

## 17 SCHEDULE OF ENVIRONMENTAL MITIGATION

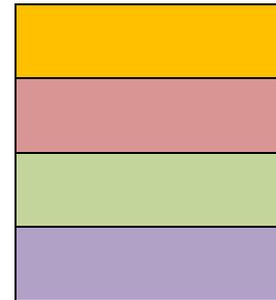
### 17.1 INTRODUCTION

This Schedule of Environmental Mitigation summarises and sets out an implementation programme for all environmental mitigation measures recommended in the Environmental Impact Statement (EiAR) and Natura Impact Statement (NIS) for the proposed Shronowen Wind Farm development.

### 17.2 FORMAT OF THE MITIGATION SCHEDULE

The schedule on the following pages is structured in accordance with the following project phases:

- **Prior to Commencement of Construction**
- **During Construction Phase**
- **Post Construction/ Operational Phase**
- **Decommissioning**



The schedule is presented in a Table format which outlines, for each of the project phases:

- i. the environmental aspect or resource for which mitigation is required,
- ii. the required or proposed mitigation measure to be undertaken/implemented,
- iii. the persons responsible for implementing the recommended mitigation,
- iv. the relevant actions, procedures and plans relating to implementation of the mitigation.

Table 17-1: Schedule of Environmental Mitigation Measures

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION / RECOMMENDATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Safety and Health Plan</b>	A Safety and Health Plan covering all aspects of the construction process will be prepared in advance of construction and will comprehensively deal with safety and health related issues.	Principal Contractor	Chapter 5 Population & Human Health  Safety & Health Plan to be prepared.
PLANNING STAGE/PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Construction Traffic Management Plan (TMP)</b>	A Traffic Management Plan (TMP) has been prepared for the project and will be implemented during construction to manage traffic to and from the site. It includes details of the road network to be used by construction traffic, including over-sized loads, and detailed arrangements for the protection of bridges or other structures to be traversed, as may be required. The timing of turbine delivery along the proposed haulage route will be agreed with Kerry County Council and An Garda Síochána to ensure that the impact on the public is minimised.	Developer Project Manager	Chapter 15 Material Assets  Appendix 15-1 Traffic and Transportation Assessment  Appendix 15-3 TMP  To be communicated to Principal Contractor and incorporated into final TMP.
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Construction Traffic Management Plan (TMP)</b>	A final TMP will be prepared by the Principal Contractor and will take account of the measures specified in the TMP submitted with the planning application and any measures agreed with the relevant authorities.	Principal Contractor	Develop final TMP and submit to planning authority for comment.
PLANNING STAGE/PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Construction Environmental Management Plan (CEMP)</b>	A Construction Environmental Management Plan has been prepared for the project and will be implemented during construction in order to ensure that the project is constructed in accordance with best practice, with the minimum impact on the surrounding environment. The implementation of proposed mitigation measures, environmental commitments of the project and the monitoring and supervision of these measures will be managed through the CEMP. It includes measures to control/manage the following: <ul style="list-style-type: none"> <li>• Noise and Dust Emissions;</li> <li>• Protection of Water Quality/Sediment and Erosion Control;</li> <li>• Fuel and Oils Management;</li> <li>• Management of Concrete;</li> <li>• Ecological Management (Protection of Habitats and Fauna);</li> </ul>	Developer Project Manager	Chapter 2 Project Description  Appendix 2-1 CEMP  To be communicated to Principal Contractor and incorporated into Final CEMP.

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION / RECOMMENDATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
	<ul style="list-style-type: none"> <li>• Invasive Species Management;</li> <li>• Management of Archaeology;</li> <li>• Waste Management;</li> <li>• Emergency Response;</li> <li>• Site Environmental Training and Awareness;</li> <li>• Monitoring and Auditing;</li> <li>• Managing Environmental Incidents and Complaints.</li> </ul>			
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Construction &amp; Environmental Management Plan (CEMP)</b>	A final CEMP will be prepared by the appointed main construction contractor in advance of works commencing and will be submitted to the local authority(s) for approval. Construction method statements will be prepared prior to commencement of construction and incorporated into the CEMP.	Principal Contractor and Responsible personnel identified in the CEMP	Develop final CEMP and submit to planning authority for comment.
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Best Practice</b>	<p><b><u>Environmental Manager</u></b> An Environmental Manager with appropriate experience and expertise will be employed for the duration of the construction phase to ensure that all the environmental mitigation measures are implemented. This manager will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted in the EIAR.</p> <p><b><u>Project Ecologist</u></b> A Project Ecologist (PE) with appropriate experience and expertise will be employed on site for the duration of the construction phase to ensure that all the mitigation measures outlined are implemented. The PE will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental/ecological effects. The PE will provide all personnel involved in the construction with ecological Toolbox Talks and will ensure that the proposed mitigation measures are adhered to. The PE will document the safe construction and implementation of the mitigation measures through the use of a SOWOR system (Schedule of Works Operation Record).</p>	Developer Project Manager and/or Principal Contractor	Chapters 5 to 15  Appoint Project Team Personnel
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Ornithology – Tree Felling</b>	Pre-construction tree felling and any vegetation clearance, including the cutback or clearance of hedgerows and scrub, should be undertaken outside of the bird breeding season (1 <sup>st</sup> March to 31 <sup>st</sup> August). Avoid damage or loss of trees thereafter.	Principal Contractor	Chapter 7 Ornithology

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<b>PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS</b>	<b>Protection of Water Quality – Best Practice</b>	<p>All works in proximity to watercourses shall follow the industry-standard best practice guidance outlined in the following documents:</p> <ul style="list-style-type: none"> <li>• Forestry and Water Quality Guidelines (DMNR, 2000);</li> <li>• Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters (IFI, 2016); and</li> <li>• Guidelines for the crossing of Watercourses during Construction of National Road Schemes (TII, 2008)</li> </ul> <p>Conduct pre-construction baseline water quality monitoring.</p>	Principal Contractor	Chapter 6 Biodiversity Chapter 8 Water Appendix 2-1 CEMP
<b>PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS</b>	<b>Protection of Water Quality – Site Drainage</b>	<ul style="list-style-type: none"> <li>• Prior to any construction activity, the site will be inspected for areas that would be prone to siltation of nearby rivers/streams.</li> <li>• Where necessary, existing pollution prevention measures (check dams and silt ponds) will be maintained / upgraded to ensure optimum standard of water running into streams from the drainage adjacent to access tracks.</li> <li>• Settlement ponds/silt traps have been incorporated into the design to attenuate sediment in waters draining the site.</li> <li>• Check dams will be installed at 50m intervals in roadside drains.</li> <li>• The side slopes in the cuttings for access track construction will be at a slope of no less than 1:3. This will serve to reduce any potential erosion of the side slopes in the access track cuttings. The side slopes will be reinstated with the excavated vegetated peat layer to reduce potential sedimentation and erosion impacts.</li> <li>• In general, the outflow weirs should not be located on slopes greater than 3:1 or in areas of instability risk.</li> <li>• Existing rills and drains within the dispersion zone will be blocked off where necessary to prevent concentration of the flow.</li> <li>• A programme for the ongoing monitoring of water quality in site watercourses/drains and drainage outfalls during the construction period will be implemented with the agreement of the local authority.</li> </ul>	Developer Project Manager and/or Principal Contractor	Chapter 3 Civil Engineering Chapter 6 Biodiversity Chapter 8 Water Appendix 2-1 CEMP
<b>PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS</b>	<b>Protection of Water Quality - Water Crossings</b>	<ul style="list-style-type: none"> <li>• Where construction activities require crossing of existing land drains and watercourses, method statements will be agreed with the relevant Fisheries Board prior to initiation of construction works.</li> </ul>	Principal Contractor	Chapter 6 Biodiversity Chapter 8 Water Appendix 2-1 CEMP

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION / RECOMMENDATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Biodiversity – Invasive Species</b>	A pre-construction survey for invasive species will be conducted. Should invasive species be recorded at works locations on the transport route, along the grid connection route or within the development footprint an Invasive Species Management Plan will be prepared prior to construction works commencing.	Developer Project Manager Project Ecologist	Chapter 6 Biodiversity Appendix 2-1 CEMP
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Ornithology</b>	Pre-construction bird surveys will be undertaken by an ornithologist with appropriate expertise and experience or an ecologist with appropriate expertise and recognised long-term ornithological experience at the same vantage point (VP) locations as the pre-planning surveys using the same methodology.	Developer Project Manager Project Ecologist/ Ornithologist	Chapter 7 Ornithology Appendix 2-1 CEMP
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Residential Amenity/ Landscape &amp; Visual Impact</b>	Turbines are to be off-white or grey in colour and will have a matt non-reflective finish.	Developer Project Manager	Chapter 5 Population & Human Health  Chapter 13 Landscape and Visual
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Archaeology/ Cultural Heritage</b>	Licensed archaeological monitoring should be undertaken in advance of construction at targeted areas of all primary ground impacts associated with the proposed development including: - (a) turbine pad foundations; (b) substation; (c) compounds (d) proposed new internal excavated tracks (e) met mast.	Developer Project Manager  and/or Principal Contractor	Chapter 15 Cultural Heritage  Commission qualified archaeologist to undertake test excavations/surveys and monitoring.

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DURING CONSTRUCTION	<b>Best Practice</b>	All construction practices are to be managed in line with the Safety, Health and Welfare at Work (Construction) Regulations and amendments.	PSDP, PSCS, Principal Contractor	Chapter 2 Project Description  Prepare Safety and Health Plan
DURING CONSTRUCTION	<b>Soil Stripping</b>	<ul style="list-style-type: none"> <li>The timing of the construction phase soil stripping and excavation works will take account of predicted weather, particularly rainfall.</li> <li>Soil stripping activities will be suspended during periods of prolonged rainfall events.</li> <li>The area of exposed ground will be kept to a minimum by maintaining, where possible, existing vegetation that would otherwise be subject to erosion in the vicinity of the wind farm infrastructure. The clearing of peat will be delayed until just before construction begins rather than stripping the entire site months in advance particularly during road construction.</li> </ul>	Principal Contractor	Chapter 3 Civil Engineering Chapter 9 Land & Soils Chapter 8 Water Chapter 6 Biodiversity Appendix 2-1 CEMP
DURING CONSTRUCTION	<b>Excavation Works</b>	<ul style="list-style-type: none"> <li>All site excavations and construction should be supervised by a suitably experienced engineer. The Contractor's method statements for each element of work should be reviewed and approved by the engineer prior to site operations. Specific method statements should be developed for each turbine and hardstanding location within the site.</li> <li>Approx 40% of the overall internal access road required is made up of existing roads/tracks. Where possible, these will be utilised to access turbine locations, reducing the volume of excavated material and imported crushed rock for road construction.</li> <li>Where possible, floated roads will be utilised which also reduces volumes of peat excavation.</li> <li>Excavation of the peat and construction of the new access roads will be carried out by excavation of the peat followed by replacement with compacted crushed rock. Machinery will not operate directly on excavated/stockpiled peat.</li> <li>Excavated peat will be reused for localised landscaping and reprofiling with excess peat deposited in the peat deposition areas.</li> <li>Excavation will be carried out from access roads or hardstanding areas to reduce the compaction of peat. Drainage will be constructed in parallel with road construction and turbine excavation. Drainage and associated pollution control measures should be implemented on site before the main body of construction activity commences.</li> <li>Drainage (including drains, stilling ponds etc) will be constructed using bog mats or "bogmaster" excavators, where required. This approach will be used in combination</li> </ul>	Principal Contractor	Chapter 3 Civil Engineering Chapter 9 Land & Soils Chapter 8 Water Chapter 6 Biodiversity Appendix 2-1 CEMP

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DURING CONSTRUCTION	Excavation Works (cont.)	<p>with the installation of other drainage protection measures in advance of construction, such as the installation of silt fencing or other waterway protection measures.</p> <ul style="list-style-type: none"> <li>• Excavations for turbine foundations will be completed to an approved temporary works design. This is likely to involve creating safe side slope angles, installation of drainage around and within the excavation and installation of sediment control measures.</li> <li>• Within excavations and around excavations, pore water pressure will be kept low by avoiding loading the peat and giving careful attention to the existing drainage and how structures could affect it.</li> <li>• All temporary cuts/excavations will be carried out such that they are stable or adequately supported. Where appropriate and necessary, cuts and excavations will be protected against ingress of water or erosion by the use of cut off drains around the excavation works. Temporary works will be such that they do not adversely interfere with existing drainage channels/regimes.</li> <li>• Plant and materials will be stored in approved locations only (such as the proposed site compounds) and will not be positioned or trafficked in a manner that would surcharge existing or newly-formed slopes.</li> <li>• Excavated peat from the cable route will be used to landscape and reinstate the area around the cable trench following backfilling of the trench with approved materials. The angle of the peat reinstated at the top of the infilled trenches will not exceed 2°.</li> <li>• Vehicular movements will be restricted to the footprint of the permitted development, particularly with respect to the newly constructed access roads. This implies that machinery must be kept on roads and, aside from advancing excavations, do not move onto areas that are not permitted for the development.</li> <li>• Earth movement activities will be suspended during periods of prolonged rainfall events to avoid or minimise negative effects to water quality; and</li> <li>• Site management should include the checking of equipment, materials storage and transfer areas, drainage structures and their attenuation ability on a regular basis during the construction phase of the project. The purpose of this management control is to ensure that the measures in place are operating effectively, prevent accidental leakages, and identify potential breaches in the protective retention and attenuation network during earthworks operations.</li> </ul>		

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DURING CONSTRUCTION	Excavation of Peat	<ul style="list-style-type: none"> <li>• Given the peatland environment and the presence of localised areas of peat instability risk, particular emphasis should be placed in the Contract that only operators of proven experience in working in peatlands are employed for any work element involving excavation, handling or placement of peat.</li> <li>• Prior to excavation, drains should be established to effectively intercept overland flow prior to earthworks.</li> <li>• The existing network of drainage within the site should be utilised whenever possible.</li> <li>• Due to peat's fluid-like properties, all peat excavated should be immediately removed from work area. If peat is required for reinstatement, then acrotelm peat (&lt;0.5m shallow, living layer) should be stripped off the surface of the excavated area and placed carefully at the margins of the work area along the access road and hardstand margins that are characterised by near-horizontal slopes (&lt;3°).</li> <li>• From previous landslides evidence and historic occurrences (e.g. Pollatomish Mayo, Derrybrien Galway (both 2003)), it is strongly recommended that construction activities should be assessed for impact after prolonged periods of heavy rainfall.</li> <li>• Peat monitoring by sightline monitoring method shall be carried out by the appointed contractor for this development. Monitoring will be carried out at areas of deep excavations (e.g. turbine bases), material deposition areas and any area of works where peat is present.</li> <li>• An emergency response system should be developed for the construction phase of the project, particularly during the early excavation phase. This, as a minimum, should involve 24-hour advance meteorological forecasting (Met Éireann download) linked to a trigger-response system. When a pre-determined rainfall trigger level is exceeded (e.g. 1 in 100 year storm event or very heavy rainfall at &gt;25mm/hr), planned responses are undertaken. These responses should include cessation of construction until the storm event, including storm runoff, has passed over. This requirement is also included in the CEMP.</li> </ul> <p>At the area of significant risk to the east of T11, more stringent mitigation measures shall be applied. These are to include the following:</p> <ul style="list-style-type: none"> <li>• No stockpiling of material in this area</li> <li>• More frequent monitoring and inspection of the floated road</li> <li>• The used of a log road construction</li> <li>• Consider the use of logs to pile the section of road through this area to transfer loads to a firm strata below the peat.</li> <li>• No excavation or removal of peat to be carried out in this area</li> </ul>	Principal Contractor	Chapter 3 Civil Engineering Chapter 9 Land & Soils Chapter 8 Water Appendix 2-1 CEMP Appendix 9-1 Peat Stability Assessment

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DURING CONSTRUCTION	<b>Excavation associated with Cable Trenching</b>	<ul style="list-style-type: none"> <li>The removal of soil, subsoil and bedrock is an unavoidable impact of the construction of the cable trenches but every effort will be made to ensure that the amount of earth materials excavated is kept to a minimum in order to limit the impact on the land and soils aspects of the site. Some of the overburden material will be used in the re-instatement of turbine excavations and cable trenches. All other material will be removed to designated storage areas.</li> <li>Temporary storage of material beside the trenches should be done in line with the CEMP. Site management should include the checking of equipment, materials storage and transfer areas, drainage structures and their attenuation ability on a regular basis during the construction phase of the project. The purpose of this management control is to ensure that the measures in place are operating effectively, prevent accidental leakages, and identify potential breaches in the protective retention and attenuation network during earthworks operations.</li> </ul>	Principal Contractor	Chapter 3 Civil Engineering Chapter 9 Land & Soils Appendix 2-1 CEMP
DURING CONSTRUCTION	<b>Storage and Management of Excavated Material</b>	<ul style="list-style-type: none"> <li>The handling, storage and management of excavated peat and spoil will be carried out in line with the project CEMP.</li> <li>Stockpiles of stripped topsoil will be in locations with minimum trafficking to prevent damage and dusting.</li> <li>Reusable excavated sub-soils and aggregate will be stored in temporary stockpiles at suitably sheltered areas to prevent erosion or weathering and shall be shaped to ensure rainfall does not degrade the stored material.</li> <li>Stockpiled materials will be located 50m away from drainage systems and silt retaining measures (silt fence, / silt curtain or other suitable materials) to reduce risk of silt run-off shall be installed along the downgradient edges of stockpiled earth materials.</li> <li>Regular watering may be necessary during dry weather periods.</li> <li>The peat storage areas will be reinstated by planting and re-seeding to provide resistance against rainfall events, and to minimise sediment and nutrient release until natural re-vegetation is established.</li> <li>Drainage measures will be provided for reinstated peat storage areas to include cut-off drains at the top of slopes, toe drains at the base of slopes, settlement ponds and silt fencing as required.</li> </ul>	Principal Contractor	Chapter 3 Civil Engineering Chapter 9 Land & Soils Chapter 8 Water Appendix 2-1 CEMP
DURING CONSTRUCTION	<b>Protection of Water Quality – Sediment Control</b>	<ul style="list-style-type: none"> <li>A surface water quality management system and plan, included in <b>Chapter 3 Civil Engineering</b>, has been prepared in order to control erosion and prevent sediment runoff during the construction phase of the proposed development. The implementation of sediment and erosion control measures is essential in preventing</li> </ul>	Principal Contractor	Chapter 3 Civil Engineering Chapter 9 Land & Soils Chapter 8 Water Appendix 2-1 CEMP

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		<p>sediment pollution (See <b>Planning Drawings 19876-MWP-00-00-DR-C-5011 to 5016</b>);</p> <ul style="list-style-type: none"> <li>Settlement ponds and check dams within the drainage and treatment system will provide the essential mechanism for the removal of silt from construction-related runoff, and the controlled return of the treated runoff to the downstream watercourses. This will ensure that the proposed development will not create adverse effects on the aquatic environment and ensure compliance with applicable legislation;</li> <li>Check dams will be placed at regular intervals, based on gradient, along all drains to provide flow attenuation, slow down runoff to promote settlement and to reduce scour and ditch erosion. They will be placed at appropriate intervals and heights, depending on the drain gradient, to allow small pools to develop behind them;</li> <li>Dewatering of turbine base excavations can result in significant flow rates to the drainage and settlement system if high capacity pumps are used. In order to avoid the need for pumping it is proposed to provide drainage channels from the excavations so as to prevent a build-up of water. Where this is not feasible, temporary storage will be provided within the excavations, and dewatering carried out at a flow rate that is within the capacity of the settlement ponds;</li> <li>Silt fences placed temporarily along drains are an alternative method of reducing the volume of suspended sediment. They will be placed at the end of any locally steep section of drain. They have the double benefit of effectively producing a localised swale to reduce scour effects and also attenuating and filtering the discharge;</li> <li>A construction wheel wash will be used for vehicles wheels and undersides entering and leaving the construction site. Water residue from the wheel wash will be fed through a settlement pond, interceptor and then discharged to a vegetated area of low ecological value to be decided by the ECoW. The wheel wash area will be cleaned regularly to avoid the buildup of residue.</li> </ul>		
<b>DURING CONSTRUCTION</b>	<b>Protection of Water Quality - Concrete Control</b>	<ul style="list-style-type: none"> <li>During the pouring of concrete at the turbine bases effective containment measures are to be implemented to avoid spilling concrete outside the construction area and prevent concrete entering the drainage system.</li> <li>A concrete wash-out area with impermeable polythene lining is to be provided to facilitate the washing of concrete lorry chutes.</li> <li>Drums of concrete trucks delivering concrete to site should not be washed out on site.</li> </ul>	Principal Contractor	Chapter 3 Civil Engineering
<b>DURING CONSTRUCTION</b>	<b>Protection of Water Quality –</b>	<ul style="list-style-type: none"> <li>Drainage within the temporary site compound will be directed to an oil interceptor to prevent pollution if any spillages occur.</li> </ul>	Principal Contractor	Chapter 3 Civil Engineering Chapter 6 Biodiversity Chapter 9 Land & Soils

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	<b>Temporary Compounds</b>	<ul style="list-style-type: none"> <li>No domestic wastewater discharges to the environment. Temporary toilet facilities will include an integrated wastewater holding tank which will be emptied routinely by a licenced waste contractor.</li> <li>A bunded containment area will be provided within the compound for the storage of fuels, lubricants, oils etc.</li> <li>The compounds will be in place for the duration of the construction phase and will be removed once commissioning is complete.</li> </ul>		Chapter 8 Water Appendix 2-1 CEMP
<b>DURING CONSTRUCTION</b>	<b>Protection of Water Quality – Fuel Management</b>	<ul style="list-style-type: none"> <li>All site plant and machinery site e.g. excavators, dumpers etc, will be refuelled in a bunded, designated area at least 50m from any watercourses, drains or riparian zones.</li> <li>No servicing or repair of plant, machinery or vehicles will be undertaken outside the site compound area.</li> <li>Any required fuel will be stored in bunded tanks within a dedicated lock up. Lubricants will be stored in the lock up. It is proposed that refuelling will be done directly from a delivery vehicle in a designated area in the compound.</li> <li>All vehicles will be parked at night in the compound and refuelling will be the first action undertaken on a works day. Drip trays and spill kits will be used and available during refuelling activities.</li> </ul> <p>A fuel management plan will be implemented which will incorporate the following elements:</p> <ul style="list-style-type: none"> <li>Prior to any work commencing it will be ensured that all construction equipment is mechanically sound to avoid leaks of oil, fuel, hydraulic fluids and grease;</li> <li>All machinery will carry emergency spill kits and additional spill kits will be available in all active construction areas;</li> <li>Mobile bowsers, tanks and drums will be stored in a secure, impermeable storage area, away from drains and open water;</li> <li>Fuel containers will be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores;</li> <li>Fuelling and lubrication of equipment will be carried out in bunded areas, within the compound;</li> <li>Ancillary equipment such as hoses, pipes will be contained within the bund;</li> <li>Taps, nozzles or valves will be fitted with a lock system;</li> <li>Fuel and oil stores, including tanks and drums will be regularly inspected for leaks and signs of damage;</li> <li>Only designated trained operators will be authorised to refuel plant and emergency spill kits will be present beside equipment for all refuelling events;</li> <li>Procedures and contingency plans will be set up to deal with emergency accidents or spills; and</li> </ul>	Principal Contractor	Chapter 6 Biodiversity Chapter 8 Water Appendix 2-1 CEMP

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		<ul style="list-style-type: none"> <li>An emergency spill kit with oil boom, absorbers etc. will be kept on site in the event of an accidental spill.</li> </ul>		
<b>DURING CONSTRUCTION</b>	<b>Protection of Water Quality - Tree Felling</b>	<ul style="list-style-type: none"> <li>All tree felling to be undertaken using good working practices as outlined by the Forest Service in their 'Forestry Harvesting and Environment Guidelines' (2000) and the 'Forestry and Water Quality Guidelines' (2000).</li> <li>Natural re-growth of vegetation is anticipated on fell areas, subsequent to construction. This will assist in controlling sediment and phosphorous release. If natural re-growth is found to have been unsuccessful, seeding with an appropriate mix will be undertaken. If required, the mix will be from an approved supplier, or locally harvested.</li> <li>All excess felled brush should be removed from site to avoid release and runoff of phosphorous.</li> </ul>	Principal Contractor	Chapter 6 Biodiversity Appendix 2-1 CEMP
<b>DURING CONSTRUCTION</b>	<b>Biodiversity - Disturbance to Fauna (general measures)</b>	<ul style="list-style-type: none"> <li>Spraying of vegetation using pesticides (herbicides, fungicides and insecticides) will not be permitted at any stage of development.</li> <li>Habitat disturbance to fauna will be limited by controlling the movement of maintenance vehicles. Construction vehicles will not encroach onto habitats beyond the proposed development footprint;</li> <li>Duration of construction activities will be restricted to between 7:00am and 7:00pm, Monday to Friday and between 8:00am and 2:00pm on Saturdays. Construction work will not take place at night unless in exceptional circumstances to reduce potential disturbance to fauna. (Note: Delivery of oversized wind turbine components will occur outside of these times to minimise traffic nuisance and in line with any typical abnormal loads licence conditions imposed by the various relevant granting Local Authorities. Turbine erections may also occasionally occur outside of these times to take full advantage of low wind periods);</li> <li>In the unlikely event that protected faunal species are found actively using the site for breeding/roosting during the construction phase, works will cease immediately, and the area will be cordoned off until advice is sought from a suitable qualified specialist; and</li> <li>Should the resting or breeding places of any protected species be discovered within the site during construction works, the NPWS will be informed. Any mitigations required for badgers will be carried out under license from NPWS, and using NRA Guidelines (2005) (now TII) where applicable; <i>Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes</i>.</li> </ul>	Principal Contractor Project Ecologist	Chapter 6 Biodiversity Appendix 2-1 CEMP

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DURING CONSTRUCTION	<b>Biodiversity – Protection of Water Quality and Natura 2000 sites</b>	<p>The most appropriate best practice method will be adopted for any/all water crossings in consultation with Inland Fisheries Ireland. Water crossing methods will not directly affect the watercourses or associated species such as otter. Nevertheless, care is required when working near watercourses to ensure that pollutants do not spill or seep into the aquatic environment. In this respect, all works will be carried out in compliance with the conditions and procedures set out in the CEMP.</p> <p>A programme of water quality monitoring in the site watercourses and drainage outfalls should be implemented during construction.</p>	Principal Contractor  Project Ecologist  Environmental Manager	Chapter 6 Biodiversity Appendix 2-1 CEMP
DURING CONSTRUCTION	<b>Biodiversity – Tree Felling/Bats</b>	A clear-fell distance of 93m should be maintained between turbines and trees/wooded areas to be felled.	Principal Contractor  Project Ecologist	Chapter 6 Biodiversity Appendix 2-1 CEMP
DURING CONSTRUCTION	<b>Biodiversity – Management of Invasive Species</b>	<ul style="list-style-type: none"> <li>An Invasive Species Management Plan should be prepared.</li> <li>The CEMP includes a procedure for the management of invasive species on the site (EMP 12, CEMP). A site-specific Invasive Species Management Plan will be developed and incorporated into the final CEMP.</li> </ul>	Principal Contractor  Ecological Clerk of Works	Chapter 6 Biodiversity Appendix 2-1 CEMP
DURING CONSTRUCTION	<b>Ornithology – General Measures</b>	<ul style="list-style-type: none"> <li>Construction bird surveys will be undertaken by an ornithologist with appropriate expertise and experience or an ecologist with appropriate expertise and recognised long-term ornithological experience at the same vantage point (VP) locations as the pre-planning surveys using the same methodology. Construction bird surveys should be undertaken monthly for the duration of the build.</li> <li>Displacement and or disturbance impacts, and habitat degradation will be limited by controlling the movement of vehicles; vehicles will not encroach onto habitats beyond the proposed development footprint. This area will be demarcated on the ground.</li> <li>Depositing of excavated material on existing areas of heather or bog will not be permitted and all works will have to adhere to working only within the permitted development footprint.</li> <li>Where possible, heavy construction work, which is envisaged to take up to 8 months, will take place outside the breeding season where possible to minimise disturbance, and or displacement to breeding birds, but where works are necessary, there will be commitment to undertake relevant pre-work checks by the PE and Project Ornithologist (if different).</li> <li>All plant and equipment will conform with the S.I. No. 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001, as amended, and other relevant legislation.</li> </ul>	Principal Contractor  Project Ecologist/ Ornithologist	Chapter 7 Ornithology Appendix 2-1 CEMP

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION / RECOMMENDATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER / ACTION REQUIRED
		<ul style="list-style-type: none"> <li>Plant and equipment will be turned off when not in use, with no unnecessary revving.</li> </ul>		
<b>DURING CONSTRUCTION</b>	<b>Ornithology – Breeding &amp; Roosting Birds</b>	<ul style="list-style-type: none"> <li>Vegetation removal, including hedgerows and trees will be conducted outside of the restricted period (March 1st to 31st of August), to prevent disturbance to breeding birds. If there is any remaining clearance during that period, it will only be completed following survey by the PE to confirm nesting birds are absent from the area to be cleared/felled.</li> <li>Site maintenance visits should be minimised and unnecessary onsite human activity will be minimised, especially between April and August.</li> <li>In the unlikely event that protected faunal species are found actively using the site for breeding and or roosting in the proximity of works during the construction phase, works will cease immediately, and the area will be cordoned off until advice is sought from the Project Ornithologist.</li> </ul>	Principal Contractor Project Ecologist/ Ornithologist	Chapter 7 Ornithology Appendix 2-1 CEMP
<b>DURING CONSTRUCTION</b>	<b>Ornithology – Hen Harrier</b>	<p>Although there is no evidence of hen harrier breeding on the site, in the case that a hen harrier nest is detected within 500m of the permitted construction works or within the general location of the wind farm site, the following will be carried out;</p> <ul style="list-style-type: none"> <li>The Project Ornithologist/Ecologist will immediately notify NPWS.</li> <li>The location of the nest will be treated as an Ecological Sensitive Area, and will be kept from the public domain.</li> <li>All high impact, and heavy construction works will be suspended within 500m of any hen harrier breeding nest site.</li> <li>Management measures for the protection of any hen harrier breeding site at the site will be discussed, and agreed with NPWS.</li> <li>Following the implementation of management measures, an exclusion zone will be installed and enforced throughout the construction phase of the project.</li> <li>The Project Ecologist will monitor the Ecological Sensitive Area, and will liaise with NPWS to ensure all mitigations measures agreed with NPWS are fully implemented.</li> </ul>	Principal Contractor Project Ecologist/ Ornithologist	Chapter 7 Ornithology Appendix 2-1 CEMP
<b>DURING CONSTRUCTION</b>	<b>Traffic</b>	<ul style="list-style-type: none"> <li>Ensure regular maintenance of plant and equipment. Technical inspection of vehicles to ensure they will perform most efficiently.</li> <li>Implementation of the Traffic Management Plan to minimise congestion.</li> <li>All site vehicles and machinery to be switched off when not in use - no idling.</li> </ul>	Principal Contractor	Appendix 15-1 Traffic and Transportation Assessment Appendix 15-3 TMP Appendix 2-1 CEMP
<b>DURING CONSTRUCTION</b>	<b>Noise</b>	Best practice in the form of <i>BS5228 –1&amp;2:2009, Code of Practice for the Control of Noise and Vibration on Construction and Open Sites</i> should be adopted during the construction phase	Principal Contractor	Appendix 2-1 CEMP Chapter 11 Noise

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION / RECOMMENDATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
		in order to minimise the noise generated by construction activities and nuisance to neighbours.		
<b>DURING CONSTRUCTION</b>	<b>Waste Management</b>	<ul style="list-style-type: none"> <li>Waste will be managed in accordance with the waste hierarchy in Council Directive 98/2008/EC on waste and section 21A of the Waste Management Act 1996, as amended, as follows: (a)prevention; (b)preparing for re-use; (c)recycling; (d) other recovery (including energy recovery); and (e) disposal;</li> <li>All waste for offsite treatment/disposal is to be stored temporarily in appropriate dedicated storage areas. The areas in which wastes are stored on site are segregated to prevent material and contaminated surface water runoff entering local surface water drains;</li> <li>All chemical, hydrocarbon or other controlled wastes will be stored in designated areas in appropriate approved containers within bunds or on spill pallets, as required;</li> <li>All waste to be removed from site will be undertaken by authorised waste contractors and transported to an authorised facility in accordance with best practice and the site waste management plan as discussed in the CEMP.</li> </ul>	Principal Contractor	Chapter 15 Material Assets Chapter 9 Land & Soil Appendix 2-1 CEMP

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION / RECOMMENDATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER / ACTION REQUIRED
POST CONSTRUCTION / OPERATIONAL PHASE	<b>Protection of Water Quality – Sediment Control</b>	<ul style="list-style-type: none"> <li>Silt ponds and silt fences constructed for water quality protection, will remain in place.</li> <li>Six months post construction, where necessary, ponds will be partly filled with stone so that they will not present a long-term safety risk.</li> <li>Runoff from the hard-standings, and other works areas will continue to be directed to these ponds and from there to the outfall weirs.</li> <li>Check dams and silt fences within the drainage channels will also remain in place.</li> </ul>	Wind Farm Operator Project Ecologist	Chapter 6 Biodiversity
POST CONSTRUCTION / OPERATIONAL PHASE	<b>Protection of Water Quality – Management of Domestic Effluent</b>	During the operational phase, a wastewater holding tank will be used on site for toilet facilities. This will be maintained by the service contractor on a regular basis	Wind Farm Operator	Chapter 2 Project Description Chapter 8 Water
POST CONSTRUCTION / OPERATIONAL PHASE	<b>Biodiversity &amp; Ornithology</b>	The use of “white lights” on the turbines should be avoided as these can attract night flying birds such as migrants, and insects, which in turn can attract bats. Any form of lighting on the turbines or other structures will have to be agreed in advance with the Irish Aviation Authority.	Wind Farm Operator	Chapter 6 Biodiversity Chapter 7 Ornithology
POST CONSTRUCTION / OPERATIONAL PHASE	<b>Noise</b>	Post commissioning operational phase noise monitoring should be carried out to ensure compliance with the relevant planning noise limit criteria in accordance with guidance outlined in the IOA GPG Supplementary Guidance Note 5: <i>Post Completion Measurements</i> (July 2014).	Wind Farm Operator	Chapter 11 Noise
POST CONSTRUCTION / OPERATIONAL PHASE	<b>Residential Amenity/ Material Assets</b>	In the event of interference being caused by a permitted turbine on any communication signals, facilities shall be installed to minimise such interference. Details of the facilities to be installed, which shall be at the developer's expense, shall be submitted to and agreed in writing with the planning authority prior to commissioning of the turbine.	Wind Farm Operator	Chapter 15 Material Assets
POST CONSTRUCTION / OPERATIONAL PHASE	<b>Management of Ground/Slope Stability</b>	All vehicular movement during operation and maintenance will be restricted to the areas of hardstanding and existing/newly constructed access roads.	Wind Farm Operator	Chapter 9 Land and Soils
POST CONSTRUCTION / OPERATIONAL PHASE	<b>Ornithology</b>	<ul style="list-style-type: none"> <li>A post-construction bird monitoring programme shall be developed and undertaken in consultation with NPWS. The programme of works will monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project at the same Vantage Point locations used during pre-construction surveys. Monitoring measures will be based on guidelines issued by the Scottish Natural Heritage (Monitoring the Impact of Onshore Wind Farms on Birds. Scottish Natural Heritage, 2009).</li> </ul>	Wind Farm Operator Project Ecologist/ Ornithologist	Chapter 7 Ornithology

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION / RECOMMENDATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
		<ul style="list-style-type: none"> <li>Habitat degradation will be limited by controlling the movement of maintenance vehicles; maintenance vehicles will not encroach onto habitats beyond the project footprint, with the exception of maintenance works on the site drainage system.</li> </ul>		
<b>POST CONSTRUCTION /OPERATIONAL PHASE</b>	<b>Shadow Flicker</b>	Shadow flicker control modules (SFCM), which operate by standing the turbine down based on times of day and the relative angle of the sun and turbine, will be installed on any turbines causing shadow flicker; these can be programmed to shut down turbines if shadow flicker is anticipated to exceed nuisance levels.	Wind Farm Operator	Chapter 12 Shadow Flicker

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION / RECOMMENDATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
<b>DECOMMISSIONING</b>	<b>Removal of Wind Farm Components and Site Reinstatement</b>	<ul style="list-style-type: none"> <li>Decommissioning will comprise the removal of the turbines and reinstatement of the site. Upon termination of the use of the wind farm, the turbines shall be dismantled, and all above ground elements removed from the site.</li> <li>The cables will not be removed if the environmental assessment of the decommissioning operation demonstrates that this would do more harm than leaving them in situ. The assessment will be carried out closer to the time to take into account environmental changes over the project life.</li> <li>Hardstand areas will be remediated to match the existing landscape thus requiring agricultural pasture reinstatement, peatland restoration or reforestation. Access roads will be left for use by the landowners. The current view is that the disturbance associated with the removal and disposal of the material would be more deleterious than leaving them in place.</li> <li>Any structural materials suitable for recycling will be disposed of in an appropriate manner. The financial costs of decommissioning, at current material values, will be more than met by the recycling value of the turbine components.</li> <li>Prior to the decommissioning work, a comprehensive plan will be drawn up to ensure the safety of the public and workforce and the use of best available techniques at the time.</li> <li>Prior to the decommissioning work, a comprehensive reinstatement proposal, including the implementation of a programme that details the removal of structures and landscaping, will be submitted to Kerry County Council for approval.</li> </ul>	Wind Farm Operator	Chapter 2 Project Description  Prepare Decommissioning Management Plan and submit to local authority(s) for agreement.
<b>DECOMMISSIONING</b>	<b>Management of Ground/Slope Stability</b>	Concrete bases could be removed to 1m below ground level but it may be better to leave them under the ground as this causes less disturbance. The area around the bases will be rehabilitated by covering it with locally sourced soil in order to regenerate the vegetation and reduce run-off and sedimentation effects. The cables may be removed from the trenches however the ducts may be left in place.	Wind Farm Operator	Chapter 9 Land and Soils
<b>DECOMMISSIONING</b>	<b>Ornithology</b>	<ul style="list-style-type: none"> <li>During the decommissioning phase, disturbance limitation measures will be as per the construction phase.</li> <li>Plant machinery will be turned off when not in use.</li> <li>All plant and equipment for use will comply with the S.I. No. 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001, as amended.</li> </ul>	Wind Farm Operator	Chapter 7 Ornithology