locations in the Roughy or the Flesk sub-catchment and hence no requirement for fish removal. ➤ The ECoW must be on hand when each channel is dewatered to ensure that all water management, pump-over, pump-out and sediment containment measures are operating effectively to prevent export of solids (and other pollutants) from the works area. ➤ Stony stream bed substrates will be removed locally and stockpiled immediately nearby, and these will be reused for reinstatement of streambed and banks to pre-existing 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>condition once the trench is backfilled. Additional stony streambed reinstatement material will be of a locally sourced type (e.g., from the borrow pit).</p> <p>➤ Stream bed and banks will have rock armour installed to prevent scour upstream and downstream ends of the upgraded culverts. These are steep, step-pool type watercourses and rock armour will be installed as appropriate to restore the pre-existing channel gradient.</p>		
MM81	Concrete	Chapter 7, 9	<p>➤ The possibility of spillage can be mitigated largely through avoidance using the best practice in construction management, noting that all major infrastructure, e.g., proposed new foundations/ hardstandings, are located a minimum of 50m from watercourses, hence the overall risk of cement toxicity to downstream salmonids and pearl mussel is very low..</p>		
MM82	Hydrocarbons	Chapter 7,9	<p>➤ Loss of hydrocarbons during the construction phase can be avoided and prevented by best practice in terms of site layout including fuel storage and best practice construction management. All of these possibilities can and will be mitigated primarily by avoidance using the best practice in construction site layout and construction management meaning the overall risk is very low.</p>		
Operational Phase					
MM83	Degradation of Water Quality	EIAR Chapter 7,9	<p>➤ The site-specific drainage design will be implemented in full. This has been designed to significantly increase the level of on-site attenuation to what currently exists including the use of new silt traps, settlement ponds and vegetated buffer areas prior to discharge to the existing site drainage network.</p> <p>➤ During the operational phase, access tracks will be inspected routinely to ensure no significant rutting or erosion is occurring. Such inspections will be carried out a minimum of twice per annum, timed to allow for any repairs prior to the winter season (e.g., August/September) and again in the spring (e.g., March/April) to repair any winter period damage.</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Culverts will be inspected on the same schedule as tracks and cleared of any debris that could cause blockage and localised erosion. ➤ Any areas of obvious road erosion / rutting that are potential sediment loss sources will be repaired as soon as they are identified using clean, locally sourced hardcore with a low fine content. These can be recorded during routine site visits over the operational phase. ➤ Track-side drains will be allowed to retain re-grown wet grassland / heath vegetation and aquatic macrophytes throughout the operational phase, as these naturally contribute to on-site attenuation by slowing water velocity and trapping/filtering sediment within trackside drainage in advance of entry to watercourses. ➤ No refuelling or other hydrocarbon related usage will be undertaken within 50m of any watercourse in relation to maintenance vehicles, plant or machinery. 		
Decommissioning Phase					
MM84	Decommissioning Phase	EIAR Chapter 7	➤ Mitigation as set out in MM72-MM82, above.		
EIAR Chapter 8 Land, Soils and Geology					
Pre-Construction Phase					
MM85	Peat Stability Assessment	EIAR Chapter 8 Appendix 8-1	<ul style="list-style-type: none"> ➤ An iterative design process involving multiple stages of ground investigations, followed by turbine and infrastructure design has been completed to ensure the areas with optimum ground conditions have been selected. <p><u>Mitigation by Design:</u></p> <ul style="list-style-type: none"> ➤ Where existing electrical onsite cabling is direct buried within peat, this will be left in-situ, cut, and tied. No excavations will be completed. Where cables have been ducted, the cable will be snipped at both ends and pulled from the ducting. The 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			ducting will remain in situ. Therefore, there will be no disturbance to the peat and subsoils associated with the decommissioning of the existing internal cabling;		
Construction Phase					
MM86	Removal of the Existing Kilgarvan Wind Farm on Land Peat/ Subsoils	EIAR Chapter 8	<ul style="list-style-type: none"> ➤ The Proposed Development layout has been designed to make use of as much of the existing infrastructure as possible, i.e., hardstands, site access roads, the existing substation and overhead grid connection. The integration of the existing wind farm layout and associated infrastructure into the Proposed Development will minimise the disturbance to the peat and subsoils. ➤ The natural revegetation of existing ancillary infrastructure will have a long-term positive effect on the land environment and no specific mitigation measures are required. <p><u>Mitigation by Design:</u></p> <ul style="list-style-type: none"> ➤ Where existing electrical onsite cabling is direct buried within peat, this will be left in situ, cut, and tied. No excavations will be completed. Where cables have been ducted, the cable will be snipped at both ends and pulled from the ducting. The ducting will remain in situ. Therefore, there will be no disturbance to the peat and subsoils associated with the decommissioning of the existing internal cabling; 		
MM87	Effects on Land-Take	EIAR Chapter 8	<ul style="list-style-type: none"> ➤ The Proposed Development layout has used the Existing Kilgarvan Wind Farm site layout as much as possible in order to minimise potential effects to land (land-take). This has reduced the area of the site which will be altered from existing forestry and peat bogs to site access roads and/or hardstands. ➤ The loss of ~8.9ha of forestry and ~2.8ha of upland bog will not have a significant impact on soils/land at the Proposed Development site. Following the construction phase these areas of the site will be replaced by hardstand areas. This represents a change in landcover of ~2% of the total Proposed Development site (~775ha). Therefore, the effects of peat bog 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			land loss and commercial forestry land loss within the Proposed Development site is negligible.		
MM88	Peat and Bedrock Excavation	EIAR Chapter 8	<p><u>Mitigation by Avoidance:</u></p> <p>The Proposed Development layout has used the Existing Kilgarvan Wind Farm site layout as much as possible in order to minimise the requirement for peat and bedrock excavation.</p> <p><u>Mitigation by Design:</u></p> <ul style="list-style-type: none"> ➤ Placement of turbines and associated infrastructure in areas with shallower peat; ➤ The peat and subsoil which will be removed during the construction phase will be localised to the wind farm infrastructure turbine location, substation and temporary compounds and access roads; ➤ The Proposed Development has been designed to avoid sensitive habitats within the application area; ➤ A minimal volume of peat, subsoil and rock will be excavated and removed to allow for infrastructure works to take place in comparison to the total volume of these materials present on the site due to optimisation of the Proposed Development design; ➤ In general, excavated peat and spoil will be moved short distances from the point of excavation and will be used for landscaping or stored in the onsite borrow pit; and, ➤ Construction of settlement ponds will be volume neutral, and all excess material will be used locally to form pond bunds and surrounding landscaping. 		
MM89	Extension, Excavation and	EIAR Chapter 8	The proposed borrow pit location has been chosen to minimise potential effects on the soils and geological environment. The proposed borrow pit constitutes an extension to the existing borrow pit which was used to facilitate the construction of the Proposed Development. The		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Reinstatement of the Borrow Pit		<p>existing borrow pit is located in the Gun Point Formation and is overlain by small volumes of peat, therefore reducing the volumes of peat which will require excavation and storage elsewhere in the Proposed Development Site.</p> <p>The Peat and Spoil Management Plan attached as Appendix 4-2 sets out the guidelines for the construction and reinstatement of the on-site borrow pit. Upon the removal of the required volumes of material (for the construction of the infrastructure elements at the wind farm) from the borrow pit it is proposed to reinstate the pit using excavated peat. The borrow pit is designed and will be constructed in a way which will allow the excavated peat and spoil to be placed safely, with areas within the borrow pit designated for the storage of excavated peat. Other mitigation measures included in the design of the borrow pit are as follows:</p> <ul style="list-style-type: none"> ➤ Excavation works will be undertaken and supervised by an experienced contractor and suitably qualified personnel; ➤ Rock will be removed by either breaking or blasting and will be determined by confirmatory ground investigations comprising of rotary core drilling; ➤ The borrow pit will be developed with stable ground inclinations; ➤ Exposed slopes will be left with irregular faces to promote re-vegetation; ➤ The stability of the rock faces will be inspected by the Project Geotechnical Engineer upon excavation to ensure stability; ➤ Rock buttresses will be constructed within the borrow pit to help retain placed peat and spoil. The founding stratum for each buttress will be inspected and approved by the Project Geotechnical Engineer; ➤ Infilling of peat and spoil should commence at the back of the borrow pit and progress towards the pit entrance. <p>No other specific mitigation measures are required as the excavation of bedrock to provide material for the construction phase is seen as an acceptable part of the Proposed Development.</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM90	Proposed Substation Upgrade & Contamination of Soil by leakages, Spillages, and Alteration of Peat/ Soil Geochemistry	ELAR Chapter 8 Appendix 4-3	<ul style="list-style-type: none"> ➤ On-site re-fuelling will be undertaken using a double skinned bowser with spill kits kept on site for accidental leakages or spillages; ➤ Only designated trained operatives will be authorised to refuel plant on-site. ➤ Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system; ➤ Fuels stored on-site will be minimised. All storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area; ➤ Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage; ➤ The electrical control building (at the existing onsite 110kV Coomagearlahy substation) will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; ➤ The plant used during construction will be regularly inspected for leaks and fitness for purpose; and, ➤ An emergency response plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan 		
MM91	Erosion of Exposed Subsoils and Peat During Construction of Infrastructure	ELAR Chapter 8	<ul style="list-style-type: none"> ➤ Peat removed from the development locations will be reinstated within the Proposed Development site (~24,330m³ of peat will be used for landscaping at turbine locations, along site roads and at construction compound locations; ~7,880m³ of peat will be used in the reinstatement of existing hardstand areas to be decommissioned; and, ~38,880m³ of peat will be used to reinstate the borrow pit); ➤ Where possible, the upper vegetative layer (where still present) will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the stored peat within the peat storage areas; ➤ Re-seeding and spreading/planting will also be carried out in these areas; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Brush/bog mats will be put in place to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur 		
MM92	Erosion of Exposed Soils/Subsoils and Peat During Tree Felling	EIAR Chapter 8	<ul style="list-style-type: none"> ➤ Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff; ➤ The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ➤ All machinery will be operated by suitably qualified personnel; ➤ These machines will traverse the site along specified off-road routes (referred to as racks); ➤ Brush mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur; ➤ As felling progresses, the harvester will collect brush produced by the felling and place it in front of the machine before it advances forward along the rack; ➤ The condition of the racks will be continually monitored and fresh brush will be applied when the brush mat becomes heavily used and worn, ensuring that the mat remains effective throughout the operational phase; and, ➤ The location of racks will be chosen to avoid wet and potentially sensitive areas. 		
MM93	Peat Instability & Failure	EIAR Chapter 8 Appendix 8-1	<ul style="list-style-type: none"> ➤ Appointment of experienced and competent contractors; ➤ The site will be supervised by experienced and qualified personnel; ➤ Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a localised peat movement); ➤ Prevent undercutting of slopes and unsupported excavations; ➤ Maintain a managed robust drainage system; ➤ Prevent placement of loads/overburden on marginal ground; ➤ Implementation of safety buffers around the location of the 2012 landslide and an area of quaking bog to the southwest of T6 as outlined in the Geotechnical and Peat Stability Assessment; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Adhere to the 5 no. peat storage restriction areas detailed in the Geotechnical and Peat Stability Risk Assessment; ➤ Set up, maintain and report findings from monitoring systems as outlined in the Geotechnical and Peat Stability Assessment; ➤ Ensure construction method statements are developed and agreed before commencement of construction and are followed by the contractor; ➤ Revise and amend the Construction Risk Register as construction progresses to ensure that risks are managed and controlled for the duration of construction; and, ➤ During construction it is recommended to carry out frequent monitoring, especially after heavy rainfall events or prolonged rainfall. <p>Please refer to Appendix 8-1 for details on the safety buffers and stockpile restrictions.</p>		
Operational Phase					
MM94	Soils and Geology	EIAR Chapter 8	<p>Mitigation measures for soils and geology during the operational stage include;</p> <ul style="list-style-type: none"> ➤ Use of aggregate from authorised quarries for use in road and hardstand maintenance. ➤ Vehicles used during the operational phase will be refuelled off site before entering the site; ➤ No fuels will be stored on-site during the operational phase; and ➤ Spill kits will be available in all site vehicles to deal with an accidental spillage and breakdowns; and, ➤ An emergency plan for the operational phase to deal with accidental spillages and breakdowns will be contained in the Environmental Management Plan. ➤ All transformers and substation areas will be bunded to 110% of the volume of oil used in each transformer/substation; ➤ An emergency plan for the operational phase to deal with accidental spillages will be contained in the Environmental Management Plan. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Decommissioning Phase					
MM95	Decommissioning Phase	EIAR Chapter 8 Appendix 4-5	<p>Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant.</p> <p>Some of the effects will be avoided by leaving elements of the Proposed Development in place where appropriate. The existing onsite 110kV Coomagearlahy substation is part of the national grid. The turbine bases will be rehabilitated by covering with local topsoil/peat in order to regenerate vegetation which will reduce runoff and sedimentation effects. Internal roads will remain as amenity pathways. Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures.</p>		
EIAR Chapter 9 Hydrology and Hydrogeology					
Pre-Construction Phase					
MM96	Pre-emptive Site Drainage Management	EIAR Chapter 9	<p>The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.</p> <p>The following forecasting systems are available and will be used on a daily/weekly basis, as required, to allow site staff to direct proposed and planned construction activities:</p> <ul style="list-style-type: none"> ➤ General Forecasts: Available on a national, regional and county level from the Met Éireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale; ➤ 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events; ➤ Rainfall Radar Images: Images covering the entire country are freely available from the Met Éireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and, ➤ Consultancy Service: Met Éireann provide a 24-hour telephone consultancy service. The forecaster will provide an interpretation of weather data and give the best available forecast for the area of interest. <p>Using the safe threshold rainfall values will allow planned works to be safely executed (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.</p> <p>Works will be suspended if forecasting suggests any of the following is likely to occur:</p> <ul style="list-style-type: none"> ➤ >10 mm/hr (i.e. high intensity local rainfall events); ➤ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ➤ >half monthly average rainfall in any 7 days. 		
MM97	Pre-emptive Site Drainage Programme Management	EIAR Chapter 9	The works programme for the entire construction stage of the development will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of soil/subsoil or vegetation stripping will be suspended or scaled back if heavy rain		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.</p> <p>The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:</p> <ul style="list-style-type: none"> ➤ General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates; ➤ MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale; ➤ 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events; ➤ Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and, ➤ Consultancy Service: Met Eireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. <p>Using the safe threshold rainfall values will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.</p> <p>Works will be suspended if forecasting suggests either of the following is likely to occur:</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > >10 mm/hr (i.e. high intensity local rainfall events); > >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, > >half monthly average rainfall in any 7 days. <p>Prior to works being suspended the following control measures will be completed:</p> <ul style="list-style-type: none"> > All active excavations will be secured and sealed off; > Temporary or emergency drainage will be installed to prevent back-up of surface runoff; and, > No works will be completed during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded. 		
MM98	Earthworks : Pre-commencement Temporary Drainage Works	Chapter 9	<p>Prior to the commencement of road upgrades (or new road/hardstand or turbine base installs) the following key temporary drainage measures will be installed:</p> <ul style="list-style-type: none"> > All existing dry forestry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps; > Clean water diversion drains will be installed upgradient of the works areas; > Check dams/silt fence arrangements (silt traps) will be placed in all existing forestry drains that have surface water flows and also along existing forestry roadside drains; and, > A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone. 		
Construction Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM99	Potential Surface Water Quality Effects from Clear Felling	EIAR Chapter 9,7	<p>Mitigation by Avoidance:</p> <p>There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document “Forestry and Water Quality Guidelines”.</p> <p>With moderate to steep slopes existing across much of the Proposed Development site, a 10 to 15m setback will be established along all aquatic zones. Furthermore, a 5m setback will be established along all relevant watercourses and water hotspots. Buffer zone widths will be increased at vulnerable hotspots where deemed necessary. This will ensure water quality is protected during the felling operations.</p> <p>The setback distance from sensitive hydrological features means that adequate room is maintained for the proposed mitigation measures (discussed below) to be properly installed and operate effectively. The buffer/setback zone will:</p> <ul style="list-style-type: none"> ➤ Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment; ➤ Avoid peat/soil disturbance and compaction within close proximity to surface watercourses; ➤ Avoid the entry of suspended sediment from works into watercourses; and, ➤ Avoid the entry of suspended sediment from the drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone. <p><i>Table 18-2: Recommended minimum buffer zone widths</i></p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure				Audit Result	Action Required	
			Average slope leading to the aquatic zone		Buffer zone width on either side of the aquatic zone	Buffer zone width for highly erodible soils			
			Moderate	(0 – 15%)	10m	15m			
			Steep	(15 – 30%	15m	20m			
			Very Steep	(>30%)	20m	25m			
			<p>Mitigation by Design:</p> <p>Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:</p> <ul style="list-style-type: none"> ➤ Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; ➤ All machinery will be operated by suitably qualified personnel; ➤ Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; ➤ These machines will traverse the site along specified off-road routes (referred to as racks); 						

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The location of racks will be chosen to avoid wet and potentially sensitive areas; ➤ Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; ➤ Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground; ➤ In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction; ➤ Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; ➤ Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; ➤ Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; ➤ Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and, ➤ Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors. 		
MM100	Silt Traps	Chapter 9	Silt traps will be strategically placed down-gradient of felling areas within forestry drains near streams. The main purpose of the silt traps and drain blocking is to slow water flow, increase residence time, and allow settling of silt in a controlled manner.		
MM101	Timing of Site Felling Works	Chapter 9	Felling will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses.		
MM102	Drain Inspection and Maintenance	Chapter 9	<p>The following items shall be carried out during inspection pre-felling and after:</p> <ul style="list-style-type: none"> ➤ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines; ➤ Inspection of all areas reported as having unusual ground conditions; ➤ Inspection of main drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches shall be identified. Ideally the pre-felling inspection shall be carried out during rainfall; ➤ Following tree felling all main drains shall be inspected to ensure that they are functioning; ➤ Extraction tracks near drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Culverts on drains exiting the site will be unblocked; and, ➤ All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall. 		
MM103	Surface Water Quality Monitoring	Chapter 9	<p>Criteria for the selection of water sampling points include the following:</p> <ul style="list-style-type: none"> ➤ Avoid man-made ditches and drains, or watercourses that do not have year round flows, i.e. avoid ephemeral ditches, drains or watercourses; ➤ Select sampling points upstream and downstream of the forestry activities; ➤ It is advantageous if the upstream location is outside/above the forest in order to evaluate the impact of land-uses other than forestry; ➤ Downstream locations will be selected: one immediately below the forestry activity, the second at exit from the forest, and the third some distance from the second (this allows demonstration of no impact through dilution effect or contamination by other land-uses where impact increases at third downstream location relative to second downstream location); and, ➤ The above sampling strategy will be undertaken for all on-site sub-catchments streams where tree felling is proposed. <p>Also, daily surface water monitoring forms will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.</p>		
MM104	Earthworks Resulting in Suspended Solids Entrainment in Surface Waters	Chapter 9	<p><u>Mitigation by Avoidance</u></p> <p>The key mitigation measure during the construction phase is the avoidance of sensitive hydrological features, by application of suitable buffer zones (i.e. 50m to main watercourses, and 10m to main drains).</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>All of the key Proposed Development areas (turbines, hardstands, construction compounds etc.) are located away from the delineated 50m watercourse buffer zones. The only works proposed within the hydrological buffer zones are the upgrade of existing watercourse crossings and at new watercourse crossings and upgrades to the existing site access tracks. Similarly, all hardstand areas to be decommissioned are located outside of the delineated 50m hydrological buffer zone.</p> <p>Within the Proposed Development site, road upgrades are proposed over a total of 10 no. existing watercourse crossings.</p> <ul style="list-style-type: none"> ➤ 5 no. crossings are located on tributaries of the Roughty River within the site: <ul style="list-style-type: none"> ○ An unnamed stream ~500m east/northeast of T3; ○ An unnamed stream ~250m west/southwest of T4; ○ An unnamed stream ~150m east/southeast of T6; ○ An unnamed stream ~280m northeast of T7; and, ○ An unnamed stream ~220m east/northeast of T8. ➤ An additional 4 no. crossings are located on the main access road from the N22 and cross tributaries of the Flesk River: <ul style="list-style-type: none"> ○ 1 unnamed stream in the townland of Coomacullen; ○ Coomacullen stream; ○ Cloonkeen stream; and, ○ An unnamed stream in the vicinity of Clonkeen substation. ➤ 1 no. existing crossing to be upgraded is located on the Inchamore stream, a tributary of the Bardinch River, within the Sullane River catchment. <p>All of these existing watercourse crossings are culverted.</p> <p>In addition there is 1 no. new proposed watercourse crossing located ~190m north of T11 over an unnamed tributary of the Roughty River.</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operate effectively. The proposed buffer zone will:</p> <ul style="list-style-type: none"> ➤ Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment; ➤ Avoid excavations within close proximity to surface watercourses; ➤ Avoid the entry of suspended sediment from earthworks into watercourses; and, ➤ Avoid the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone. <p><u>Mitigation by Design</u></p> <p>The Proposed Development design has been optimised to utilise the existing infrastructure (roads and hardstands) where practicable. This design prevents the unnecessary disturbance of peat and spoil, significantly reducing the potential for elevated concentrations of suspended solids in runoff.</p> <p>Presented below are temporary and long-term drainage control measures that will be utilised during the construction phase of the Proposed Development. As stated above there is an existing drainage network in some areas of the Proposed Development site which comprises forestry drains and roadside drains and headwater streams. The measures outlined below will be used in conjunction with the existing drainage network to ensure the protection of all rivers and downstream watercourses.</p> <ul style="list-style-type: none"> ➤ Source controls: 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Interceptor drains, vee-drains, diversion drains. ➤ Small working areas, covering temporary stockpiles, weathering off of side-cast peat/spoil, cessation of works in certain areas or other similar/equivalent or appropriate measures. ➤ In-Line controls: ➤ Interceptor drains, vee-drains, temporary sumps/attenuation lagoons, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems. ➤ Treatment systems: ➤ Temporary sumps and attenuation ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as “Siltbuster”, and/or other similar/equivalent or appropriate systems. <p>It should be noted for this site that an extensive network of forestry and roadside drains already exists, and these will be integrated and enhanced as required and used within the wind farm development drainage system. The integration of the existing forestry drainage network and the proposed wind farm network is relatively simple. The key elements being the upgrading and improvements to water treatment elements, such as in line controls and treatment systems, including silt traps, settlement ponds and buffered outfalls.</p> <p>The main elements of interaction with existing drains will be as follows:</p> <ul style="list-style-type: none"> ➤ Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the proposed wind farm drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion; ➤ Temporary silt traps will be placed in the existing drains downstream of construction works, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ During the operational phase of the wind farm runoff from individual turbine hardstanding areas will be not discharged directly into the existing drainage network but discharged locally at each turbine location through field drains, main drains, and existing settlement ponds; ➤ Buffered outfalls which will be numerous over the site will promote percolation of drainage waters across the bog surface and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site; ➤ Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters; and, ➤ Existing culverts will be lengthened where necessary to facilitate access road widening. 		
MM105	Earthworks Silt Fences	Chapter 9	<ul style="list-style-type: none"> ➤ Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids such as those present in the subsoils/sandstone tills that overlie the site. This will act to prevent entry to water courses of sand and gravel sized sediment, released from excavation of mineral sub-soils of glacial and glacio-fluvial origin, and entrained in surface water runoff. Inspection and maintenance of these of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. 		
MM106	Earthworks Silt Bags	Chapter 9	Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, the majority of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters or sedimats Sediment entrapment mats, consisting of coir or jute matting, will be placed at the silt bag location to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			to the full width of the outfall to ensure all water passes through this additional treatment measure.		
MM107	Earthworks Settlement Ponds	Chapter 9	The Proposed Development footprint will be divided into drainage catchments (based on topography, outfall locations, catchment size) and stormwater runoff rates based on the 10-year return period rainfall event will be calculated for each catchment. These flows will then be used to design settlement ponds for each drainage catchment. The settlement ponds will either be designed for 4.1hr or 24hr retention times used to settle out medium silt (0.01mm) and fine silt (0.004mm) respectively (EPA, 2006) ³ . Settlement pond at borrow pits will be designed to allow 24hr retention and settlement ponds along access roads and at turbine hardstands will have 4.1hr retention as there is additional in-line drainage controls proposed along access tracks and at hardstands.		
MM108	Earthworks Level Spreaders and Vegetation Filters	Chapter 9	<ul style="list-style-type: none"> ➤ The purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. level spreaders are not intended to be a primary treatment component for development surface water runoff. They are not sand alone but occur as part of a treatment train of systems that will reduce the velocity of runoff prior to be released at the level spreader. In the absence of level spreaders, the potential for ground erosion is significantly greater than not using them. ➤ Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. In fact, vegetation filters are ultimately a positive consequence of not discharging directly into watercourses which is one of the mitigation components of the drainage philosophy. This makes use of the natural vegetation of the site to provide a polishing filter for the wind farm drainage prior to reaching the downstream watercourses. 		

³ Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006).

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Again, vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not sand alone but are intended as part of a treatment train of water quality improvement/control systems (i.e. source controls→check dams→silt traps→settlement ponds→level spreaders →silt fences→vegetation filters). 		
MM109	Earthworks Water Treatment Train	Chapter 9	A final line of defence will be provided by a water treatment train such as a “Siltbuster”. If the discharge water from construction areas fails to be of a high quality during regular inspections, then a filtration treatment system (such as a ‘Siltbuster’ or similar equivalent treatment train (sequence of water treatment processes) will be used to filter and treat all surface discharge water collected in the dirty water drainage system. This will apply for all of the construction phase.		
MM110	Timing of Construction Works	Chapter 9	Construction of the site drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works.		
MM111	Excavation Dewatering and Potential Effects on Surface Water Quality	Chapter 9	<p>Management of surface water and groundwater seepages and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit; ➤ There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; ➤ Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken; and, ➤ A mobile ‘Siltbuster’ or similar equivalent specialist treatment system will be available on-site for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed. 		
MM112	Potential Effect on Groundwater Levels During Excavation Works	Chapter 9	<ul style="list-style-type: none"> ➤ The Proposed Development site is underlain by Locally Important aquifers and contains bedrock which is generally unproductive. The Proposed Development site is elevated and groundwater will flow downslope, discharging into nearby surface water streams and tributaries of the Roughty River. ➤ The existing onsite borrow pit was inspected during the site walkover surveys and no groundwater inflows were noted. The borrow pit is located in elevated terrain and no groundwater inflows occur. Similarly due to the location of the borrow pit, it is likely to receive only minimal surface water inflow and therefore no significant dewatering works will be required at the borrow pit location. ➤ The proposed turbine bases are located in bedrock which is generally unproductive. No groundwater dewatering will be required due to the relatively shallow nature of the excavations and lack of observed groundwater inflows within the existing excavations such as the onsite borrow pit. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The topographical (i.e. the elevation of the turbines, borrow pit and other proposed infrastructures) and hydrogeological setting of the Proposed Development site means that no significant groundwater dewatering is expected to be required. Moreover, direct rainfall and surface water runoff will be the main inflows that will require water volume and water quality management. For the avoidance of doubt, we would generally define dewatering as a requirement to permanently drawdown the local groundwater table by means of over pumping, e.g. as would be required for the operation of a bedrock quarry in a valley floor. ➤ Relevant environmental management guidelines from the EPA quarry 2006 guidance document – “Environmental Management in the Extractive Industry” in relation to groundwater issues will be implemented during the construction phase. 		
MM113	Potential Release of Hydrocarbons	Chapter 9	<p>Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:</p> <ul style="list-style-type: none"> ➤ All plant will be inspected and certified to ensure they are leak free and in good working order prior to use on site; ➤ On-site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. <ul style="list-style-type: none"> ➤ The fuel bowser, a double-axel custom-built refuelling trailer or truck will be re-filled off site and will be towed/driven around the site to where machinery is located. ➤ The 4x4 jeep/fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages. ➤ The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. ➤ Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; ➤ Onsite refuelling will be carried out by trained personnel only; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> > A permit to fuel system will be put in place; > Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the period of the construction; > The electrical control building will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; > The plant used will be regularly inspected for leaks and fitness for purpose; > An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan. Spill kits will be available to deal with accidental spillages. 		
MM114	Release of Cement-Based Products	EIAR Chapter 9	<ul style="list-style-type: none"> > No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and emplacement of pre-cast elements, will take place; > Where possible pre-cast elements for culverts and concrete works will be used; > Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water is to be isolated in temporary lined wash-out pits located near proposed site compounds. These temporary lined wash-out pits will be removed from the site at the end of the construction phase; > The contractor will use weather forecasting to plan dry days for pouring concrete; and, > The contractor will ensure pour site is free of standing water and plastic covers will be ready in case of a sudden rainfall event. <p>No mitigation is required for potential groundwater effects as these are imperceptible at the outset.</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM115	Groundwater and Surface Water Contamination from Wastewater Disposal	EIAR Chapter 9	<ul style="list-style-type: none"> ➤ During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site construction compounds, maintained by the providing contractor, and removed from the site on completion of the construction works; ➤ Water supply for the site office and other sanitation will be brought to site and removed after use by a licensed contractor to be discharged at a suitable off-site treatment location; and, ➤ No water or wastewater will be sourced on the site, nor discharged to the site. 		
MM116	Morphological Changes to Surface Watercourses	EIAR Chapter 9	<p>The Proposed Development design has been optimised to utilise the existing infrastructure (roads and hardstands) where practicable. As mentioned, road upgrades are proposed over a total of 10 no. existing watercourse crossings within the Existing Kilgarvan Wind Farm site, and only 1 no. new crossing is proposed. This design prevents the unnecessary disturbance of the existing site drainage network and also largely eliminates the requirement for instream works across the Proposed Development site.</p> <p>Mitigation measures are detailed below:</p> <ul style="list-style-type: none"> ➤ The new proposed watercourse crossing between proposed T8 and T11 (upper Lettercannon tributary) will be a pipe culvert (non-fisheries channel in the extreme upper headwater); ➤ Section 50 consent (Arterial Drainage Act, 1945) will be required for this new crossing. The Section 50 requirement will determine final pipe culvert dimensions, but will allow for a minimum 300mm embed of the pipe below the existing bed level, plus sufficient freeboard; ➤ IFI will be provided with a copy of the finalised pipe crossing dimensions and construction method statement. If the channel is not fully dried out during the construction period, a water management technique will be employed (dam and pump over or temporary piping) to dry out the construction reach. Any additional measures stipulated by IFI will be 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>incorporated into the final design and construction method statement for the proposed crossing;</p> <ul style="list-style-type: none"> ➤ Instream construction will be carried out in the period July to September inclusive. This is a conservative working window that will help ensure construction occurs during very low or no flow and will minimise the risk of entrainment of suspended sediment in surface water runoff to fisheries waters in the lower Lettercannon tributary and the Roughty River; and, ➤ During the near-stream construction work, double row silt fences will be placed immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed on-site. The bottom edge of geotextile silt fence material will be installed to a 200mm embed below ground level. Stakes will be placed at the ends, on any bends, and at 2m intervals along the silt fence. Stakes will be driven a minimum of 400mm to provide adequate support. The silt fence will have a tensioned wire backing - a minimum of 2 lines of wire run along the stakes. The top wire is used to clip the geotextile onto to hold it up and provide strength against trapped sediment. Silt fences will be checked and maintained weekly at minimum, and always before any forecasted heavy rain event. 		
MM117	Use of Siltbuster and Effect on Downstream Surface Water Quality	EIAR Chapter 9	<p>Chemical dosing is intended to force smaller/lighter particles to join together and therefore be heavy enough to settle out. As such the added chemicals are bound in the floc and do not get carried over into the treated discharge water. As such, the risk to water quality relates to operational issues, such as spill management and prevention of overdosing. Measures that will be employed to prevent spills and prevent overdosing and potential chemical carryover include:</p> <ul style="list-style-type: none"> ➤ Use of banded chemical storage areas; ➤ Loading and unloading of chemical containers by trained staff; ➤ Use of spill kits and emergency response procedures in the event of a spill; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding agents so overdosing does not occur; ➤ Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system; ➤ Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment; ➤ Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and, ➤ Use of biodegradable chemical agents can be used at very sensitive sites (i.e. adjacent to SACs). ➤ Siltbusters will only be used in emergency situations 		
MM118	Potential Effects on Surface Water Drinking Supplies	EIAR Chapter 9	<ul style="list-style-type: none"> ➤ Mitigation measures for felling are detailed in MM99. ➤ Mitigation measures for sediment control are detailed in MM104. ➤ Mitigation measures for the control of hydrocarbons during construction works are detailed in MM113. ➤ Mitigation measures for the control of cement-based products during construction works are detailed in MM114. 		
MM119	Potential Effects on Hydrologically Connected Designated sites & Potential Effects on Surface and Groundwater WFD Status	EIAR Chapter 7, 9	<ul style="list-style-type: none"> ➤ Mitigation measures for felling are detailed in MM99. ➤ Mitigation measures for sediment control are detailed in MM104. ➤ Mitigation measures for the control of hydrocarbons during construction works are detailed in MM113. ➤ Mitigation measures for the control of cement-based products during construction works are detailed in MM114. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Operational Phase					
MM120	Progressive Replacement of Natural Surface with Lower Permeability Surfaces	EIAR Chapter 4, 9	<p>The Proposed Development design has been optimised to utilise the existing infrastructure (roads and hardstands) where practicable. This design prevents the unnecessary creating of additional road and hardstand areas which would increase surface water runoff from the Proposed Development site.</p> <p>As part of the proposed wind farm drainage design, it is proposed that runoff from the proposed infrastructure will be collected locally in new proposed silt traps, settlement ponds and vegetated buffer areas prior to release into the existing site drainage network. The new proposed drainage measures will then create significant additional attenuation to what is already present. The operational phase drainage system will be installed and constructed in conjunction with the existing site drainage network and will include the following:</p> <ul style="list-style-type: none"> ➤ Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed into downstream field drains; ➤ Collector drains will be used to gather runoff from access roads and turbine hardstanding areas of the site likely to have entrained suspended sediment, and channel it to new local settlement ponds for sediment settling; ➤ On sections of access road transverse drains ('grips') will be constructed where appropriate in the surface layer of the road to divert any runoff off the road into swales/roadside drains; ➤ Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Settlement ponds, emplaced downstream of access road sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to existing drains; ➤ Settlement ponds will be designed in consideration of the greenfield runoff rate; and, ➤ All surface water runoff from the development will have to pass through the proposed settlement ponds prior to release into the existing site drainage network. <p>As described above the proposed integration of the wind farm drainage with the existing forestry drainage is a key component of the proposed drainage management within the development. By integration we mean maintaining surface water flowpaths where they already exist, avoid creation of new or altered surface water flowpaths, and maintaining the drainage regime (i.e. normal flow) within each forestry compartment. Critically, there will be no alternation of the catchment size contributing to each of the main downstream watercourses. All wind farm drainage water captured within individual site sub-catchments will be attenuated and released within the same sub-catchments that it was captured.</p>		
MM121	Runoff Resulting in Contamination of Surface Waters	EIAR Chapter 9	<ul style="list-style-type: none"> ➤ Mitigation measures for sediment control are the same as those outlined in MM100. ➤ Mitigation measures for the control of hydrocarbons during maintenance works are similar to those outlined in MM113 		
Decommissioning Phase					
MM122	Decommissioning Phase	EIAR Chapter 9	<ul style="list-style-type: none"> ➤ Potential effects will be similar to the construction phase but to a lesser degree. Some of the impacts will be avoided by leaving elements of the Proposed Development in place where appropriate. The onsite 110kV electrical substation and 110kV electrical cabling will 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		Appendix 4-5	<p>be retained as a permanent part of the national grid. The turbine bases will be rehabilitated by covering with local topsoil/peat in order to regenerate vegetation which will reduce runoff and sedimentation effects.</p> <p>➤ Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures.</p>		
ELAR Chapter 10 Air					
Construction Phase					
MM123	Exhaust Emissions: Construction	ELAR Chapter 10 Appendix 4-3	<p>➤ Proposed Development construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager produce and follow a site inspection and machinery checklist which will be followed and updated if/when required.</p> <p>➤ All plant and materials vehicles shall be stored in dedicated areas (on-site). Machinery will be switched off when not in use.</p> <p>➤ Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. Please see Chapter 15 Material Assets for details.</p> <p>➤ All plant and materials vehicles shall be stored in dedicated areas (on-site).</p> <p>➤ Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.</p> <p>➤ The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the site. Therefore, all wastes streams generated onsite will be deposited into a single waste skip which will be covered. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF will be local to the site to reduce the emissions associated</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>with vehicle movements. There are several licenced waste treatment facilities located outside of Killarney and Kenmare, approximately 14.2km northwest and 16km southwest respectively of the site.</p> <ul style="list-style-type: none"> ➤ Aggregate materials for the construction of the Proposed Development infrastructure will be predominantly sourced onsite. ➤ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-3). 		
MM124	Exhaust Emissions: Transport	EIAR Chapter 10 Appendix 4-3	<ul style="list-style-type: none"> ➤ Measures listed in MM106 above pertaining to exhaust emissions will be implemented for the transportation of vehicles to and from the site. ➤ Aggregate materials for the construction of site access tracks and all associated infrastructure will all be locally sourced, where possible, which will further reduce potential emissions. ➤ Turbines and construction materials will be transported to the site on specified haul routes only. ➤ Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the amount of emissions associated with vehicle movements. ➤ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-3). 		
MM125	Dust Emissions: Construction	EIAR Chapter 10 Appendix 4-3	<ul style="list-style-type: none"> ➤ Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff. ➤ All plant and materials vehicles shall be stored in dedicated areas within the site. ➤ Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Turbines and construction traffic will be transported to the site on specified haul routes only. ➤ The agreed haul route road adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary. ➤ The roads adjacent to the site entrances will be checked weekly or damage/potholes and repaired as necessary. ➤ The transportation of materials from the borrow pit around the site will be covered by tarpaulin or similar covered vehicles where necessary. ➤ The transportation of construction materials from locally sourced quarries for the Proposed Development will be covered by tarpaulin where necessary. ➤ If necessary, excavated material will be dampened prior to transport to the spoil management areas. ➤ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-3). The CEMP includes dust suppression measures. 		
MM126	Dust Emissions: Transport	EIAR Chapter 10 Appendix 4-3	<ul style="list-style-type: none"> ➤ Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff. ➤ All plant and materials vehicles shall be stored in dedicated areas within the site. ➤ Turbines and construction vehicles will be transported to the site on specified haul routes only. ➤ The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary. ➤ The roads adjacent to the site entrances will be checked weekly or damage/potholes and repaired as necessary. ➤ The transport of construction materials around the site from the nearby quarry facilities will be covered by tarpaulin where necessary. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the volume of emissions associated with vehicle movements. ➤ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-3). 		
Operational Phase					
MM127	Exhaust Emissions	EIAR Chapter 10	<ul style="list-style-type: none"> ➤ Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any emissions that arise. ➤ When stationary, delivery and on-site vehicles will be required to turn off engines. ➤ Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the emissions associated with vehicle movements. 		
MM128	Dust Emissions	EIAR Chapter 10	<ul style="list-style-type: none"> ➤ Maintenance vehicles brought onsite during the operational phase will be maintained in good operational order, thereby minimising any dust emissions that arise. ➤ Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the emissions associated with vehicle movements. 		
Decommissioning Phase					
MM129	Decommissioning Phase	EIAR Chapter 10	Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less effect. The mitigation measures		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		Appendix 4-5	prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential effects.		
EIAR Chapter 11 Climate					
Construction Phase					
MM130	Greenhouse Gas Emissions	EIAR Chapter 11 Appendix 4-3	<ul style="list-style-type: none"> ➤ All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager produce and follow a site inspection and machinery checklist which will be followed and updated if/when required. ➤ When stationary, delivery and on-site vehicles will be required to turn off engines. ➤ Turbines and construction materials will be transported to the site on specified routes only unless otherwise agreed with the Planning Authority (see Section 15.1 Chapter 15 for details) ➤ The majority of all rock and hardcore materials for the construction of the Proposed Development will be obtained from the borrow pit on site. This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. ➤ The Construction and Environmental Management Plan (CEMP) (Appendix 4-3) includes a Waste Management Plan (WMP) which outlines the best practice procedures that will occur during the construction phase relating to waste material. The WMP will outline the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of the construction of the Proposed Development. <ul style="list-style-type: none"> ○ Section 3.9 of the CEMP (Appendix 4-3) for this EIAR refers to the methodology that will be utilised to manage onsite waste. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor, 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ○ The MRF facility will be local to the Proposed Development site where possible to reduce the amount of emissions associated with vehicle movements. ○ Disposal of waste will be seen as a last resort <p>➤ Where applicable, low carbon intensive construction materials will be sourced and utilised onsite.</p>		
Operational Phase					
MM131	Greenhouse Gas Emissions	EIAR Chapter 11	<ul style="list-style-type: none"> ➤ Ensure that all maintenance and monitoring vehicles will be maintained in good operational order while onsite, and, when stationary, be required to turn off engines thereby minimising any emissions that arise. ➤ When stationary, delivery and on-site vehicles will be required to turn off engines. ➤ Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the site to reduce the emissions associated with vehicle movements ➤ As detailed in Appendix 6-8, a Blanket Bog Enhancement Plan has been developed and will be applied at a suitable location within the site as identified by Dr, John Conaghan, the botanical specialist ➤ The restoration area will be monitored for the lifetime of the wind project in accordance with the plan. ➤ No removal/clearance of habitats or movement of construction machinery will occur outside of the development works area/footprint during the construction phase, where the works area/footprint will be clearly marked for associated site staff. ➤ Afforestation of the 8.9ha of forestry being felled for the Proposed Development will be completed as per the Forest Service’s policy on granting felling licenses for wind farm development 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Decommissioning Phase					
MM132	Decommissioning Phase	EIAR Chapter 11	Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less impact. The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential impacts.		
EIAR Chapter 12 Noise					
Construction Phase					
MM133	Construction Noise	EIAR Chapter 12 Appendix 4-3	<p>No significant effects resulting from the removal of the existing turbines and construction of the Proposed Development are predicted. Nevertheless, a range of good practice measures are presented in the Construction Environmental Management Plan (CEMP), included as Appendix 4-3 of this EIAR, and these will be employed to minimise noise impacts. At this stage of the development process, the assessment is based on a precautionary approach, as a detailed construction programme is not available.</p> <p>Good site practices will be implemented to minimise the likely effects. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will be employed onsite:</p> <ul style="list-style-type: none"> ➤ Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; ➤ All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Select inherently quiet plant where appropriate – all major compressors will be ‘sound reduced’ models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use; ➤ All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; ➤ Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; ➤ Regularly maintain all equipment used on site, including maintenance related to noise emissions; ➤ Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and ➤ All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided. <p>While it was concluded above that there will be no significant vibration impacts associated with the turbine removal / construction of the Proposed Development, and that no specific mitigation measures were required, it is recommended that vibration from turbine removal or construction activities will be limited to the values set out in Section 12.4.1.2 of Chapter 12. Given that construction activities are only likely to occur for a short duration, the use of internal vibration limits is likely to be unnecessary. Therefore, no mitigation measures are proposed.</p>		
Operational Phase					
MM134	Operational Noise	EIAR Chapter 12	<ul style="list-style-type: none"> ➤ The exact model of wind turbine to be used for the Proposed Development will be the result of a future tendering process. The final choice of turbine will, however, have to meet the derived noise limits and/or noise limits from the Guidelines determined and contained within any planning permission condition imposed. In the event that mitigation is required, modern turbine control systems allow for turbines to operate in a reduced noise mode for 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>a range of wind speeds and wind directions as required, referred to as ‘mode management’.</p> <ul style="list-style-type: none"> ➤ The exact model of wind turbine to be used for the proposed development will be the result of a future tendering process. Achievement of the noise limits determined by this assessment would be a key determining factor in the final choice of wind turbines for the site. ➤ Based on the candidate wind turbine modelled in the noise assessment, in order to meet the Site Specific Noise Limits at NAL7-12 initial predictions suggest that low noise management would be required at 7 of 11 turbines. The required reductions can be achieved using the standard modes available for the turbine; no turbines will need to be switched off to meet the noise limits. ➤ Whilst it is not possible to predict if OAM will occur, in the event that complaints are received regarding OAM, mitigation measures are available. The design of such mitigation measures can only be determined once the wind farm is operational if OAM is found to occur frequently and at sustained levels. For the Proposed Development, the developer is committed to investigating noise complaints, inclusive of any complaint which may relate to OAM (i.e. beyond overall noise levels found in planning conditions). To deal with the eventuality of a complaint, the developer proposes the following: <ul style="list-style-type: none"> ➤ A community liaison officer will be appointed prior to first generation of electricity and contact details made publicly available; ➤ Any complaint relating to noise can be reported to the community liaison officer, who will undertake an initial screening of the complaint (review of logs submitted, review of wind conditions and turbine data etc..) and speak to the complainant in person, with an eventual visit to the complainant location if possible; ➤ Following initial screening, the community liaison officer will be responsible for commissioning a detailed noise complaint investigation. This will include appointing a qualified acoustic consultant to undertake noise measurements at the complaint location and quantify the occurrence and depth (in dB) of 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>OAM for every 10 minute of the measurement campaign. The measured 10 minute noise levels and OAM depth would also be correlated with 10 minute wind conditions and operational data to find patterns; and,</p> <p>➤ If frequent and sustained OAM is found, then appropriate mitigation would be designed and implemented and the complainant informed by the community liaison officer. Mitigation measures considered would include: changes to the operation of the relevant wind turbine(s) by changing software parameters such as blade pitch for specific wind conditions and time periods, addition of blade furniture (such as vortex generators) to alter the flow of air over the wind turbine blades; and, in extreme cases, targeted wind turbine shutdowns in specific conditions.</p>		
Decommissioning Phase					
MM135	Decommissioning Phase	EIAR Appendix 4-3	No specific mitigation measures are required for decommissioning. To ameliorate any potential noise impacts that may present during the decommissioning phase, a schedule of noise control measures has been formulated in accordance with best practice guidance. These are outlined in the Construction and Environmental Management Plan (CEMP) that has been prepared for the Proposed Development.		
EIAR Chapter 13 Landscape and Visual					
Pre-Construction Phase					
MM136	Landscape & Visual	EIAR Chapter 13	<p><u>Mitigation By Design</u></p> <p>Through the iterative project design process, various best practice tools used for assessing the landscape and visual impact of a proposed wind farm development were used to bring forward the optimum design for the Proposed Development with respect to landscape and visual</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>factors. These tools include, landscape modelling, ZTV mapping and preparation of photomontage visualisations.</p> <p>The final design of the Proposed Development and strategic siting of turbines in the landscape was informed by extensive early-stage impact assessment work conducted throughout 2022, including assessment of various turbine layouts and turbine models. The evolution of the turbine layout included omission of turbines from the project and careful micro-siting of turbines aimed at preventing the potential for significant landscape and visual effects. The final design is also considered in the context of siting and design guidance stated in the <i>‘Wind Energy Development Guidelines for Planning Authorities’</i> Published by the Department of Environment, Heritage and Local Government in 2006 and the draft revised Wind Energy Development Guidelines - Hereafter referred to as the WEDGs (DoEHLG, 2006) and Draft WEDG’s (DoHPLG, 2019). The project layout that is the subject of this LVIA, incorporates the following landscape and visual design considerations for good wind farm design:</p> <ul style="list-style-type: none"> ➤ The turbines are sited strategically within an area designated as a ‘Potential Repowering Area’ within the Kerry County Development Plan (2022-2028). The turbines are located within a landscape where the suitability of wind energy has already been established by the planning system. ➤ Strategic containment of the proposed turbines within the extent of the Existing Kilgarvan Wind Farm ensures that the Proposed Development does not increase the horizontal extent of turbines visible within most sensitive landscape views assessed (as demonstrated by visualisations in the Volume 2 Photomontage Booklet). In general, the Proposed Development does not include a novel addition of turbines into new areas of the landscape. ➤ The turbines are sited strategically within a landscape capable of accommodating a wind energy development of this scale. The site is an area surrounded by substantial topographical features which both eliminate visibility of the turbines from a large portion of the LVIA Study Area and provide a sense of scale that 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<p>causes the turbines to appear congruous and appropriately scaled in the landscape type within which they are viewed.</p> <ul style="list-style-type: none"> ➤ Siting of turbines in a sparsely settled upland landscape with large set back distances from residential receptors, large populations centres and other high sensitivity visual receptors. ➤ All proposed turbines have been sited greater than 500 metres from residential receptors in order to protect residential visual amenity in accordance with the Guidelines. All the proposed turbines are greater than 900m from residential receptors, adhering to the 4 times tip height set-back distance explicitly set out for residential visual amenity prescribed by the <i>'Draft Revised Wind Energy Development Guidelines for Planning Authorities'</i> published by the Department of Housing, Planning and Local Government in 2019 - Hereafter referred to as the 'draft Guidelines (DoHPLG, 2019)'. ➤ In consideration of visual effects on proximate residential receptors to the east of the site, early-stage photomontage visualisations were used in combination with topography maps to strategically micro site turbines so that they are appropriately positioned at lower contours on the Proposed Development Site (west) of prominent ridgelines (at the east of the site) reducing their prominence in the landscape and impacts on local residential visual amenity. ➤ The Proposed Development makes use of the existing wind farm infrastructure of the Existing Kilgarvan Wind Farm. This reduces the requirement for new internal site roads or grid infrastructure, therefore reducing the extent of direct Landscape Effects on the site. 		
Construction Phase					
MM137	Landscape	EIAR Chapter 13	<ul style="list-style-type: none"> ➤ General housekeeping measures, necessary for Health & Safety requirements, will ensure that the active construction areas will be kept tidy, mitigating localised visual impacts during the construction phase. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Every use will be made of the existing wind farm access tracks and other existing tracks on site to reduce the visual effects in the surrounding area. 		
Operational Phase					
MM138	Landscape	EIAR Chapter 13,6	<p>The proposed turbines are located within a designated “<i>Potential Repowering Area</i>” within the KCDP (2022-28). Therefore, the Proposed Development assimilates within the landuse of the area.</p> <p>Once planting and reinstatement of roads is implemented and vegetation has re-established, as detailed in Chapter 6, no significant landscape or visual effects will occur.</p>		
Decommissioning Phase					
MM139	Decommissioning Phase	EIAR Chapter 13	Any potential direct impacts effects will already have been resolved through mitigation measures during the construction phase.		
EIAR Chapter 14 Cultural Heritage					
Pre-Construction Phase					
MM140	Recorded Monuments within the EIAR Site Boundary	EIAR Chapter 14 Appendix 4-3	<ul style="list-style-type: none"> ➤ All archaeological sites within the EIAR Site Boundary will be highlighted by erecting Keep-out signage prior to construction and a map of all archaeological features will be available to all personnel during construction by way of appearance in the Construction and Environmental and Management Plan. ➤ The monuments will be fenced off prior to the commencement of construction with ‘Keep Out’ signage erected. The fencing will be inspected by the appointed archaeologist. ➤ The fencing should be erected 15m from the monuments outer extent which will act as a protective buffer zone within which no machinery will be permitted to access. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
Construction Phase					
MM141	Recorded Monuments within the EIAR Site Boundary	EIAR Chapter 14	<ul style="list-style-type: none"> ➤ An archaeologist (under licence) will be present on-site during construction works to monitor all ground works and to ensure that no accidental damage occurs to the identified monuments detailed below. If archaeological finds, features or deposits are uncovered during archaeological monitoring, the developer will be prepared to provide resources for the resolution of such features whether by preservation by record (excavation) or preservation in situ (avoidance). Once the project is completed, a report on the results of the monitoring will be compiled and submitted to the local authorities and the National Monuments Service. The National Monuments Service will be informed of such findings to discuss how best to proceed. ➤ A map of all archaeological features will be available to all personnel during construction by way of appearance in the Construction and Environmental and Management Plan. 		
MM142	Newly Recorded Archaeological		<ul style="list-style-type: none"> ➤ The monuments will be fenced off prior to the commencement of construction with 'Keep Out' signage erected. The fencing will be inspected by the appointed archaeologist. ➤ The fencing should be erected 15m from the monuments outer extent which will act as a protective buffer zone within which no machinery will be permitted to access. ➤ A map of all archaeological features will be available to all personnel during construction by way of appearance in the Construction and Environmental and Management Plan. ➤ An archaeologist (under licence) will be present on-site during construction works to monitor all ground works and to ensure that no accidental damage occurs to the identified monuments detailed below. Once the project is completed, a report on the results of the monitoring will be compiled and submitted to the local authorities and the National Monuments Service. The National Monuments Service will be informed of such findings to discuss how best to proceed. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM143	Sub-surface Archaeological Potential	EIAR Chapter 14	<p>➤ Archaeological monitoring of ground works during construction. This will include all excavation works within the EIAR Site Boundary, as well as any topsoil removal along the haul route. If archaeological finds, features or deposits are uncovered during archaeological monitoring, the developer will be prepared to provide resources for the resolution of such features whether by preservation by record (excavation) or preservation in situ (avoidance). Once the project is completed, a report on the results of the monitoring will be compiled and submitted to the local authorities and the National Monuments Service. The National Monuments Service will be informed of such findings to discuss how best to proceed.</p>		
Operational Phase					
MM144	Archaeological Sites, Landscapes, monuments and Protected Structures	EIAR Chapter 14	<p>➤ It is not possible to mitigate the effect of the turbines on the visual setting of the structures. Therefore, no mitigation measures are being proposed.</p>		
EIAR Chapter 15 Material Assets					
Material Assets - Traffic					
Pre-Construction Phase					
MM145	Traffic	EIAR Chapter 15	<p>Mitigation by Design</p> <p>Mitigation by design measures include the following:</p>		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ Selection of the most appropriate delivery route to transport the wind turbine components, requiring the minimum remedial works to accommodate the vehicles as set out in Chapter 15. 		
Construction Phase					
MM146	Traffic	EIAR Chapter 15	<p>The successful completion of the Proposed Development will require significant coordination and planning and a comprehensive set of mitigation measures will be put in place before and during the construction stage in order to minimise the effects of the additional traffic generated by the Proposed Development.</p> <p>A detailed Traffic Management Plan (TMP) will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior to construction works commencing. The detailed TMP will include the following:</p> <ul style="list-style-type: none"> ➤ Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the construction of the Proposed Development and this person will be the main point of contact for all matters relating to traffic management. ➤ Delivery Programme – a programme of deliveries will be submitted to Cork County Council and other relevant authorities in advance of deliveries of turbine components to the Proposed Development site. ➤ Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and/or posters in public places. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ A Pre and Post Construction Condition Survey – A pre-condition survey of roads associated with the Proposed Development will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority. ➤ Liaison with the relevant local authorities - Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse, and An Garda Síochána, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. ➤ Implementation of temporary alterations to road network at critical junctions – At locations where required highlighted in Section 15.1.8. ➤ Identification of delivery routes – These routes will be agreed and adhered to by all contractors. ➤ Travel plan for construction workers to Site– While the assessment above has assumed a robust case that construction workers will drive to the site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of a routes to / from the site and identification of an area for parking. ➤ Delivery times of large turbine components - The management plan will include the delivery of large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage. ➤ Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including sweeping / cleaning of local roads as required. ➤ Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. 		
Decommissioning Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM147	Decommissioning Phase	EIAR Chapter 15 Appendix 4-5	In the event that the Proposed Development is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Chapter 4 and Appendix 4-5 Decommissioning Plan. This plan will include a material recycling / disposal and traffic management plan will be prepared for agreement with the local authority prior to decommissioning.		
Material Assets - Other					
Pre-Constructions Phase					
MM148	Built Services	EIAR Chapter 3, 15	<ul style="list-style-type: none"> ➤ Proposed Development infrastructure have been designed to avoid identified services and utilities. Prior to commencement of construction of the Proposed Development the surveys will be repeated and updated, to ensure any new services and utilities will not be impacted by the Proposed Development. 		
Construction Phase					
MM149	Built Services & Waste Management	EIAR Chapter 15	<p>Relevant mitigation measures have been set out which will ensure that no adverse impact is felt on built services or waste management during the construction phase of the Proposed Development. The mitigation measures include the following:</p> <ul style="list-style-type: none"> ➤ Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works. ➤ Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. ➤ Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services. 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			<ul style="list-style-type: none"> ➤ The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks. ➤ In the event that any unmapped overhead lines are encountered along the turbine delivery route, these will be avoided with appropriate precautions and procedures. 		
MM150	Telecommunications	EIAR Chapter 3, 15 Appendix 15-3	<ul style="list-style-type: none"> ➤ MKO employed the expertise of Ai Bridges, who compiled specialist reports to identify any remaining issues and propose appropriate mitigation measures. The report received from Ai Bridges is attached to this chapter as Appendix 15-3 and lists mitigation measures to be implemented such as the construction of relay masts and relaying links to existing mast sites. ➤ In the event of interference occurring to telecommunications, the Guidelines acknowledge that '<i>electromagnetic interference can be overcome</i>' by the use of divertor relay links out of line with the wind farm. 		
MM151	Aviation	EIAR Chapter 15	<ul style="list-style-type: none"> ➤ The specification for obstacle lighting requested by the Department of Defence will be implemented in full once the proposed turbines have been constructed. ➤ Although none was received in this case, scoping responses from the IAA generally set out lighting requirements as set out above. These requirements will still be complied with for the Proposed Development and any further details will be agreed in advance of construction with the IAA, i.e. crane erection. The coordinates and elevations for the as-built turbines will be supplied to the IAA, as is standard practice for wind farm developments. 		
MM152	Aviation	EIAR Chapter 15	<ul style="list-style-type: none"> ➤ The specification for obstacle lighting requested by the Department of Defence will be implemented in full once the proposed turbines have been constructed. ➤ Although none was received in this case, scoping responses from the IAA generally set out lighting requirements as set out above. These requirements will still be complied with for the Proposed Development and any further details will be agreed in advance of 		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			construction with the IAA, i.e. crane erection. The coordinates and elevations for the as-built turbines will be supplied to the IAA, as is standard practice for wind farm developments.		
Decomissioning Phase					
MM153		EIAR Appendix 4-5	The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential impacts.		

18.2

EIAR Monitoring Measures

Table 18-3 Schedule of Monitoring

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Pre-Construction Phase						
MX1	Drainage Maintenance	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ An inspection and maintenance plan for the on-site drainage system will be prepared in advance of commencement of any works. ➤ Daily visual inspections of drains and outfalls will also be performed during the construction period to ensure suspended solids are not entering streams and rivers on site, to identify any obstructions to channels and to allow appropriate maintenance of the drainage regime. Should the suspended solids levels measured during construction be higher than the existing levels, 	On going	Monthly	Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>the source will be identified, and additional mitigation measures implemented.</p> <ul style="list-style-type: none"> ➤ Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. ➤ Daily inspection and recording of surface water management system by on-site clerk of works and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the site. 			
MX2	Water Quality and Monitoring	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ An appointed, qualified, experienced Environmental Clerk of Works (ECoW) will be responsible for daily checks and monthly water sampling that ensures water quality protection measures and guidelines are complied with during the pre-commencement phase. 	Once	As Required	ECoW
MX3	Terrestrial Ecology	EIAR chapter 6	<ul style="list-style-type: none"> ➤ Due to the unavoidable disturbance to Kerry Slug habitat, a derogation license will be sought from the NPWS prior to the commencement of construction. ➤ Bird Vantage Point surveys will be commenced ahead of the construction phase. ➤ A pre-construction mammal survey (including checks for non-volant mammals and passive/active bat surveys) will be carried out immediately before the commencement of vegetation clearance to ensure that there is no evidence of resting/breeding sites of protected mammal species in or directly adjacent to the works footprint. ➤ An updated survey for adult Marsh Fritillary, <i>Euphydras aurinia</i>, will be carried out in the year of construction (May/June) ideally 	Once	As Required	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			before construction commences. An updated survey for adult Marsh Fritillary, will be carried out in the year of construction (May/June) ideally before construction commences.			
MX4	Sub-Surface Archaeology	EIAR Chapter 13 CEMP Section 4	<ul style="list-style-type: none"> ➤ Pre-development archaeological testing of the proposed infrastructure in previously undisturbed greenfield areas of the Site will be carried out under licence from the National Monuments Service. This is in order to identify any archaeological features at the earliest stage possible in the project to allow time to deal with any requirements such as preservation in situ (redesign / avoidance) or preservation by record (archaeological excavation). ➤ A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority. 	Once	As Required	Project Archaeologist
Construction Phase						
MX5	Spoil Management	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ Inspections of the spoil management areas will be made by a Geotechnical Engineer through regular monitoring of the works. The appointed contractor will review work practices at spoil management areas when periods of heavy rainfall are expected so as to prevent excessive dirty water runoff from being generated. 	As Required	As Required	Geotechnical Engineer
MX6	Drainage Design	EIAR Chapter 4 CEMP Section 4	<ul style="list-style-type: none"> ➤ Daily inspection and recording of surface water management system by on-site clerk of works and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the site. 	Daily	As Required	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> ➤ Check dams are designed to reduce velocity and control erosion and are not specifically designed or intended to trap sediment, although sediment is likely to build up. If necessary, any excess sediment build up behind the dams will be removed. For this reason, check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam. ➤ Piped drains will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and blockage. 	<p>As Required</p> <p>Weekly</p>		
MX7	Dust Suppression	<p>EIAR Chapter 4,8</p> <p>Appendix 4-5</p>	<ul style="list-style-type: none"> ➤ In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. If necessary, water will be taken from stilling/settlement ponds in the Proposed Wind Farm site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and temporary construction compounds to prevent the generation of dust. Silty or oily water will not be used for dust suppression, because this would transfer the pollutants to the haul roads and generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff. 	As Required	As Required	PSCS
MX8	Health and Safety	<p>EIAR Chapter 5</p> <p>CEMP</p>	<ul style="list-style-type: none"> ➤ The PSCS shall monitor the compliance of contractors and others and take corrective action where necessary; and ➤ Notify the Authority and the client of non-compliance with any written directions issued. 	Daily	Daily	PSCS

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX9	Terrestrial Ecology	EIAR Chapter 6	<p>➤ The fatality monitoring programme for birds and bats (using dog-based searches) instigated in the construction phase will be continued for the first three years of operation. Monthly searches of turbine bases and met mast will be carried out along with associated searcher efficiency and scavenger removal trials. An annual report will be prepared detailing the results of the fatality monitoring and circulated for the information of the Planning Authority, Kerry County Council and NPWS.</p> <p>➤ To minimise effects on Kerry Slug areas of suitable habitat that occur outside of the footprint of the Proposed Development shall be avoided during the course of construction thereby minimising the loss and disturbance of Kerry Slug habitat. Immediately prior to undertaking works in areas of suitable habitat, the ECoW, or nominated specialist, will check for the presence of Kerry Slug. The preferred method shall be hand-searching. Should slugs be discovered then they will be transferred to suitable habitat identified outside of the works footprint. Throughout construction, monitoring of suitable habitat within works areas will continue using a combination of metric traps and regular hand-searching. Hand-searching will be undertaken during periods of wet weather when slugs are most active and feeding on the surface and therefore at greater risk of impacts e.g. from site traffic.</p>	As Required	As Required	Project Ecologist/ Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> ➤ Standard Vantage Point Monitoring in accordance with the Survey Methods for Use in Assessing the Impacts of Onshore Wind farms on Bird Communities (Scottish Natural Heritage. 2018) will be carried out during the construction year by competent experienced ornithologists. The survey shall cover the development footprint and all areas within 500m of the works. ➤ A passive bat monitoring programme will be carried out at the site throughout the construction phase. 			
MX10	Water Quality Monitoring	EIAR Chapter 7	<ul style="list-style-type: none"> ➤ Water quality protection mitigation/ control measures shall be inspected daily by the ECoW during working days where there are active earthworks/ excavations / culvert upgrades occurring ➤ Any maintenance and repairs required relating to construction related drainage management, e.g., silt fences, settlement ponds, check-dams, will be actioned immediately. ➤ Environmental monitoring and checklists shall be recorded and added to the CEMP on a daily basis. ➤ The ECoW will also attend stakeholder meetings with relevance to aquatic ecology and fisheries throughout the construction (i.e., IFI). The finalised designs of the new culvert in the upper Lettercannon tributary and the culvert extension (as a result of Section 50 consent) plus their Construction Method Statements (CMS) will be 	As required	As Required	Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>provided to IFI no later than 6 weeks in advance of proposed works. The finalised CMS will include any additional measures conditioned within a planning permission. The ECoW, in conjunction with the Site Manager will ensure that IFI are then notified well in advance of instream works commencing. The contractor will employ a professional company with experience in continuous turbidity monitoring to carry out the monitoring.</p> <p>➤ In addition to the daily on-site visual checks set out above and within the CEMP, a dedicated water sampling programme will be implemented focusing mainly on suspended solids and turbidity on the Roughty River.</p>			
MX11	Turbidity Monitoring	EIAR Chapter 9 CEMP	<p>➤ Turbidity sonde deployment, maintenance and data management will be carried out by a professional, experienced company that specialises in continuous turbidity monitoring.</p> <p>➤ Turbidity recording will start 6 months prior to commencement of active on-site construction works (earthworks, excavations, drainage installations and felling). This will establish an up-to-date baseline for comparison during the construction phase. Continuous turbidity monitoring will thereafter continue throughout the main earthworks and forestry felling activities of the construction phase and cease 3 months after their completion.</p> <p>➤ Action Trigger Points will be identified along the Roughty main channel. If the turbidity/ Total Suspended Solids (TSS) threshold is exceeded on the Roughty main channel, the ECoW will</p>	Daily	Daily	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			investigate any potential source areas of high suspended solids on the construction site using a hand-held turbidity meter to first check Sites K19, K23 and K27 to determine if there is an obvious source from one or more of the tributaries, then work back upstream from the ‘problem’ tributary confluence(s) to key junctions in the tributary system to locate any potential construction related source of TSS. Once the source area is identified, the ECoW will instruct additional efforts be made to strengthen sediment control measures as set out in the CEMP.			
MX12	Weather Monitoring	Chapter 7	<ul style="list-style-type: none"> ➤ Prior and following heavy rainfall, the ECoW will ensure that all sediment loss prevention measures and environmental controls are functioning correctly. ➤ During and immediately after heavy periods of rain, earthmoving activities will be reviewed with temporary restrictions where necessary. 	Daily	Daily	ECoW
MX13	Plant and Equipment Inspections	CEMP	<ul style="list-style-type: none"> ➤ The plant used will be regularly inspected for leaks and fitness for purpose. 	As Required	Monthly	ECoW
MX14	Traffic and Transport	CEMP	<ul style="list-style-type: none"> ➤ The designated public roads outside the site and along the main transport routes to the Site will be regularly inspected by the ECoW for cleanliness, and cleaned as necessary 	Daily	Monthly	ECoW
MX15	Archaeology	EIAR Chapter 14 CEMP	<ul style="list-style-type: none"> ➤ Any new grant of planning permission would be subject to an archaeological monitoring under licence condition. It is noted in Chapter 14, that mitigation will include for an archaeologist (under licence) to be present on-site during construction works 	As Required	As Required	Project Archaeologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>to monitor all ground works and to ensure that no accidental damage occurs to the identified monuments detailed below.</p> <ul style="list-style-type: none"> ➤ Buffer zones would be required around any monuments by means of a fence during the construction phase of the development. It is noted in Chapter 14 that where a buffer is required during the construction phase, this will take the form of fencing and will be erected 15m from the monument's outer extent. This will act as a protective buffer zone within which no machinery will be permitted to access. ➤ Archaeological monitoring will be carried out A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority. 			
Operational Phase						
MX16	Drainage Inspections	CEMP Section 3	<ul style="list-style-type: none"> ➤ The Project Hydrologist will inspect and review the drainage system after construction has been completed to provide guidance on the requirements of an operational phase drainage system. This operational phase drainage system will have been installed during the construction phase in conjunction with the road and hardstanding construction work as described in Section 4.6 of the EIAR. ➤ The drainage system will be monitored in the operational phase until such a time that all areas that have been reinstated become re-vegetated and the natural drainage regime has been restored. 	Monthly	Monthly	Project Hydrologist
MX17	Water Monitoring	EIAR Chapter 4 CEMP	<ul style="list-style-type: none"> ➤ Monthly water sampling and laboratory analysis will be undertaken for the first six months following completion of construction works. 	Monthly for month 1-6	Monthly for month 1-6	Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>➤ Quarterly site inspections by the Project Hydrologist/ ECoW for a period of one year during the operational phase.</p>			
MX18	Botanical Species and Habitats	<p>EIAR Chapter 6</p> <p>Appendix 6-8</p>	<p>➤ The peatland restoration plan (Appendix 6-8) will be monitored annually in years 1, 2 and 3 and at five-year intervals thereafter for the lifetime of the wind farm. Status reports will be prepared and any recommendations for additional management presented in these reports will be implemented according to the advice of the habitat specialist. The reports will be provided for the information of the Planning Authority, Kerry County Council and NPWS.</p> <ul style="list-style-type: none"> ○ The restoration plan will also include monitoring of the restored borrow pit and decommissioned turbine bases, hard stands and access tracks. ○ The presence of any Third Schedule Invasive plant species in the development area will be noted and advice provided on appropriate control/eradication options. 	Annually	Years 1,2 and 3 and thereafter every 5 years for the duration of the wind farm lifetime	Project Ecologist
MX19	Mammals	EIAR Chapter 6	<p>➤ Bat activity will be monitored at the site for the first three years of operation using passive detector deployment at the same locations used to monitor activity in the construction phase. Annual reports on the occurrence and activity of Lesser Horseshoe Bat and other bats species detected will be prepared and submitted for the information of the Planning Authority, Kerry County Council and NPWS.</p>	Years 1,2,3	Annually	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> ○ As a precautionary mitigation measure, in addition to the creation of buffers between the proposed turbines and surrounding vegetation reduced rotation speed will be implemented when turbines are idling. Automatic ‘feathering’ of idling blades will be implemented (through SCADA) to reduce rotation speed of blades to below 2 RPM while idling. Feathering blades has been shown to be effective in reducing fatality rates of bats by up to 50% and does not result in a significant loss of energy output (SNH, 2019). ➤ The fatality monitoring programme for birds and bats (using dog-based searches) instigated in the construction phase will be continued for the first three years of operation. Monthly searches of turbine bases and met mast will be carried out along with associated searcher efficiency and scavenger removal trials. An annual report will be prepared detailing the results of the fatality monitoring and circulated for the information of the Planning Authority, Kerry County Council and NPWS. ➤ All lighting systems at the site, including at the entrance and around the substation will be designed to minimise nuisance through light spillage. Shielded, downward directed lighting will be used wherever possible and all non-essential lighting will be switched off during the hours of darkness. ➤ All edible and putrescible wastes will be stored and disposed of in an appropriate manner. 			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<ul style="list-style-type: none"> ➤ Any sightings of mammals on-site will be logged on the wildlife register – these logs will be maintained by the site manager and available for inspection at the site office/substation. Any records of mammal fatalities within the wind farm site and along the access road from Clonkeen will be logged and photographed. 			
MX20	Birds	EIAR Chapter 6 Appendix 6-9	<ul style="list-style-type: none"> ➤ Vantage Point surveys (breeding and winter) will be carried out at the operational site in years 1, 2, 3, 5, 10 and 15 in accordance with guidance (e.g. SNH, 2009). Reports will be prepared and submitted for the information of the Planning Authority, Kerry County Council and NPWS. ➤ The fatality monitoring programme for birds and bats (using dog-based searches) instigated in the construction phase will be continued for the first three years of operation. Monthly searches of turbine bases and met mast will be carried out along with associated searcher efficiency and scavenger removal trials. An annual report will be prepared detailing the results of the fatality monitoring and circulated for the information of the Planning Authority, Kerry County Council and NPWS. ➤ The White-tailed Eagle mitigation strategy will continue to be implemented as described in Section 6.6.1.4 and Appendix 6-9. A suitably qualified ornithologist will be appointed to oversee the implementation of the plan and prepare annual reports. <ul style="list-style-type: none"> ○ The ‘tags’ will provide accurate data on numerous locations per day, providing rapid detection of any regular use of the wind farm site by White-tailed Eagle(s) and enable the Site Manager to focus visual observational efforts (and to 	Year 1, 2, 3, 5, , 10 & 15	Annually	Project Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>investigate any possible cause of regular use e.g. presence of a carcass) before any activity builds to a level where collision risk becomes unacceptable. The Site Manager will be responsible for managing and implementing a potential turbine shut-down system, which will be informed by the following:</p> <ul style="list-style-type: none"> ○ Any sightings and information from third parties, notably the Reintroduction Programme and information on tagged individuals ○ Based on these information sources, thresholds and a protocol for instigating a shut-down (turbine numbers, locations and stop duration) will be agreed with NPWS and/or the White-tailed Eagle Reintroduction Programme in accordance with the measures agreed at Grousemount Wind Farm prior to the operation of the new turbines. ○ The proposed mitigation strategy measures for White-tailed Eagle will be applied initially for the first five years of operation. A review will be conducted after five years, including consultation with stakeholders, to consider if these, or other additional measures should continue to be applied for the remainder of the lifetime of the wind farm. A review report 			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>with recommendations will be prepared by a suitably qualified ornithologist with actionable recommendations fully implemented.</p> <p>➤ The installation of warning lights on turbines can help to increase their visibility, and thereby reduce the risk of bird collision. A number of the turbines will be fitted with aviation warning lights in accordance with the requirements of the Irish Aviation Authority in advance of project construction.</p>			
MX21	Other Taxa	ELAR Chapter 6	<p>➤ A Kerry Slug survey will be carried out in the first year of operation including in areas which have been translocated and a report of the survey results will be prepared for the information of the Planning Authority, Kerry County Council and NPWS.</p> <p>➤ Casual sightings of rare or protected invertebrates, amphibians etc. made in the course of operational phase ecological monitoring will be recorded and if appropriate this information will be submitted to the National Biodiversity Data Centre.</p>	Years 1, 2, 3, 5, 10 and 15	Years 1, 2, 3, 5, 10 and 15	Project Ecologist
Decommissioning Phase						
MX22	Decommissioning	DP Section 1	<p>As noted in the Scottish Natural Heritage report (SNH) <i>Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms</i> (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the wind farm, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore:</p>	End of Operational Life	As Required	Developer Appointed/ Contractor

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p><i>“best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm”.</i></p> <p>In this regard, the Decommissioning Plan will be reviewed and updated prior to commencement of decommissioning works to take account of the relevant conditions of the planning permission and current health and safety standards at the time of decommissioning. The Decommissioning Plan (DP) will be agreed in writing with the Planning Authority prior to the commencement of the decommissioning phase.</p>			
MX23	Decommissioning	DP Section 3	The ECoW will maintain responsibility for monitoring the decommissioning works and Contractors/Sub-contractors from an environmental perspective. The ECoW will act as the regulatory interface on environmental matters. The Site Manager will be responsible for reporting to and liaising with Kerry County Council and other statutory bodies as required.	End of Operational Life	As Required	Site Manager/ ECoW
MX24	Decommissioning	DP Section 3	The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.	End of Operational Life	As Required	Site Manager/ ECoW
MX25	Decommissioning	DP Section 3	The Site Manager will take steps to ensure the sourcing of suitably clean soil material and verify the quality of the material by having it inspected prior to bringing it to site by a suitably qualified ecologist. Prior to decommissioning, a suitably qualified ecologist will complete	End of Operational Life	As Required	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			an invasive species survey of the Site to identify invasive species where any minor excavation will be required. If present in these areas, the ecologist will propose suitable management measures.			
MX26	Health and Safety	DP Section 4	<ul style="list-style-type: none"> ➤ Due to the remoteness of the site it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This will form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable. ➤ In this regard, this DP will be reviewed and updated prior to commencement of any decommissioning works to take account of the relevant conditions of the planning permission and current health and safety standards. The DP will be agreed in writing with the Planning Authority prior to the commencement of the decommissioning. 	End of Operational Life	As Required	PSCS
MX27	Terrestrial Ecology	EIAR Chapter 6 Appendix 4-5	<ul style="list-style-type: none"> ➤ The potential for impacts during decommissioning are similar in nature, if not in scope, to those assessed for the initial decommissioning and construction phase. All decommissioning works will be governed by the same requirements to control run-off or potential pollution to watercourses as have been implemented during the construction phase. ➤ The site compound will need to conform to the construction phase mitigation measures including those related to lighting design and proper treatment of edible and putrescible wastes. All plant removed during decommissioning of the site will be re-used at other wind farm sites whenever possible. All remaining materials which cannot be re-used will be recycled. This is likely 	End of Operational Life	As Required	Project Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			<p>to include scrap metal, plastic and other waste materials. Any materials which cannot be re-used or recycled will be disposed of by an appropriately licenced contractor in the most environmentally appropriate manner available at the time of the decommissioning by an appropriately licenced contractor.</p> <p>➤ Following reinstatement, the site will be monitored to determine the progress of revegetation and if necessary to examine the need for supplementary planting with native species. A full site survey by a habitat specialist will be carried out at the end of Year 1 to assess the progression of the restoration and revegetation of the decommissioned areas and to capture photographic evidence of the site vegetation status, drainage management and general site appearance at the end of Year 1.</p>			